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Assistive Technology for Students with Multiple Challenges

Jill Gierach MSE ATP, Shelly Weingarten M.Ed, OTR, Mary Beth Werner OTR

Introduction

Students with Multiple Challenges: Who are they?
Students who experience these multiple challenges often require assistive tools and services that are responsive and flexible to the medical, sensory, physical and cognitive challenge they experience daily. By definition of the heterogeneous nature of this population, each child may have fluctuations of attending that make it imperative that teachers are capable of adjusting instruction as well as skilled in utilizing a variety of tools to maximize the instructional moment.

"It is imperative that any set of disability-specific needs not serve to stereotype a student, to lower expectations for a student, or to contribute to negative self-fulfilling prophecies for a student. So-called unique or disability-specific needs should be taken only as possible areas of risk for IEP teams to investigate, not inevitable features automatically conjoined to a specific disability in question". (Jackson, R., 2005).

The students within this group represent about 1% of the school population. It is suggested by some that we think of this group not in terms of the type of disability label; instead, we recognize that by using the response to instruction (RtI) model's definition that without specific individualized supports, students will not be able to participate independently at the universal level, or at the targeted level to address their instructional needs. The greatest part of a student's day will need individual supports provided at the top tier for the instruction to be responsive to their needs. This does not mean to suggest that these students cannot participate in general education environments. It does mean that schools must systematically utilize multiple initiatives to guarantee lasting support and meaningful students outcomes (Coyne, Simonsen, Fraggella-Luby, 2008). These are the students who will require some level of support twenty-four hours a day; these students will require assistive technology to engage in nearly all activities. Often they will require outside assistance to utilize this technology.

We further identify this group of students in the following way: these individuals will depend on significant levels of caregiver support throughout their lifespan. These students are typically not independent in communication, mobility, self-care, or decision-making areas. They have difficulty transitioning from one task to another and from one environment to another. They often have difficulty generalizing skills or applying learning across environments. Their sensory systems are not integrated systems. They may express behaviors that interfere with instruction. They may be categorized as deaf blind and also have other disabilities.

According to IDEA '97:

> Multiple disabilities means concomitant impairments (such as mental retardation-blindness, mental retardation-orthopedic impairment, etc.), the combination of which causes such severe educational needs that they cannot be accommodated in special education programs solely for one of the impairments. The term does not include deaf-blindness. Authority: 20 U.S.C. 1401(3)(A) and (B); 1401(26)

According to IDEA '97:

> Deaf-blindness means concomitant hearing and visual impairments, the combination of which causes such severe communication and other developmental and educational needs that cannot be accommodated in special education programs solely for children with deafness or children with blindness. Authority: 20 U.S.C. 1401(3)(A) and (B); 1401(26)

Purpose

This chapter's purpose is to augment the content in the other ASNAT chapters by providing some guidance to the ASNAT teams when they are considering assistive technology to support students with multiple, significant and profound disabilities. The original ASNAT process can work for helping teams sort through the options of support for these students with additional questions. These questions clarify how each disability area influences the target task and impacts assistive technology service and tool selection. Often the questions ASNAT team members uncover will require additional information to be gathered with other assessment tools. The tools we include we have found useful in our work. They are not an exhaustive list, but are presented as a starting point to assistive teams to better identify the needs of students. It is also noted that teacher beliefs influence how children succeed. This is so important when dealing with students that require ongoing instructional support and for whom skill attainment requires consistent and thoughtful interventions. To this purpose we have developed what we term "core beliefs" that are intrinsic to teachers' abilities to adopt high-learning expectations for this diverse group of students. These beliefs often affect the assessment team's approach to assistive technology and out-come expectations for this population. They will reappear in each section.

Core Beliefs

1. Movement
    1. Every child has the right to move more independently and our job is to make them safe.
    2. Each child must be honored in the process.
    3. Positioning is dynamic and there is no "one" position.
    4. Positioning is task-specific.
    5. Movement is the foundation for all learning.
    6. Transitions are the richest movement of all.

B. Communication

1. Every child deserves to communicate in multiple ways.
2. Communication is the key to engagement in all environments.
3. Every child has a story to tell and we must find a way to help them tell it.
4. Receptive language develops before expressive.

C. Functional academics
1. Every student should be provided with curriculum that is engaging and meets their needs.
2. There is the expectation there is measurable change in goal attainment.
3. There needs to be a balance between learning outcomes (observable change in the student's behavior) and general supports provided by the staff.

This chapter will also have a Decision Making Guide. We will follow the guide with a Tool box. This departs from the continuums in the other chapters. We encourage you to look at those chapters to see if they provide you with ideas of tools to try with your target student's task. If you need something else look to the tool box. These are examples of possible supports and do not follow a progression. Resources can be found at the end of this chapter. We also suggest for each category/task the reader look to the main chapters in this manual for further information on specific tasks and the continuum of tools. This chapter is meant to augment the other chapters, not replace them. This is not a chapter on specific teaching techniques. We encourage you to consult the resource section for a more extensive reference list.

Introduction to Functional Academics

Core Beliefs:
1. Every student should be provided with curriculum that is engaging and meets their needs.
2. There is the expectation there is measurable change in goal attainment.
3. There needs to be a balance between learning outcomes (observable change in the student's behavior) and general supports provided by the staff.

Research

Because of the low incidence and heterogeneous nature of this population, research is not as readily available to support implementation of assistive technology or best instructional practices. One of the chief advocacy groups for this population brings two questions to light that need to be considered as we develop environments that support students with significant disabilities.

It is important that teachers have expectations for the students with significant disabilities. This is often a foundation upon which the assessment for assistive technology supports is built. All staff must expect that the technology will provide a student with access to engaged and participatory learning. Research has been done on the affect of teacher attitude on student achievement. For more information, look to the study by:

Jussim, Lee, Kent D.,Harber (2005). Teacher expectations and self-fulfilling prophecies: knowns and unknowns, resolved and unresolved controversies. Personality and Social Psychology Review, 9. Retrieved 5/26/09, from http://psr.sagepub.com/cgi/content/abst

To further state the situation TASH (The Association for Persons with Severe Handicaps) presented testimony to the Interagency Committee on Disability Research Stakeholder Meeting in Washington on August 13, 2008. Targeting research design for this population:

> In addition to the small numbers of, and high degree of variance across, individuals with low-incidence disabilities, exerting experimental controls in inclusive settings

> using traditional large-n approaches at worst is impossible, and at best is both extremely difficult and intrusive to the natural dynamic and relationships present in those settings. A number of applicable research methodologies that are less intrusive (e.g., participant observation, case studies, single subject designs) are available that may be necessary either to collect any data related to low incidence populations (e.g., individuals with intensive support needs, dual sensory impairments, or multiple disabilities) or to avoid endangering individual relationships and opportunities for the collection of meaningful data in inclusive settings. These methodologies potentially provide a high level of both reliability and validity and inform practitioners, parents, and educators about effective and scientifically-based practices.

Thought Point: As we assess individual students for their assistive technology needs it benefits not only the student but also our field of practice if we develop replicable implementation and data collection methodologies.

