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Planning and Implementing Interventions for Students with Communication Disorders: An Integrated Framework with Perspectives from Cognitive, Developmental, & Behavioral Psychology, Occupational Therapy, Physical Therapy, Speech Therapy, and Linguistics

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Special education teachers are called upon to address a myriad of special educational needs. We are trusted to design and implement interventions tailored to each individual student with the overarching goal of equipping the student for success in education and ultimately in life. We must bring theory and research, from various child centered fields of study, directly into the real life of the classroom and, by association, the family, community, and society. We use Evaluation and Reevaluation Reports (ERs & RRs), Individualized Educational Plans (IEPs), and other records and reports that accompany a student entering our classroom to identify strengths and needs. We employ activities and methods to help the student meet the needs, use the strengths and progress toward achieving the IEP goals. The information and accountability of these reports is our starting place in programming for the individual student, but it is not the limit of our responsibility to engage the student in learning across all possible content. The overarching goal of creatively engaging students and equipping them for success as lifelong learners should include all students of all abilities. One of the more challenging situations encountered in special education is teaching students with little or no effective communication skills. Their negative behaviors may be the first, most observable, most disruptive challenge. Looking past the obvious behaviors, frustration and anxiety are often present for the student without means to express even simple wants and needs. The student may be in a state of trauma from experiencing aggressive behavior, consistent frustration and the personal consequences of negative behaviors (Bath, 2008). Improvements in communication can result in decreased negative behavior and increased engagement in learning activities, and greater compliance with tests or probes used to track progress toward goals (Durand, 2001; Mancil, 2006; Tiger, 2008). This paper attempts to create a positive framework for an effective multidisciplinary intervention design to address special needs of students with communication disorder.

Communication as a Foundation

When a student is not communicating effectively, not receiving or expressing meaning through standard means, the communication issue must be the primary concern of teachers in this child's life. Some training through behavioral interventions may be accomplished without overt communication, relying on tangible rewards or withholding reinforcement (Kaiser & Roberts, 2011). For further development, however, the student must be able to communicate, engaging with teachers and peers, expressing and receiving meaning (Howlin, 2007; Shoener, 2008). The lack of communication ability is a primary source of frustration for

the student, educators, peers, parents, therapists and specialists. Without communication, an individual has no way to make needs known and maintain active participation in the educational and social processes in the classroom or the community (Shoener, 2008).

Communications disorders in most young students qualify as developmental disabilities; meaning that the common developmental process by which most children achieve communication has not been successful or has not shown the normally expected results in communication skill. Whether the normal process was derailed by illness, specific congenital conditions associated with communication disorder, lack of timely intervention, or brain damage due to trauma, remediation and intervention will make use of the capacity to learn, styles of learning and interests and motivation of the individual student. A review of the literature on communication disorders and communication, speech, and language delays may have a variety of causes. A teacher may find many terms related to communication needs in a student's IEP or Evaluation/Reevaluation Reports. Childhood apraxia of speech (CAS), associated with brain damage and a number of genetic disorders, is a motor disorder in which messages from the brain to muscles of the mouth and face do not produce speech correctly. Dysarthria describes when the actual strength and ability of the muscles is also lacking. Cleft palate and other congenital abnormalities in the formation of the face, mouth, tongue, teeth and jaw can delay normal speech development until successful surgical treatment is complete. Aphasia refers to difficulties presumed to be in the language areas in the brain; receptive language skills, expressive language skills, or both can be impaired. Students with language or communication needs can also have difficulty "reading" gestures or facial expressions and using non-literal language expressions that they mistake for literal meaning. Autism and Autism Spectrum Disorder (ASD) have long been associated with needs in the areas of speech, language, social interaction, and overall communication skills; Teachers must understand that these children can be verbal without being adept in communication skills.

Functional Behavior in the Classroom

Negative behaviors that disrupt the activity of the classroom are usually a primary focus of intervention, and this is understandable when safety can be an issue. At the core, physically aggressive actions by students with communication disorders are often a response to frustration, anxiety and perceived threats. In addition,

the teacher should focus on sending emotionally positive messages like communicating safety and care by talking about and teaching school routines that keep students and teachers safe (Bath, 2008). The messages of respect and the value of each person can be communicated by the way teachers and students are treated and through celebrating each individuals' talents and accomplishments, this attitude or mode of operation is consistent with the model of Trauma Informed Care detailed by Bath (2008).