TASH also expressed concern about

> The passage of the No Child Left Behind (NCLB) Act has dramatically extended research in general education curriculum and instruction, but has lead to a steadily decreasing investment in educational research for individuals with the most significant disabilities, including individuals with intensive support needs, dual sensory impairments, or multiple disabilities.

Thought Point: How does this affect students as we implement universal design for learning (UDL) principals? Does UDL include all students? How do we make certain the needs of our most involved students are also considered?

For more information on UDL and low incidence students see: Jackson, R. (2005). *Curriculum Access for Students with Low-Incidence Disabilities: The Promise of Universal Design for Learning.* Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved May 23, 2009 from http://www.cast.org/publications/ncac/ncac_lowinc.html.

Specific research on functional academics is limited. With the reauthorization of IDEA ‘04 and NCLB there is a new accountability built into programming and assessment. In the past goals for this population may have been along the lines of:

- Will match one out of two colors given a set of two.
- Will hit a switch.
- Will pick up an object and put it into a container.
- Will indicate yes, no.
- Will sit quietly during story.
- Will greet a peer.

Many of these goals did not lend themselves to real learning or measureable outcomes. Switch use can be a tool but to do what activity or to participate in what task? In Wisconsin, the Department of Public Instruction has responded by creating the Wisconsin Extended Grade Band Standards http://dpi.wi.gov/sped/assmt-extstd.html.

> The State of Wisconsin has established Extended Grade Band Standards in Reading, Mathematics, and Science to guide instruction and curriculum planning for students with significant cognitive disabilities. The extended standards indicate what students with significant cognitive disabilities are expected to know and be able to do academically. The extended standards are used as the basis for the Wisconsin Alternate Assessment for Students with Disabilities (WAA-SwD).

This support assists teachers in developing IEPs that reflect a standards-based approach. This will then further assist them to identify tasks the student needs to accomplish and identify the AT tools that may support them.

At the web site goals look like this:

READING – Extended Grade Band Instructional Examples: 3-4

Model Academic Standard A: Reading

Objective 1: Determine the Meaning of Words and Phrases in Context
EXTENDED GRADE BAND OBJECTIVE 1A:
Match Words to Pictures

Instructional Achievement Descriptors

Advanced	Proficient	Basic	Minimal
Use words or pictures to determine meaning	*Match words to pictures*	*Identify correct object when given two word choices*	*Identify one picture or object from a set of two*
Take pictures of various places in the school (office, gym, music room, restrooms, etc.). Introduce pictures and words to student. Describe an activity that takes place in a specific place. Have student identify the correct picture and corresponding word card.	Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Prepare word cards for each room. Introduce pictures and words to student. Have student match the name of the place to the picture of the place. Repeat activity with community locations and rooms in the home.	Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Prepare word cards for each room. Introduce pictures and words to students. Hold up one picture and have the student identify the correct name of the place from a choice of two word choices.	Take pictures of various places in the school (office, gym, music room, restrooms, etc.) Introduce pictures to student. Have student identify picture of the requested place from a choice of two.

With this as a guide, we have movement and skill development. A student begins at minimal or basic, and then moves to proficient or advanced. The activity of matching is connected to a real activity in their environment. It begins with a low technology solution, such as photos, and then moves to picture or word cards. As we probe this example we may need to add more support depending on the student's involving and understanding. We may need to look at which communication symbol best represents the activity (see communication section in this chapter as well as the Chapter 3-Assisitive Technology for Communication within this manual).

Functional academics will provide students with skills that allow them to make choices about their care and preferences. This includes engaging in communication that is understood and honored. The communication section of this chapter provides the reader with more information on the importance communication and how this impacts all aspects of this population's quality of life.

Other supports:
COACH: Choosing Outcomes and Accommodations for Children (2005).
Every Move Counts, Clicks and Chats (2008).

Using the SETT process and Decision Making Guide

Important: It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.

WATI Assistive Technology Decision Making Guide

Area of Concern: Multiple Challenges- Functional Academics

Statement about individuals who are unable to perform tasks due to cognitive limitations or because of severe physical involvement, or both.

PROBLEM IDENTIFICATION

Student's Abilities/Difficulties	Environmental Considerations	Tasks
• Medical conditions • Severe physical challenges • Cognitive challenges (Memory) • (recognition ,strategic, • limbic systems)(ability to generalize information) • Sensory challenges • Or combination • Motivating activities • Movement • Variability on abilities from day to day or hour to hour • Challenging behaviors • Communication abilities • Other concerns	What environmental considerations impact the area of concern? • Are there multiple way representing content? • Are multiple means of expressing what the students know supported? • Are there multiple approaches to student engagement accepted. • Are there areas without visual clutter? • How flexibility is the scheduling or classroom schedule? • How much adult support is in the room?	What task(s) do you want the student to do that relate to the area of concern? • Ex. Reacts to objects, activities or interactions by displaying an observable change in behavior. • Directs and sustains attention to activity • Uses objects for intended purposes Check DPI resource Wisconsin Adaptive Skills Resource Guide http://dpi.wi.gov/sped/adaptskills.html
Sensory Considerations		**Narrowing the Focus**
What sensory challenges does the student have that impacts ? (i.e., visual, auditory, tactile) response level, self regulation recovery time, transition issues		i.e. Specific task identified for solution generation
Solution Generation Tools & Strategies	**Solution Selection Tools & Strategies**	**Implementation Plan**
Brainstorming Only No Decision Review Continuum	Use a Feature Match Process to Discuss & Select Idea from Solution Generation	AT Trials/Services Needed: • Objectives to determine effectiveness of trial • Training needed • Date • Length • Person(s) Responsible
		Follow-Up Plan
		Who & When Set specific date now.

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

Student's Abilities and Difficulties

As a team, discuss what the student's abilities and difficulties are related to communication.

Medical Considerations
Does the child receive medications that might affect their learning or recognition systems? Does their level of awareness change in response to when they receive their medications? If so, we need to take this into consideration when developing instructional programs.

Severe Physical Challenges
Often with significant cognitive involvement there will also be significant physical disability. It is critical that the student's position be assessed for active engagement in an activity to occur. We also need to determine how accessing the AT is going to be accomplished. If the student does not have hand movement, we may need to consider providing access at the head, or eye gaze. Please see position section of this chapter for further information, as well as Chapter 2 – Assistive Technology for Seating and Positioning.

Cognitive (memory, recognition, strategic and limbic systems, generalizing learning)
As we learn more about how the brain processes information we make better instructional decisions. How does the student respond to a novel tool or environment or person? How many exposures does it take for the student to retrieve or remember that information? Does this recognition only occur in the setting in which the information was learned or can the student apply this learning to unfamiliar settings? How does the student demonstrate they know or recognize information? How does the student feel about school? Are there certain activities they like more than others? How do they demonstrate this? How long does it take to learn new information? How often does the student require repeated practice? Does this change with content?

Sensory Challenges
Most students have a preferred sensory system. This can assist in finding the assistive technology that will support the chosen task. How does their sensory system impact learning? Which is their primary system? Which system affects them negatively? Does this change throughout the day?