Communication disorders can be at the root of much of the frustration and difficulty adjusting to new classrooms and even transitioning from one location or activity to another (Cihak 2010 & 2012). Visual modeling and use of video technology to make the modeling process accessible to the student was shown by Cihak (2012) to be one effective way to tap into visual prompting and allow for greater independence for students. Keeping the developmental framework in play, there are many messages non-verbal or non-communicating students are able to receive before they show any obvious interest in responding. Just as parents speak with infants, the non-verbal student needs to be spoken to and included in classroom communication and activities.

With positive communication and social behavior being modeled and practiced in the classroom, the teacher can observe the student and seek out communication with parents and other therapists or specialist to fill in information not included in IEP or ER/RR documents. Specifically teachers need to find things and activities that students show preference for or appear to seek out. The desire for specific preferred activities or objects will be better motivation to use new communication tools than using preprogrammed or "canned" communication activities. Once effective communication strategies are begun, initiating communication about wants and needs should be encouraged and rewarded. Giving the beginning communicator time to be listened to and encouraging peers to engage in using communication tools will help the new communicator gain confidence and maintain motivation.

As the student's ability to communicate increases, frustration of getting wants or needs met should decrease, leading to less acting out or negative behavior. The ability of counselors, teachers, and emotional support staff to discuss feelings, fears, or concerns with the student and develop new strategies for coping and reducing stress should also develop as the student's communication skills increase. These changes should help the student and teachers avoid triggering negative behaviors and allow the student to engage in developing methods and strategies to avoid stress and effectively de-escalate when frustration leads to negative or aggressive behavior.

School as Functional Communication Laboratory

Since communication is basic to human relationships. Negotiating any culture or institution requires a communication skill set. The classroom and school can be a great laboratory for students to discover and develop skills if teachers make school a safe place to take risks and experiment. Without communication and understanding of schedules, the school day may appear to students as a random and chaotic assault of changes throughout the day. Since unexpected abrupt changes are stressful for most people, it is not surprising that student with communication disorders find

transitioning from one room or subject to another to be upsetting and unsettling. For this reason, communication interventions that enable students to access school routines, through picture schedules for example, can have almost immediate benefits once they are understood by the student. Engaging with students and designing individualized interventions that allow them to inform or remind themselves about established routines, instead of relying upon staff to lead them about the school building. This increases the students' independence and helps the student feel some sense of personal control during transitions. This intervention example requires effort on the part of the teacher to create a schedule with visual images that effectively communicates concepts. The schedule may also need to be printed, laminated, and replaced when lost, changed, and redesigned again to meet individual needs, but the resulting change in the student's view of the school day is a meaningful success on which the teacher can build with subsequent interventions. While addressing communication needs to follow routines and rules in the school as laboratory context, methods and models should make every effort to mirror contexts outside of school, keeping current learning in line with future success in the home, work, and community.

While the student is developing communication skills that help make routines comprehensible, Academic and Life Skills communication skills can be introduced. Academic communication can follow the individual's interests and will be first centered on simple naming of objects of interest, following a developmental pattern. Life skills communication should center first on basic needs and wants in order to promote a pattern of consistent expectation of engagement in communication, which will move the student toward independence and personal responsibility. For some students this will be part of learning toileting, dressing, and feeding skills, and this communication is especially important for the dignity of students who due to physical disability, will require assistance in these areas. If a student cannot physically engage in the steps of toileting, communicating the needs and asking for help in each step, at least provides the student some dignity, responsibility and control over what our culture labels a private task for school age children.

Critical Pedagogy

If the classroom is the communication laboratory, the teacher is the chief researcher, coordinating and designing interventions and responding to results. Just as a researcher in a medical lab studying the efficacy of a new treatment, the teacher must use all of the resources available to coordinate a serious and wise approach to special education. Critical Pedagogy in this context demands that the teacher fully engage in the pursuit of empowering the students become successful. This means the teacher must embrace the role of advocate and leader in addressing student needs and giving students opportunity to make productive use of their strengths. As leader, the teacher must make use of known methods, creatively adapting some, and always be ready to find, learn, and try new approaches. A critical assessment of methods should be an ongoing practice along with regularly reflecting on professional skills. As part of gathering data and information, a teacher should also actively seek out observations and opinions from other teachers and staff, and provide time to consult with specialists, and therapists who are also serving the student. For this reason the teacher must

be comfortable with terminology and basic theory in disciplines related to children and education, and always ready to ask questions and clarify when consulting with other professionals. Parents, social workers and therapists outside of the school can also provide perspective on how in-school interventions impact life at home and in the community. While communicating regularly with teachers, parent may also make use of similar interventions at home and teachers can assist parents in adapting ideas for home use. If an intervention is successful at school and parents report positive changes at home, it should be noted that the skills learned are transferring to other contexts.

Positive Approaches and Methods

Students are Individuals

Our understanding of our students as people should not be limited to the lists of strengths and needs included in their IEPs. Each student has some personal understanding and appreciation of own their identity. When students do not communicate effectively using conventional methods, informal interaction can lead to valuable insights into how the students perceive themselves and the world. Charlton wrote *Nothing about us without us*, in 1998, as a passionate and direct challenge to the traditional philosophy of Special Education as the “able” using their abilities to care for the disabled by minimizing their pain and managing the needs of “disabled persons”. If we are to continue, over 15 years later, to answer this challenge, we must know our students, see them as individuals, attend to their rights, and guide them in developing self-advocacy. This requires teachers to extend genuine relationship, respect, and creative leadership opportunities to their students within the structure of the classroom. Teachers must spend time getting to know students and establishing some connection with students’ own views of themselves as individuals. Engaging in “play” activities, creative expression, and open ended activities gives teacher an opportunity to go further than reports and structured academic permit to engaging with the student’s personality, values, and desires. Although the school day can be rushed and full or activity, teachers can plan for time and make opportunities to be drawn into the mind and inner world of the student.

Recently popular, autobiographical accounts from the perspective of more mature individuals who have experienced lifelong communication and emotional disability can be useful in opening educators to the world of the young student who struggles with behavior and communication challenges. Temple Grandin, in addition to her successful scholarly writing in animal husbandry, has authored and co-authored a number of books revealing autobiographical accounts of learning challenges, gifts, and experience in the education system and in developing her career (Grandin, 1995, 2011; Grandin & Attwood, 2012; Grandin & Barron, 2005; Grandin & Panek, 2013, 2013; Grandin & Scariano, 2005; Simone & Grandin, 2010; Myers & Grandin, 2010). Grandin also lends her experience to providing insight into a number of helpful therapies and differences in cognitive activity and perception by contributing to professional journals (Grandin, 1992, 1996, 1998; 2006, 2007, 2009; Ray, King, & Grandin, 1988). A more personal and subjective account of severe autism is offered by Naoki Higashida’s book, *The Reason I Jump* (2013). Exposure to these writings from the perspective of firsthand experience may prepare

teachers with additional openness as they observe and engage with their own students.

The investment of time in making informal observations can give the teacher clues about potential motivation, interests, and even how students’ mood and attention are affected by small environmental changes and specific sensory stimulation. Teacher observations and those related to teachers by other staff should be recorded in writing in an observation journal or as dated entries in a computer document, spreadsheet or database on the day of the observation. Although teachers are already documenting progress on IEP objectives, the journal descriptions can provide valuable insight about new trends or student interests as they develop. Content of conversations with parents, social workers, counselors, specialists, therapists and medical reports can also be noted in this account. This habit of observation and keeping notes, also communicates to the students a respect for individual children and that the relationship with the student has value. Having information and observations documented and available for meetings and conversations regarding the student is a must for advocating for the student and communicating with other members of the IEP team.