A Combination of Sensory and Cognitive Challenges
It will often be the case that there will be both sensory and cognitive challenges. It is important that the assessment team assesses how to approach the implementation of AT with this in mind. Supports such as Every Move Counts, Clicks and Chats can assist in determining sensory influences.

Variability of Abilities from Day to Day or Hour to Hour
Variability of abilities is often a characteristic observed in some students in this category. Teachers will often remark, "The student knew how to do that last week." There is more than one reason for this. It could have been a skill taught in isolation and not generalized. It may be something that met criteria on one day and was not returned to. There may be some organic issues that are affecting retention, or the task has little meaning to the student. Students can be fully engaged at different times of day. Teachers will need to look at what happens prior to an optimal learning state. Was there: a preceding vestibular activity, a change in position, a long bus ride, or too much noise in the classroom? Many factors can affect these children that other children without these significant disabilities can screen out so they can focus and recall.
Challenging Behaviors

What do they look like? Can you predict when they occur? How do you deal with them? We find that when we can address the sensory and communications needs of these students challenging behaviors decrease.

Other Concerns
List other items that are particular to this student and affect their ability to perform the task.

Environmental Considerations

As a team discuss and write on chart paper any environmental considerations that might impact the student's communication in the classroom, number of different settings or any other environmental impacts.

There may be concerns about the transition from one activity to another within the classroom or across the school environment. Is there an opportunity to slow the transition time down for those students who process differently? Does the student have ready access to a variety of materials (manipulative, picture or tactile supports, real objects, music, e-text, computers, other access materials and supports) that would help them to understand and process content? Can they move around the environment? How is the lighting, sound? Is there a quiet place to work? Is there room for the student to be in a work group with peers? Does the teacher include materials in the lesson that meet the unique learning style of this student? Does the program time respond to the student processing need or does the student need to adjust to a predetermined schedule? What are barriers to this child's active participation?

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student's learning, identify the sensory levels in each environment in which the student will be communicating

Assistive Technology: past and present
What assistive technology has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist or can be changed such as computer conflicts, lack of training, not transferring to a new building/staff, lack of interest, or other reasons that are no longer present. If the student is currently using assistive technology, note the locations, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student's skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference.

Task(s)

As a team discuss and write on chart paper the tasks that the student needs to do related to the tasks.

We may start with tasks identified in the general education setting. Wisconsin Adaptive Skills Resource Guide (www.dpi.wi.gov/sped/adaptskills.html) is aligned with the Wisconsin Knowledge Content Standards. Many of the students this chapter supports will utilize the Pre-Requisite Concepts beginning on page 6 of the guide. Here is a math example:

I. Pre-Requisite Concepts

Wisconsin Content Standard for Math, Language Arts, and Social Studies: Students in Wisconsin will draw on a broad body of mathematical knowledge and apply a variety of mathematical skills and strategies, including reasoning, oral and written communication, and the use of appropriate technology, when solving mathematical, real-world and non-routine problems.
Wisconsin Content Standard: Students in Wisconsin will listen to, understand, and will speak clearly and effectively for diverse purposes.

Rationale: These skills lay the foundation for academic subjects. Basic skills & general knowledge concepts are broken down into steps that are more easily managed by the child with special needs. Pre-Requisite concepts include very basic skills needed to be able to move into the other academic sub-components.

Performance Standard:	*Sample Alternate Performance Indicators:*	*Sample Performance Tasks:*	*Instructional Tools:*
Math A.4.1 Use reasoning abilities to: • Perceive patterns • Identify relationships • Formulate questions for further exploration • Justify strategies • Test the reasonableness of results	A. Demonstrate visual discrimination B. Use receptive/expressive language C. Recognize similarities and differences	Color 1.a. Use sensory input to match colors 1.b. Sequence colors to follow a given pattern 1.c. Point to requested color 1.d. Name/sign basic colors as requested 1.e. Sort by color 1.f. Sort by attribute (same/different)	- flash cards for matching - coloring books - manipulatives (i.e., vehicles, fruits, animals) - bean bags - commercial games - crayons - paints - markers - music/songs about colors

The Tools list will present additional assistive technology tools and supports that will expand what is generally listed as an Instructional tool in the Adaptive Skills Resource guide.

Narrowing the Focus

As a team, identify by circling or other means those few tasks the student needs to do in whatever curriculum area has been chosen that will have the most impact. In our experience the goals usually chosen are communication. But they may be asked to communicate about a function curriculum task. So we will be utilizing two applications of assistive technology and possibility three if the positioning issue also needs attention.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies and/or strategies you think will assist the student in successfully completing those tasks you identified.

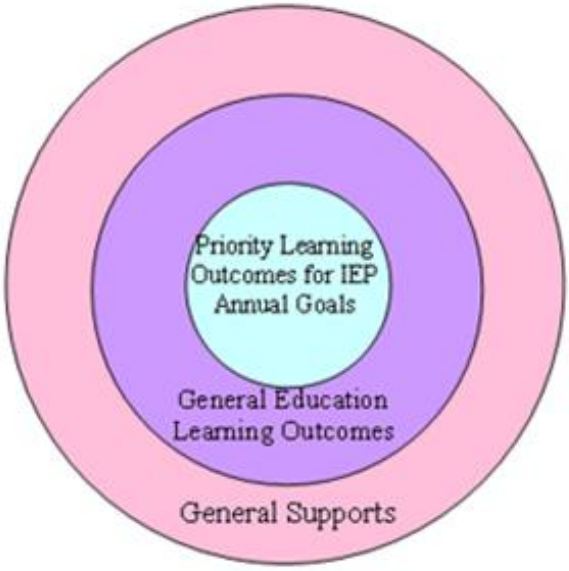
The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The tools and strategies discussed below follow the general continuum for reading. The continuum is generally organized from low to high Assistive Technology. It is not intended to be used as a step-by-step protocol for using AT tools with a student, but rather an organizational continuum of types of Assistive Technology.

Each ASNAT chapter has a list of tools or strategies that may need some adaptation to meet the needs of students with multiple disabilities. See the continuum in each targeted academic area.

For additional information on instruction, look at the supports in our Toolbox for Academics.

Tool Box for Academic Support for students with Multiple Challenges

1. **Program development: COACH: Choosing Outcomes and Accommodations for Children** Support for developing individual education programs in integrated setting. Giangreco,Cloninger, & Iverson, Michael F., Chigee J., & Virginia S. (2005). *COACH: Choosing Outcomes and Accommodations for Children*. Baltimore, Maryland: Brookes. This tool assists IEP team members in understanding the relationship between functional and academic skills that are part of the general education curriculum. The COACH includes a set of questionnaires and forms to guide users through a series of interviews and a problem-solving process of divergent and convergent decision-making that results in a list of prioritized objectives that reflect valued life outcomes for individual students. The overall model can be viewed below. In the bull's eye are those priority IEP objectives these priorities are identified as a result of the planning process and includes general learning outcomes (in the second concentric circle) that are expected for all students. IEP teams use COACH to identify the subset of outcomes targeted for instruction and the general supports (in the third circle) that can be used to enable students to meet the prioritized outcomes. Other content can be considered to be part of the student's curriculum enhancement but not a priority-the third circle. Assistive technology can be used at any level.