Trauma Informed Care

No matter what diagnosis or issues a new student presents, the first goal is to establish a trusting relationship with the student. This relationship begins by creating a safe and positive environment in my classroom for all students. The Trauma Informed Care (Bath, 2008) and the Sanctuary Model (Bloom & Sreedhar, 2008) approaches are helpful and comprehensive student centered models. These methods, developed for use with children who have a type of Post-Traumatic Stress or special emotional needs as a result of trauma, work well with students with Communication Disorders. Both provide a framework for guiding interactions with students. Based on my own observations and experience, special needs children experience quite a bit of personal stress due to the their own struggles with disability. In addition, they witness family and caregivers’ frustrations, grief, fears, and failure as attempts are constantly made to treat, accommodate, and manage the special needs of the child.

Teachers can employ methods to help the students avoid additional stress and develop strategies to reduce stress. Due to the sensitivity of some students to sound as a trigger for stress, staff should use calmer quieter voices and keep sensory stimulation from becoming too intense. When specific triggers are known efforts to avoid them can be made along with plans for helping students “de-escalate” or calm themselves. Creating this type of classroom environment allows students to feel safe. In addition to making the school an emotionally safe place, trauma informed care models charge teachers with making “connections” with students as individuals as described previously. The positive and respectful relationship with teachers and staff promotes and models positive social interaction for all students. The final piece of the Trauma informed care model involves helping students to take responsibility for their reactions and actions. Teachers can begin by providing students with opportunities to take breaks and choose ways to help themselves avoid becoming overly stressed. Positive Behavioral Support Plans (Kroeger, & Phillips, 2007) are a more formal

means to assess and design strategies for helping to manage student behavior that can also be helpful. Although the Sanctuary Model is intended for adoption by an entire institution or organization, many of its recommended practices can also be implemented at the classroom level (Bloom & Sreedhar, 2008).

For many students with Emotional Disability and Communication Disorders, sensory input of certain types or when at an extreme level can increase stress. While a new student gets settled into the classroom routine, it is best to minimize sensory stimulation volume, while making opportunity for discrete sensory exposure to allow teachers and staff to observe any strong reactions to sensory content. Early observation while sensory input is dialed down a bit can give valuable feedback as to which sensory modes a child responds most favorably and which forms of sensory stimulation appear to irritate the child or even elicit negative behavior. Tantrum behaviors, and very disruptive behavior are often seen to follow loud noises, or other situations which, after consistent observation, form a pattern of avoidance behavior. Often students who find auditory stimulation overwhelming react by yelling to make more noise, “drowning out” the noise level or frequency they wish to avoid. Clearly this reaction could easily be misinterpreted as meaning that the student wants more noise, but when the noise level is kept lower and the negative responses end, the true cause and effect may be seen.

Building a positive and trusting relationship with individual students is even more important with the student who has a communication disability. Whether the primary source of the disability is autism, another developmental disability or a specific speech-language disorder, the student who cannot communicate cannot be successful as a learner. The first message the students need to receive from the teachers and staff is one of acceptance, respect, and positive expectations. For students with communication disorder, the learning process cannot begin unless students are made to feel physically safe, emotionally supported, and understood. The learning process requires that students be able to successfully engage in learning activities with teachers and peers, develop increasing independence, and participate in positive social relationships. For students with communication disorder, the learning process cannot begin unless students are made to feel physically safe, emotionally supported, and . The learning process requires that students be able to successfully engage in learning activities with teachers and peers, develop increasing independence, and develop positive social relationships.

Functional Behavior Analysis & Positive Behavior Support Plans

A Behavioral Specialist would be the team member to lead in developing a FBA a creating the PBSP with the collaboration of teachers and other team members. If there is no Behavioral Specialist available, the collaborative process can still be effectively followed by the teacher with some basic guidelines (McClean & Grey, 2012). Functional Behavior Analysis (FBA) is a method introduced by Behavioral Specialists to identify and analyze problem behaviors. Observations of behavior from family, specialists and classroom teachers and staff can be collected then submitted to the analysis. When negative behaviors are identified, “ABC” charts are used as teachers and assistants collaborate to identify possible Antecedent events or situations which contribute to

initiating the behavior. Next the Behavior is objectively described without any subjective judgment. The “C” on the chart stands for the Consequence of the behavior. This Consequence can be a reward or some way that the student’s behavior functions to get what the student wants, like attention seeking or being offered a preferred activity. The other Consequence option is avoidance; this occurs when the behavior results in the child being allowed to avoid a less preferred activity or experience.

The FBA process is especially helpful in narrowing down and analyzing the relationship between the classroom environment and behaviors in an inclusion classroom (von der Embse, Brown, & Fortain, 2011). Preventive, supportive and corrective actions employed by inclusion teachers, are key to maintaining student with Autism Spectrum Disorder (ASD). Preventive and supportive strategies focus on what can be changed in the environment and what can be changed about the behavior of the adults and peers in the environment to promote positive behaviors for the student with ASD. Preventive strategies include planning practices, outcome options, environmental considerations, and grouping accommodations. Preventive management strategies aim to limit ambiguity or perceived chaos, allowing students and staff greater predictability and structure in activities so that lessons flow smoothly and activities are well planned out in advance. Supportive strategies are employed during teaching and classroom activities. Teachers reinforce attending to visual cues, verbal rehearsal of rules or directions, and peer-supported cues for the class. Students may also have personal visual cues located on desktops or notebook covers as reminders of planned positive behavior expectations before and during engagement, to avoid ambiguity or the perception of chaos. Corrective strategies are used to redirect or refocus students (Leach, 2009).

Once the ABC charts are reviewed, it is best to choose a single most serious behavior or the one that causes the most disruption in class, and work with the student to reduce the severity, duration and frequency of this target behavior. Although there are still advocates of aversive behavior therapy who use punishments, withholding of rewards, separation for classroom, and school suspensions as a response to negative behaviors, the Positive Behavior Support Plan is a better alternative.

When writing a PBSP, the choice of planned interventions must be effective while compatible with your classroom’s situation and the needs of the students. The plan must never compromise the safety or emotional well-being of any students or staff. There are four basic categories of possible intervention used in creating a PBSP:

- Changing the Antecedent situation -- removing the stimulus, changing the stimulus or offering alternative choices to the student.
- Teaching the student behavior or communication strategies.
- Providing strong reinforcement or reward for positive behavior (replacement behavior).
- Changing the way staff and peers react to the behavior if this reaction is the thing reinforcing the behavior.

Total Communication

Alternative and Augmented modes of Communication (AAC) refers to the concept of designing communication interventions by combining use of multiple modalities involved in language and communication. Advances in the study of early language development and early intervention demonstrate that all communication modes in which a child is able to engage work together to reinforce overall development of positive language and communication skills, interest and motivation to take communication risks, connections between communication and the development of positive social behavior, and a firm foundation for literacy development (Kaiser et al, 2011).

An example of application of Early Intervention style use of AAC with a school age student with disability, would be teaching a student who is aware of letters and their associated names and sounds, but has delayed articulation skills making their speech difficult to understand, to use standard American Sign Language (ASL) finger spelling to clarify the initial sounds of words as they are spoken. The use of ASL was modelled and reinforced for all students in the class during activities and a poster displaying the ASL alphabet was on display for reference. The child described had been frustrated and annoyed with being misunderstood and sometimes ignored, but when equipped with a method to communicate more effectively by combining speech and ASL spelling, this student began to initiate conversations with classmates. Although the student had established a reputation for attention seeking and using screaming and foul language to gain attention while walking on campus or in the lunchroom, the use of AAC provided a new positive social ability to replace the former behavior. During lunch and multi-classroom activities, the student would introduce himself and engage in conversations with these new acquaintances, with a classmate or ASL knowledgeable staff to interpret as needed.

Maintaining and Developing Ability with Supports

The Fields of Physical Therapy and Occupational Therapy share a relentlessly positive and proactive approach. Unlike direct instruction, these therapists tap into the physical body's ability to maintain and develop skills through actual practice with opportunity for muscles and nerves to create new patterns of learning. We often ignore the student's need for physical or sensory input and feedback during everyday activities.