The COACH Model

2. **MAPS (Making Action Plans)** is a widely used approach to person-centered planning. MAPS helps bring together the key people in someone's life to develop a support plan developed by Marsha Forest and Jack Pearpoint at the Marsha Forest Center, 24 Thorne Crescent, Toronto, Ontario, Canada M6H 2S5(416) 658-5363 or FAX 658-5067. This is not a curriculum but

rather a team tool to look at the student and develop the IEP after they answer six key questions that end with **"What would an ideal day at school be like for the student?"**

3. **Information on Literacy, reading and writing--**look to Copeland, & Keefe, Susan, & Elizabeth (2007). *Effective Literacy Instruction: for students with moderate or severe disabilities*. Baltimore, Maryland: Brookes

4. **Information on effective instruction practices for teaching students who may not understand spoken language--**look to Downing, June,E. (2008). *Including Students with Severe and Multiple Disabilities in Typical Classrooms*. Baltimore, Maryland: Brookes.

5. **Stages Framework -** "Stages is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities). The sequence of seven Stages is based on the work of Madalaine Pugliese, a nationally recognized authority in the fields of assistive and instructional technologies. Stages is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities)."
   http://store.cambiumlearning.com/ProgramPage.aspx?parentId=074004184&functionID=009000008&site=itc (retrieved June 17, 2009)

   This software assists teachers to look at students needs in the following areas:
   1. Cause and Effect
   2. Language Readiness
   3. Emerging language
   4. Early Concepts
   5. Advanced Concepts and Communication
   6. Functional Learning
   7. Written expressions

As the team focuses in on the specific academic needs for a student, it has been our experience that when using the ASNAT process the team realizes that for the student to succeed it is less about the tools used and more about supporting communication and positioning for task performance. We also find the team needs support in identifying appropriate IEP goals and consistent teaching strategies. It is for these reasons that we added sections to this chapter on communication and how powered mobility might be addressed.

Communication for Students with Multiple Challenges

Introduction

Communication is a major functional skill.

- Every child deserves to communicate in multiple ways.
- Communication is the key to engagement in all environments.
- Receptive language develops before expressive.
- Every child has a story to tell and we must find away to help them tell it.

When an individual cannot communicate, often their communication partners assist with prompts and interpretations. Given this situation, it is not possible to determine if the message source is truly the individual with the disability or the communication partners.

Individuals with severe disabilities often depend upon communication partners to send messages. In some cases, partners play "20 questions" to determine wants, needs, and desires. Examples include:

"Do you want juice or cookies?"
"You want a cookie?"
"Do you want chocolate chip or peanut butter?"
"Oh, you don't want a cookie, do you want chips?"

Other times, partners prompt the individual to convey specific messages. For example:

"Tell Mrs. Ice you want the front seat."
"Say thank you!"

Communication partners translate information to third parties, and also to themselves. For example:

"When he makes that face, I know he wants more."

When these experiences happen again and again a child is being taught to be a passive communicative partner which in turn leads to learned helplessness.

> Learned helplessness occurs when a student does not attempt to ask for or do things for themselves due to repeated experiences in which the child has not been able to have an effect on other people or the environment. This is likely the result for a child who is unable to act or behave in expected or conventional ways or is helplessness due to a disability. Because family members are not able to interpret or respond to the child's communicative attempts, the child does not discern a relationship between his or her own actions and a response from people or the environment. Learned helplessness is associated with excessive dependence and lowered self-esteem. Children with severe disabilities are at risk for learned helplessness due to:
>
> - Motor, sensory or cognitive impairments that impede their ability to effectively act the environment, or to understand the results of their actions.
> - Lack of opportunity to make choices or otherwise be able to determine one's own life.
> - Communication impairments that prevent them from being understood by others.

> To prevent learned helplessness, the child needs to be able to exert some control over other people and the environment. This can be done by providing the child with instruction and adaptations that increase his or her ability to reliably and effectively influence others and the environment, such as Alternative Augmentative Communication (AAC) devices. In addition, the child can also be given the ability to exercise this control through increased sensitivity and responsiveness from partners, and ample opportunity to make choices. (Reichle, York, & Sigafoos, as cited in Ballinger, 1999, sec.2)

Research related to communication for children with multiple disabilities is limited due to the low incidence of this population, and the heterogeneous nature of their make-up. We can look for the research in the area of deaf blind populations. This group often has other considerations including cognitive, sensory, or motor issues that impact their communication.

Research

Research tells us that we all communicate.

- Research on the development of communication in infants without disabilities has shown that parents and infants communicate with each other soon after the infant is born. This knowledge has helped to understand that speech is not the only way we communicate and that we can teach individuals with severe communication disorders to communicate using a variety of means. (Rowland & Schweigert 1990, 1996)
- Contemporary assessment procedures can best be characterized as fitting the Participation Model, which holds that all persons with severe disabilities can achieve enhanced communication ability. This makes it a strength model, a departure from previous deficit-based models (Kroth & Bolson, 1996)
- Perhaps the greatest change in augmentative and alternative communication has been the near-universal abandonment of prerequisites for AAC services. This has occurred largely because of the lack of compelling empirical research supporting the requirement that certain cognitive prerequisites be present prior to beginning effective augmentative communication services (Kangas & Lloyd, 1988)

We must change how we (the communication partner) interact with the students.

vanDijk's (2006) research suggests:

- Teachers and parents can improve the quality of interactions with children who are deaf-blind by learning new skills.
- Video analysis is a powerful tool in training.
- When parents and teachers change their own attitudes and behavior, children use more positive interactive behaviors in response.

Mirenda (1993) noted, "Communication is not something that has to be learned. It is inevitability because people cannot <u>not</u> communicate." The success of an interaction with a child with complex communication needs depends heavily on the interaction skills of the communication partner.

Blackstone (2002) research looks at some behaviors of communication partners:

- Dominate communicative interactions.
- Ask yes/no questions.
- Take the majority of conversational turns.
- Provide few opportunities for individuals using AAC to initiate conversations or to respond during conversations.
- Frequently interrupt the utterances of individuals using AAC or his or her message

At the same time, individuals using AAC have been noted to:

- Play passive roles (e.g., initiate few interactions, respond only in obligatory contexts)
- Produce a limited range of communicative functions; and
- use restricted words

There is clear evidence that many communication partners need to learn how to successfully interact with individuals who use AAC.

Karlan (1989) developed a program called Environmental Communication Teaching (ECT). ECT is a research-based communication intervention approach that uses incidental teaching episodes that are directed toward functional communication. The goal of this training program is to facilitate an increase in augmentative communication use in target students. One day of the training is looking at how partners can act to facilitate, rather than inhibit, the student's communication skills.

We must start where the child is at for them to advance. Sometimes we have to take a step back to kick it up a notch.