Even the act of maintaining an appropriate posture while seated may have less connection to "attention span" or a mental ability, and more connection to the needs associated with the student's body. A child needs a certain level of strength and developed muscle tone to be comfortable sitting upright. In addition, the chair and desk should be the correct size for comfort, including allowing the child to have their feet planted firmly on the floor while seated. This may seem like a minor issue, but many students need to engage with the feedback of their feet on the floor to maintain posture and balance while seated. When a shorter chair is not available a carpet covered step can be used to accommodate. Some students may need further sensory feedback like a slightly inflated textured balance cushion on their chair to enhance their awareness of their position in space. If a student has a relationship with

a P.T. or O.T. professional, reports from evaluations and ongoing collegial contact will often provide teachers with physical changes which will enhance the student's ability to learn and participate.

While able to maintain a posture which encourages attention and participation, many students may have poor or delayed fine motor skills which interfere with basic writing. Although simple practice with hand-over-hand support may be needed at times, this level of support encourages dependence and may attract negative attention from peers if it cannot be phased out. Alternatives like PenAgain (U.S. Patent No. 6,637,962, 2003) an ergonomically designed wishbone shaped pen with a non-slip textured surface which provides better stability, reduces strength required, and improves the student's grip, can make a dramatic improvement in hand writing, drawing, and forming shapes while maintaining the student's independence. Both O.T. and P.T. professionals can advise teachers in using adapted tools like this in the classroom that can reduce discomfort, enhance ability and provide students with greater independence and confidence while carrying out everyday classroom activities.

Embracing Multicultural & Multilingual Experience

Just as teacher awareness and sensitivity to individual students areas of natural interest can provide insights to motivation and means to maintain engagement and attention in the classroom, understanding a child's home and community culture and linguistic background can provide teachers with valuable insights that will help individualize the child's learning experience in the classroom. Contact with families and sensitivity and respect for family traditions, religious observance issues can build trust with families and help teachers and school staff to maintain a relationship of cooperation, collaboration, and open communication that will support the child's development more consistently. The classroom experience can be richer for all students as diversity is celebrated and sincere acceptance and respect of different personalities and values is modeled by adults. Many times a student or their family will be able to bring new ideas and customs into the classroom, giving the teacher an opportunity to demonstrate interest and engage in learning about aspects of a culture openly, modelling lifelong learning as a value and perhaps inviting the student to take on the role of teacher in demonstrating or sharing specific cultural identity knowledge with adults and peers at school. Celebrations and the sharing of foods or crafts related to cultures represented in the classroom can provide opportunities for both staff and students to share new experiences and engage in taking positive risks like tasting spices or hearing unfamiliar music or languages. These experiences and celebration of differences, just like engaging in various modes of communication, can be very stimulating cognitively and set up students with greater awareness and readiness to learn.

Some students may have a primary spoken language at home other than English; these non-English languages would be referred to by Linguists and Teachers of English to Speakers of Other Languages (TESOL) as the student's L1 (or first language), and the teaching of English in the classroom is the teaching of an L2 or second language. In respects, the methods and research in L2 teaching can inform the teaching experience of delayed language learners as well. In an intensive communication intervention classroom

limiting students to an English only rule, when other languages are known may not be helpful. There is ample evidence in the field of Linguistics that trans-linguaging and multi-lingual approaches provide students with a richer level of cognitive engagement and lead to increased understanding and depth of meaning (Blackledge & Creese, 2010; Garcia, 2009; Macaro, 2005; and Pennycook, 2012).

Assistive Technology for Communication – Individualized and Personalized

According to the Individuals with Disabilities Education Act (IDEA) “The term ‘assistive technology device’ means any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of a child with a disability” (20 U.S.C. § 1400 IDEA, 2004 DEFINITIONS. SEC. 602.1.A). The following is a partial list of suggested Assistive Technology (AT) options teachers may consider using with students to increase their engagement with language and communication (Kirinic, Vidacek-Hainš, & Kovacic, 2010):