Rowland and Schweigert (2000), show that most individuals who do not have pre-symbolic means of communication are not successful in acquiring any sort of symbolic means of communication. Through their research they demonstrated that once individuals learn to communicate pre-symbolically, it is a fairly straightforward matter to teach students to use some sort of symbol system to communicate (assuming that you have identified the type of symbol that makes sense to that child). (Rowland & Schweigert, 2000)

Prior to children understanding that symbols represent an activity is a level of pre-symbolic communication. At this level children use body and limb movements, gestures and vocalizations as a way of intentionally communicating.

Tangible Symbols have proved useful for a wide variety of individuals of all ages. *Tangible Symbols Systems*™ is not just a mode of communication, but a systematic instructional sequence. A recent study (Rowland & Schweigert, 2000) demonstrated the following findings:

- Tangible symbols may serve as a bridge to other symbol systems, including abstract symbol systems such as speech or manual sign language.
- Learning to use tangible symbols does not interfere with the acquisition of speech.
- Tangible symbols may be a useful means of communication for some children with autism spectrum disorders.
- Individuals who are already able to communicate effectively using gestures or vocalizations are more readily able to learn to use tangible symbols than are those who do not have intentional pre-symbolic communication skills.

Using the SETT process and Decision Making Guide-Communication

Important: It is intended that you use this as a guide. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.

It is important to remember for students with multiple challenges we need to focus on the interaction and communication- not the technology. Sensory Considerations play a significant role with children with multiple challenges.

The next section will go through the Student, the Environment and the Tasks on the Decision Making Guide. Typically you would also talk about brainstorming Tools and Strategies, Selection of Tools and Strategies and the Implementation Plan.
The purpose of this section is to help teams to identify where the student currently is with their communication skills. The resources listed in the toolbox provide frameworks to systematically approach student assessment all the way to developing an implementation plan. It is critical that teams spend time on assessing the student's current functioning.

WATI Assistive Technology Decision Making Guide

Area of Concern: <u>Multiple Challenges-Communications</u>

PROBLEM IDENTIFICATION

<table>
<tr><th>Student's Abilities/Difficulties</th><th>Environmental Considerations</th><th>Tasks</th></tr>
<tr><td>What are the student's abilities & difficulties related to the area of communication?

Review Student Information Guide, Chapter 1
• Current Mode of communication (reliable and predictable motor movement)
• Motivating activities
• Readiness to use symbols
• Visual Concerns
• Hearing Concerns
• Medical conditions
• Other concerns</td><td>What are the staff doing/ what does the environment look like?

Type of classroom
• Self contained
• Resource
• Full inclusion
• Team approach
• Communication opportunities
• Transitions
• Assistive Technology: past and present</td><td>What skill does the student need to develop prior to utilizing A.T.?
• Communication intent
• Reliable motor response
• Identify motivating activities
• Symbol set

What tasks do we want the student to do that assistive technology would enhance?

• Refuse
• Make choices
• Social Participation
• Make comments</td></tr>
<tr><th colspan="2">Sensory Considerations</th><th>Narrowing the Focus</th></tr>
<tr><td colspan="2">What sensory preference/ sensitivities does the student have that impacts Communication
(i.e., visual, auditory, tactile)</td><td>i.e. Specific task identified for solution generation</td></tr>
<tr><th>Solution Generation Tools & Strategies</th><th>Solution Selection Tools & Strategies</th><th>Implementation Plan</th></tr>
<tr><td rowspan="3">Brainstorming Only
No Decision</td><td rowspan="3">Use a Feature Match Process to Discuss & Select Idea from Solution Generation</td><td>AT Trials/Services Needed:
Communication Objectives to determine effectiveness of trial:
• Training needed
• Date
• Length
• Person(s) Responsible</td></tr>
<tr><th>Follow-Up Plan</th></tr>
<tr><td>Who & When
Set specific date now.</td></tr>
</table>

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

Student's Abilities and Difficulties

As a team, discuss what the student's abilities and difficulties are related to communication. In looking at beginning communicators it is critical to ask the following questions:

Mode of communication
How does the student demonstrate intent to communicate? Does the student use change in affect, gestures, vocalizations, facial expressions, or eye gaze to tell you something? Does the student have a reliable motor response? When looking for a reliable movement, reflexes and tone can interfere in reliability, so you must be careful in choosing a movement for communication. It must be reliable, not reflex-induced or position-dependent. You want to stride for optimal positioning for the student. If a student can only use a movement in one position that will make communicating at all times difficult.

One needs to be acutely aware of the continuum-of-communication intent to ensure that one does not miss a potential response by the student. For example, you may be watching for the student to extend their hand to point, while they have gazed at the object several times. It is common for each team member to have communication interactions based on different communication responses. It is significant that you determine whether the student has intent in their communication responses. The key to keep in mind is for everyone to understand the student's communication (familiar communication partners as well as unfamiliar communication partners) and we want the student to be able to say what he/she wants to say.

Motivating activities
What are motivating (enjoyable) activities? How often do they occur during the day? It is important to keep in mind when teaching communication skills that you must start with what the communicator finds enjoyable, and it must occur often for them to learn the connection between the message (the topic, what the communicator is communicating about) and their means of communication (behavior used to communicate the message). Only when communication is recognized and consistently reinforced will those with severe differences find the effort to communicate worthwhile.

Readiness to use symbols to communicate
Does the student understand that concrete symbols (symbolic gestures and vocalizations, three–dimensional objects, two-dimensional pictures) represent an activity (event or person)?

The work of Charity Rowland and Phillip Schweigert have demonstrated that tangible symbols may serve as bridge to other symbol systems (such as speech or manual sign language), and that learning to use tangible symbols does not interfere with the acquisition of speech.

Rowland, C. & Schweigert, P. (1990, 1996). *Tangible Symbol Systems.* is one resource for teachers if the student is ready for Tangible Symbols. This resource explains tangible symbols for expressive communication, receptive communication, and levels of representation. The book includes a Tangible Symbol pretest, a comprehension check and progress monitoring tools. It is available on the Design to Learn website through the authors and online at http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp .

Vision / Hearing

It is important to consider vision and hearing. Below are three common visual and or hearing deficits often found in children with multiple challenges. This is not a complete list, but is meant to provide a basic understanding and lists of common behaviors.

Deaf-Blindness

Students that are considered severe/profound may also have dual sensory impairments. The nature and extent of deaf-blindness in children is often misunderstood. Although the term deaf-blindness implies a complete absence of hearing and sight, in reality, it refers to children with varying degrees of vision and hearing loss. The core feature of deaf-blindness is that the combination of losses limits access to auditory and visual information. When both vision and hearing are affected, especially from birth or early in life, natural opportunities to learn and communicate can be severely limited.

The National Consortium On Deaf-Blindness November 2007 newsletter reported on the findings of the National Deaf-Blind Child Count. Key points were identified as:

- Deaf-blindness is varied and complex.
- Children with deaf-blindness are as diverse as the number of children reported.
- Early identification and intervention are critical.

Children and youth who are deaf-blind often have other disabilities. In fact, more than 90% of children who are deaf-blind have one or more additional disabilities or health problems and some may be identified as having multiple disabilities rather than deaf-blindness. In these cases, the impact of combined hearing and vision loss may not be recognized or addressed.
Training and support are available through federally-funded technical assistance projects in each state. http://www.nationaaldb.org

> For a student with deaf-blindness, the combined effects of the vision and hearing loss create a barrier that significantly impedes the ability to gather information from the environment. This causes chronic difficulties with incidental learning and concept development. Students cannot learn what they do not detect, and they may be unaware of what they are missing. Access to information is a primary issue for all students with deaf blindness, and should be addressed in each IEP. (From *IEP Quality Indicators for Students with Deaf-blindness* - <http://www.tsbvi.edu/Outreach/deafblind/indicators.htm>)

Cortical Visual Impairment

http://ohiolionseyeresearch.com/cortical_visual_impairment.htm

Cortical visual impairment (CVI) is a complex and heterogeneous condition in which the eyes and optic nerves appear healthy; yet, the patient does not have normal vision or normal visual perception. Indeed, as the name implies, CVI is not an eye condition but rather a brain condition. Previously, many eye doctors referred to such patients as "cortically blind" but it is now generally believed that many of these patients have useable, albeit abnormal, vision.

CVI results from a number of conditions that affect the brain and particularly the surface of the brain called the cortex. Intracranial bleeding, head trauma, birth defects, strokes, or seizures can result in CVI. Typically diagnosed during infancy, CVI is also associated with premature or more

accurately complications due to premature birth, such as intracranial bleeding. Typical visual behaviors of an infant or child with CVI include:

- Momentary fixation – the child will look (fixate) on things only briefly, say about a second or less
- Variable vision – the child with CVI will seem to "see" at certain times and not at other times
- Selective attention – the child may look at some things that may be rather hard to see (e.g., small toy) but act unaware with very salient objects (e.g., faces)
- Avoidance – some children with CVI will actively avoid (e.g., look away from) salient visual objects
- Prefer certain colors – some children with CVI will attend to colored objects (e.g., yellow) but ignore black-white objects
- Moving objects – some children with CVI will track or watch an object when it is moving (e.g., a small ball rolling across the floor) but ignore or exhibit "blind" behavior (using hands to locate a nearby object) to the same object when it is stationary
- Act blind but respond to objects – some children with CVI will act as though they're not able to see or identify an object but, at the same time, are able to locate and grab or actively avoid the object.
- Hemianopsia – some children with CVI will be missing parts of their visual field and may prefer to fixate on objects by looking to the left or right of the object.

Central Auditory Processing

Auditory processing is a term used to describe what happens when your brain recognizes and interprets the sounds around you. Humans hear when energy that we recognize as sound travels through the ear and is changed into electrical information that can be interpreted by the brain. The "disorder" part of auditory processing disorder (APD) means that something is adversely affecting the processing or interpretation of the information.

Children with APD often do not recognize subtle differences between sounds in words, even though the sounds themselves are loud and clear. For example, the request "Tell me how a chair and a couch are alike" may sound to a child with APD like "Tell me how a couch and a chair are alike." It can even be understood by the child as "Tell me how a cow and a hair are alike." These kinds of problems are more likely to occur when a person with APD is in a noisy environment or when he or she is listening to complex information.

APD goes by many other names. Sometimes it is referred to as central auditory processing disorder (CAPD). Other common names are auditory perception problem, auditory comprehension deficit, central auditory dysfunction, central deafness, and so-called "word deafness." More information is available at:
http://www.nidcd.nih.gov/health/voice/auditory.asp
National Institute on Deafness and Other Communication Disorders
National Institutes of Health
31 Center Drive, MSC 2320
Bethesda, MD USA 20892-2320

Sensory Considerations
What does the environment look like?
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student's learning, identify the sensory levels in each environment in which the student will be communicating. It is imperative that we consider the sensory needs of children with multiple challenges.

- What sensory input is calming to the student?
- What sensory experiences are over-arousing to the student?
- Does the student have a sensory diet?

Environmental Considerations

As a team discuss and write on chart paper any environmental considerations that might impact the student's communication in the classroom, number of different settings or any other environmental impacts.

Type of classroom: self contained, resource or full inclusion?
Least restrictive does not mean full inclusion; it means that they are in the classroom that provides them with the best meaningful educational benefit. With the differences in needs and interests among students with disabilities, there is no single definition of what a least restrictive environment (LRE) will be for all students.

Multiple classrooms or environments create additional challenges. How will the student access the necessary assistive technology tools? Will there need to be multiple sets of tools in each environment? How will staff and other children in these multiple environments support the student using the assistive technology tools? One approach is to provide a dictionary of the student's communication system, and directions on how support staff should use them.

Team approach
Do you use a team approach in the classroom? How many support staff are in the room? Do they rotate between students? Where does therapy take place?

Communication opportunities
What communication opportunities are happening throughout the day?
Bukelman & Mirenda (1998) stated that the primary emphasis of communication intervention has shifted to the acquisitions of functional communication skills within natural environments. Although structural approaches are still utilized, best practices today emphasize functional language skills within natural daily routines and natural environments.

"Naturalistic teaching procedures typically incorporate the following:
- Instruction that is based on the child's interest and that follows the child's lead
- Frequent models of appropriate communication within natural routines
- Open, unambiguous prompting of child communication
- Use of natural consequences
- Ongoing interaction between the child and the interventionist." (Warren & Richele, 1992)

Transitions
Is the student involved in the transitions to an activity throughout the day?
List times when the student is involved in the transition from one activity to another.

Kangas, (2009) noted:

> Transition prepares a child for control. Intention develops when a child understands the beginning, the middle and the end of a task. What happens is we control the beginning, extend the middle too long and we control the end. Instead we should repeat the frequency of the activity not the duration. When the child can anticipate the beginning and the middle then they can control the duration.

Assistive Technology: past and present
What assistive technology has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist or can be changed such as computer conflicts, lack of training, not transferring to a new building/staff, lack of interest, or other reasons that are no longer present. If the student is currently using assistive technology, note the locations, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student's skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference.

Tasks

As a team discuss and write on chart paper the tasks that the student needs to do related to communication:
What skill does the student need to develop prior to utilizing A.T.?

- Communication intent
- Reliable motor response

What symbol set will the student use for communication?

- Objects, partial objects, pictures, line drawings, symbols, touch cues/ partner assisted scanning, signs. Voice output (see chapter for ideas).

What tasks do we want the student to do that assistive technology would enhance?

- Refuse
- Make choices
- Social Participation
- Make comments

Narrowing the Focus

As a team, identify by circling or other means those tasks the student needs to do for communicating that will have the most impact.

Below you will find a Tool Box of Resources for Students with Multiple Challenges that will help you developmentally and systematically move your students to their highest potential.