- **Picture Cards** – Drawings, Photographs, or Icons printed on durable paper or laminated. These cards are used to represent words. They can be used in a formal Picture Exchange activity or as suggested below.
 - o **Training** would basically involve learning to associate these cards with the words they represent. Successful learning is evidenced by students choosing the correct card when prompted with the word or answering a question by indicating the card “Who rode the bike?”
 - o **Using** the cards in expressive communication when answering questions in class, having conversations in a group, or when socializing with friends.
- **Picture cards** may also have their corresponding word printed on both the picture and blank sides of the card.
- **Picture & Word Cards** encoded with **barcodes, or Quick Response (QR) Codes** (the black and white pixelated squares that can be read by smartphone applications) which can be programmed to activate audio output when scanned into a computer with voice generating capacity.
- **Arrays of pictures, words, or letters** printed on a laminated surface. The student may point to express themselves to the reader who verifies understanding by reading the words indicated aloud.
- **Computerized communication Voice or Text generating devices** which students use by providing input on touchscreens, touch-boards or traditional typing keyboards with pictures/letters to create verbal expression.
- **Computer** access with **Word Processing** and **Voice Recognition** software to assist speakers who have a disability that interferes with manual writing.
- **Adapted pens/pencils** which are easier to use for students who lack the fine motor skill and stability to write manually – even if a student prefers to use a computer interface, these writing tools can be used to develop a signature for documents and potential for filling out simple pencil paper forms or tests where they are directed to match items or circle their answers.
- **Organizers, class schedules, notes, and reminders** can be printed on sticky notes, paper, or entered into computer applications. Paper items, like the schedule for the day, can be slipped under a clear lamination sheet attached to the desk or the cover of a notebook for reference as needed. Computer applications can be used as cues and reminders with preset “alarms” to indicate that a transition to another activity, classroom or building.

Although technology is rapidly advancing, and a teacher must keep learning and adjusting methods and techniques in response to these changes, the possibilities and positive opportunities to engage students make keeping up with change an exciting opportunity to improve our practice of teaching and reach students in life changing ways. Kirinic et al. (2010) break down the areas of positive influence through using Information and Communication Technology (ICT) as follows:

- **Technology to Support Education** – a means to access tutoring, practice, exploration, learning tools, exposure to new experiences, a communication tool, and an assessment tool.
- **Motivation** – enhance through the immediate response of touch screen access, immediacy of feedback, and the feeling of accomplishment and competence from using the same technologies as peers.
- **Social Component** – the ability to demonstrate competence when engaged in collaborative work through use of word processing and the ability to create high quality visually pleasing reports and products when using creative software.
- **Simulation of everyday situations** – through engagement in virtual technology and games that reinforce mental skills needed to negotiate situations like shopping, travel and transportation use, cooking, safety skills, money management, and work skills.
- **Reading & Writing** – through the use of Computer Assisted Instruction (CAI) activities like learning new sight-words can be taught in an interactive format that allows the student to meet increasing levels of challenge at their own pace based on mastery at each level, while competing against their own past achievement and building upon previously mastered content without constant comparison to peers.

Educational technology, computer programs, and applications are also becoming more responsive to teacher involvement by providing teachers with direct access to records of achievement, monitoring of student progress, and the ability to set individual levels of content and challenge in response to student strengths and needs.

Language & Communication Development in Content Areas – Pulling it all together

The following is an example of putting the concepts discussed into practice in teaching in the Science content area. A Science unit, based on taking Nature walks and collecting specimens to study allows teachers to include students with Communication Disorders in high interest activities as they develop their Communication Skills while engaging in individual, partnered, small group and full class activities. While pursuing these general methods common to “Hands-On” or “Experiential Learning” techniques, the overarching goal will be to improve Communication Skills.

Although a full language environment had been discouraged in the past by researchers who assumed that too many words or complex terms would confuse a child with disability (Potter & Whittaker, 2001), more recent research has successfully challenged this assumption. Emerson & Dearden (2013) demonstrated success using “full language” with students who demonstrated their comprehension clearly using non-verbal responses. They strongly encourage teachers to use complete sentences and vocabulary that would be appropriate with students who do not have an identified disability, describing this approach as the “least dangerous assumption” compared to the alternative of limiting expression. They point out that teachers may need to adjust their expectations of responses by providing additional wait-time or lapsed time for a student to respond. Students with disabilities that affect their expressive communication skills, may indeed have receptive communication ability, and would benefit from exposure to more stimulating language experience. Likewise, students with special needs should have exposure to the same depth of content available in regular education, whether they are in an inclusion setting or not. Exposure to age appropriate content in Science and Social Studies, for example, may increase motivation, build the student’s learning skills, increase interest in content, and eventually lead students to value and take ownership of their own learning.