Tool Box for Students with Multiple Challenges: Communication

every move counts clicks and chats (emc³) is a systematic sensory based assessment and implementation resource that supports and encourages communication. The power of this program is that it takes the student through a communication matrix that is based on where the student is currently functioning. emc³ helps identify, refine and expand responses into a more functional communication system. Assistive technology from switches to voice output are included. Available at: http://www.everymovecounts.net/

Design to Learn Package Includes the following resources. They can be purchased as a package or purchased individually. Available at http://www.designtolearn.com

- First Things First book provides practical strategies for encouraging early communication in children who have no or minimal intentional communication. First Things First describes instructional strategies for children who are not yet ready to use symbols to communicate.
- Tangible Symbol Systems manual helps teach individuals to communicate using objects or pictures that represent items, people, and events in their daily lives. These products describe and illustrate alternative communication options and instructional strategies for a broad range of learners of all ages who are unable to communicate using speech, manual sign language, or other systems that involve abstract symbols.
- Communication Matrix The Communication Matrix (©1996, 2004 Charity Rowland) is a communication skills assessment instrument.
  available in three formats:
  * the ORIGINAL version designed for professionals
  * a "user-friendly" version designed Especially for Parents – Now available in Spanish
  * an ONLINE version using the parent-friendly format, but available as a FREE service to parents and professionals
- Design to Learn The Design to Learn environmental inventory is used to track the opportunities to learn communication and object interaction skills that are provided in classroom activities for a specific student. The inventory was developed especially for children with pervasive developmental disorders (including autism) and it is applicable to nonverbal children with wide a range of disabilities.
- Hands-On Learning The Hands-On Learning materials address a wide range of object interaction skills, including the use of objects in symbolic play and in social interactions. They focus on the child's interaction with the physical environment and specific object interaction skills that may reflect cognitive and social skill development.
- Problem Solving Skills These materials are appropriate for nonverbal children with multiple disabilities that may include severe mental retardation or sensory impairments, including deaf-blindness. These assessment tools are used to examine a child's everyday interactions with the physical environment in order to determine cognitive ability. This information will help educators and parents to target problem solving skills that will promote cognitive development.

- HomeTalk HomeTalk is an assessment tool for parents and care providers of children who are deafblind and who have other disabilities. Its purpose is to help you participate in the planning of your child's educational program. As a parent or care provider, you have the best opportunities to make observations of your child at home and in the community. HomeTalk can provide a broad picture of your child's skills, special interests, and personality. HomeTalk was developed by a group of parents and professionals who know the importance of collaboration. Your assessment will be very helpful to members of your child's educational team, such as teachers, therapists, special instructors, and aides, who may not know your child well or have the chance to observe your child outside of the school.
- On the Same Page makes it easy for parents and teachers to compare how the child behaves in the two different environments and to discuss and generate logical new skills to target based on information from home and school. The form also includes space to evaluate the teaching environment using Design To Learn to identify environmental supports for learning within activities the team has identified as motivating to the child.

Power Mobility for Students with Multiple Challenges

Introduction

Mobility Core Beliefs

1. Every child has the right to move more independently and our job is to make them safe.
2. Each child must be honored in the process of mobility.
3. Transitions are the richest movement of all so the student must be involved in the transition.
4. Positioning is dynamic. There is no one position rather positions are task specific.
5. Self-produced movement is a foundational skill for learning.

This chapter will help guide the team working with students with multiple challenges to think about powered mobility and what resources your teams need to assess your student for powered mobility. Please read Chapter 2 - Assistive Technology for Seating, Positioning and Mobility. There are articles listed in the reference section for a more complete understanding about the components needed for seating and positioning for powered mobility. This chapter will pose questions to the team specifically about mobility for students with multiple challenges. Karen Kangas, and Lisa Rotelli from Adaptive Switch Labs, have been instrumental in the development of our approach to the content in this section. They carefully consider a functional approach to seating and positioning for powered mobility. Karen and Lisa believe that every person should be given the chance to try power mobility. It takes a willing team working diligently with a wheelchair vendor and specialized equipment to make this a reality for students with multiple disabilities.

Background information to think about:
Every child has the right to move more independently.
The following are several statements from professionals working in the field of powered mobility. Hear what they have to say:

Kangas (1997) believes that any child with a physical disability who is unable to walk independently, in all environments, with efficiency and safety is a candidate for powered mobility. She goes on to say, "Anyone who can demonstrate an understanding of starting and stopping can benefit from a powered wheelchair. The only motor control necessary is to get off the 'go'. It is the adults' job to make the child safe."

Kermoian, (1997, quoted by Seiberlich), "If children need to demonstrate prerequisite cognitive and physical skills in order to receive a powered wheelchair and if these skills are usually developed with mobility, then many of children who could benefit from a means of independent mobility may not qualify for a powered wheelchair"

Self-produced movement is a foundational skill for learning.
(Seiberlich) Various cognitive, motor, perceptual and psychosocial skill developments are dependent upon and associated with the development of self–produced mobility in early childhood.

- Spatial cognition
- Emotional skills
- Self awareness
- Increased independence
- Ability to cope with environmental stresses

Tellefson (n.d.) "The effects of motor dysfunction are cumulative and incrementally disabling because motor action and mobility play such a crucial role at every stage and in virtually every aspect of a child's continuing development. Secondary benefits include improved posture, increased attention, improved motivation and interaction and desire to communicate."

Using the SETT process and Decision Making Guide

Important: It is intended that you use this as a guide for the process of assessing students for assistive technology. The Decision Making Guide follows the SETT (Student, Environment, Task, and Tool) format with a subcategory under Student and Environment for Sensory Considerations. Additional categories include Narrowing the Focus to help identify a specific task in order to select appropriate assistive technology, a category for Implementation Plan to assign trials, dates, responsibilities, data collection and also a Follow-Up Plan to set a date for the team to reconvene. Again, this is intended as a guide; during the actual assessment each topic should be written in large print where everyone can see, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The questions posed are not intended to be all inclusive but rather to prompt the team to consider as many factors as possible in order to identify and ultimately try appropriate assistive technology for their students.

The resource toolbox at the end of this section will provide teams with some resources to get you started.

WATI Assistive Technology Decision Making Guide

Area of Concern: Powered Mobility

PROBLEM IDENTIFICATION

Student's Abilities/Difficulties	Environmental Considerations	Tasks
Current level of independent mobility • Age • Supervision • Pelvic stability • Seating position • Task performance position • Vision • Hearing • Other	What environmental considerations impact the area of mobility including staff? • Current or past AT used • Staff knowledge of power mobility • Need for other access • Transitions	What task(s) do you want the student to do that relate to mobility? Increase power mobility independence Safe transportation Other
Sensory Considerations		**Narrowing the Focus**
What sensory challenges does the student have that impacts mobility? (i.e., visual, auditory, tactile)		i.e. Specific task identified for solution generation
Solution Generation Tools & Strategies	**Solution Selection Tools & Strategies**	**Implementation Plan**
Brainstorming Only No Decision	Use a Feature Match Process to Discuss & Select Idea from Solution Generation	AT Trials/Services Needed: Objectives to determine effectiveness of trial Training needed Date Length Person(s) Responsible
		Follow-Up Plan
		Who & When Set specific date now.

Important: It is intended that you use this as a guide. Each topic should be written in large print where everyone can see them, i.e. on a flip chart or board. Information should then be transferred to paper for distribution, file, and future reference.

The following are suggested questions to ask when using the Decision Making Guide, and information that will help teams think more about the questions.

Student's Abilities and Difficulties

As a team, discuss what the student's abilities and difficulties are related to communication.