While offering a wide and creative palette of Communication methods, the individual student will present with specific responses and the ease of use of any means of communication will determine how useful it will be. Exposing all students to what various means of communication look or sound like and how they are used is meaningful as the experience will help students tolerate diverse communication. Students will also be able to engage with each other more without as much teacher mediation as they are able to switch to a peer’s preferred communication method. Engagement with peers and their communication methods, like peer tutoring (Yasutake & Bryan, 1996), can have positive effects on self-competence.

The outdoor activity will engage all students, and the hands-on nature of the activity will allow students with L1s other than English to follow the example of peers and modelling of adults with little need for direct language skills other than safety related directions. The teacher and staff will have collection jars and boxes, a couple plastic shovels and plastic forks, paper plates, hand wipes and surgical gloves so that the students can use their hands to collect and hold any items. Children will be encouraged to find things they like without adults using terms or names. Adults will physically prompt, help, encourage and model collection of

samples, including plant leaves, soil, rocks, insects, arthropods, feathers, seeds etc.

Later, in the classroom, L1 languages can be employed by parallel translation of words and terms used to describe the collected samples, these translations can be found using on-line references and through conversation with parents or guardians. When samples are brought into the room, students should be allowed time to observe them and respond to what they see. Drawing materials can be offered to those ready to record information about what they see. Students can also “show” information about the samples by demonstrating how they were found and how they move with sign, gesture, and acting out the movement they observe. Magnifying glasses and

The goal will be for each student to increase their understanding of and ability to communicate about collected samples. In order to motivate students they will be able to choose the types of specimens they prefer to begin with, and they will make use of what information they already know first. They will be encouraged first to use means of communication that fits their abilities and present Language ability. As they continue to collect and observe additional samples, developmentally appropriate challenges to learn more and branch out into studying less familiar specimens and language will be assigned. The class will be introduced to resources and research materials in print, video, and computer and helped to research the specimens and create their own notes, drawing and responses with the goal of showing, telling, or demonstrating what they have learned. Although I have begun with the Pre-K – K level, this unit can be made more sophisticated and challenging depending on the abilities of the students.

Books in English and in student L1 languages can be acquired from local libraries as available to be read to the class and to be reread individually with students. Videos in a student’s L1 can be made available for independent viewing to review in addition to classroom wide viewing as a group, or in small groups as needed. For students who are not speakers, they may act out, sign, draw, and point to picture cards to indicate answers to questions. For readers and pre-readers, picture and word cards can also include L1 terms. Picture/word cards can be produced for labelling features and parts of specimens as well as whole specimens. For L1 speakers, wordless books can be available to elicit verbal student responses and to identify what L1 or English words they know for content terms and ideas. All known L1 and English words will be used while phrasing in preferred terms. All answers are accepted, but clarified as needed; if the student uses “feet” for insect appendages, for example, the answer will be recorded in writing on the insect picture by the student or teacher, then the preferred term “legs” will be added with gesture and comparison to the entire length of the limb. As the student practices reading and using the drawings and flashcards, the original word may be put in parentheses, leaving the preferred term emphasized.

Students will, with varying levels of support, create booklets or posters which they will use to communicate with others about what they have learned with as much independence as they are capable. Some suggested activities and ways to engage meaningfully and socially with the content are included in the lesson goals organized in chart form with the English Language Proficiency

Standards (TESOL, 2006) in the accompanying document. This flexible unit plan can be used for each season in the year, with supplemental specimens not available on school grounds, and more advanced tools and materials like microscopes and digital still and video cameras. Student responses to learning can also be extended to writing songs, choreographic dances, or creating news activities, games, or plays across the curriculum with cooperation of special teachers. Community involvement through science fairs, earth/ecology fairs, theatrical performances, or the creation of a community garden or flower show exhibit could also be sparked by the nature walk and discovery science unit. (For specific unit goals and examples of objectives see Appendix: Lesson Goals.)

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