Age

How old is the student? What motor milestones have they achieved?
Hardy (2004) stated that children as young as 4-18 months of age are able to mobilize around their environment using any of a variety of means according to there physical development, typically; rolling, crawling, cruising, walking then running. They require constant supervision while they enjoy the opportunities to explore and learn about their environment. Children with disabilities who have no other means of experiencing independent movement can and should be given an opportunity to experience independence using an augmented mobility system. Young children using powered wheelchairs simply need the supervision and learning support (appropriate to their developmental level) normally provided to their ambulant peers.

Supervision

How much supervision does the student require for participation in activities?
Hardy (2004) found that children and adults with cognitive impairments deserve to experience and learn through independent movement. There are many ambulant people in society who have varying degrees of cognitive impairment. These people require varying degrees of supervision and support within their individual environments. People with cognitive impairments can use a powered wheelchair for mobility and should be provided the training, support and supervision required in specific environments.

Pelvic Stability

What is happening at the pelvic girdle when the student is sitting?
Kangas (2008) said that for isolation, and adequate use of an extremity to be used in a graded, controlled movement, pelvic stability with pelvic weight-bearing must occur and be controlled by clients themselves. This stability of the pelvis is not a position of immobility but rather a position that allows a range of self-controlled (limited, graded) pelvic mobility. In short, the body must allow muscle lengthening and controlled shortening simultaneously to allow controlled holding. Pelvic girdle stability is required for shoulder girdle mobility. This relationship is critically related to weight-bearing and movement.

The Seating Position

Is the student's seating system flexible? What kind of chest supports does the child have? Where is the shoulder girdle in relation to the pelvis? Does it change or stay the same throughout the day?
Kangas (2008) asserted that for many individuals with hypertonicity, or combined hyper and hypotonicity, chest supports are not working. The adult or child can be readily observed to be hanging on the chest supports, collapsing their trunks into the support, rather than being assisted by the support to remain upright.

Rotelli (2008) confirmed that the shoulder girdle is behind the pelvis you are using more peripheral vision. When shoulders are slightly forward in relationship to the pelvis, central vision is better and arm power is stronger.

Position for a Task Performance
Does the student have different positions for working versus safe mobility?

Kangas (2003) verified that seating for task performance is not a seated posture to be maintained all day, or for long periods of being inactive. In short, the seating has to allow a change in postures. This can best be developed with the use of a tilt-in-space function as well as less restrictive seating while the individual performs a task. With a powered system, the seating can be changed without changing the seat with which the individual is already extremely familiar.

Sensory Impairments
Does the student have vision or hearing issues?

Hardy (2004) said that children and adults with vision and hearing impairments are able to ambulate safely within in our society. These people need to compensate for their sensory impairment by using strategies such as assistive technology (vision cane, hearing aide etc.), environmental supports (Braille signs, curb indicator line, etc) and other support systems. Using similar principles, there would seem to be no real reason why people with sensory impairments can't be considered as candidates for powered wheelchair mobility. Problem solving around the issues involved may result in the development of new technologies for powered wheelchairs such as sensor.

Environment

As a team discuss and write on chart paper any environmental considerations that might impact the student's communication in the classroom, number of different settings or any other environmental impacts.

Assistive Technology: past and present
What assistive technology has been employed in the past or is currently used with the student? List all assistive technologies that have been used with the student. If some have been discontinued, make note of the reasons. Sometimes effective tools are discontinued for reasons that no longer exist or can be changed such as computer conflicts, lack of training, not transferring to a new building/staff, lack of interest, or other reasons that are no longer present. If the student is currently using assistive technology, note the locations, level of effectiveness, trained staff, and any other issues that are pertinent to the student/building. Do not discount assistive technology that was previously tried and discarded. There may have been a mismatch between the assistive technology and the student's skills at the time. Differences in skill development, maturity, a different environment or other factors may make all the difference.

If there is currently a chair but if the student is not using it effectively try this:
Check out the programming of the controls, can they be changed? If using a joystick did you consider using a head array?

Did you know: All wheelchairs are made to work with a joystick? This can be changed; some chairs are easier to add these electronics than others.

Staff knowledge
What is the staff knowledge of power mobility? Do you need more training?
What other person(s) do you need to connect with?

PT
OT
Wheelchair vendor
Seating and positioning
Other

Access to other devices
Will you want the student to do more than mobility? Do they need to access the computer, communication device, environmental controls?
Did you know? It is best at the time of ordering **to know that you will** want these extra accesses, **you do not need to know what** devices and what computer software.

Transitions
Is the student involved in transitions?
Did you know? This is something that wheelchairs currently don't do – but need to do.

Sensory Considerations
Different environments have different levels of sensory stimulation. If the team has determined that sensory impacts are influential for the student's learning, identify the sensory levels in each environment in which the student will be. What is calming and what is alerting and what is over arousing?

Tasks

As a team discuss and write on chart paper the tasks that the student needs to do related to mobility.

- Increase power mobility independence
- Safe transportation
- Other

Narrowing the Focus

As a team, identify by circling or other means those few tasks the student needs to do for communicating that will have the most impact.

Solution Generation: Tools/Strategies

As a team, brainstorm and write on chart paper any assistive technologies &/or strategies you think will assist the student in successfully completing those tasks you identified.

The team brainstorms strategies and assistive technology tools that may be of benefit for the student to complete the identified tasks in the given environments. Do not critique or otherwise

evaluate the suggestions at this time. List all suggested tools and strategies including those currently in use on chart paper for all to see. The following is a resource toolbox with some resources to get you started.

Tool Box for Students with Multiple Challenges: Mobility Resources
Please also see Chapter 2: Seating, Positioning and Mobility

Power mobility for everyone	Baniec, M. (n.d). Pediatric Mobility retrieved from the internet 4-2009 http://www.invacare.co.nz/index.cfm/3,101,522/pediatricmobility.pdf Hardy, P. (2004) Examining the barriers: Powered wheelchair mobility for people with cognitive and/or sensory impairments. Retrieved March 19, 2009 from website http://www.e-bility.com/arataconf/papers/doc/hardy.doc Kangas, K., (2008) Why power? Why should children be considered candidates for powered mobility? retrieved 2-6-09 from http://www.patinsproject.com/KarenKangas/whypower.pdf
Seating	Kangas, K. (2003) Seating for Task Performance Closing the Gap Handout
Mastery of Independent Mobility	Kangas, K. (2008) Clinical Assessment and Training Strategies for the Child's Mastery of Independent Mobility Shamokin, PA. Available through the author @ kmkangas@ptd.net Kangas, K. (2006) Configuring Powered Mobility Systems for Children Closing the Gap Handout

Resources

References

Davis, K. & Dubie, M. (2004) Sensory integration: Tips to consider. *The Reporter 9*(3), 3-8. Available at: http://www.iidc.indiana.edu/irca/Sensory/sensoryIntegrate.html

Ballinger, R. (1999). Learned helplessness. *Augmentative and Alternative Communication (AAC) Connecting Young Kids (YAACK) Website.* Available at: http://aac.unl.edu/yaack/b1.html#b1b

Beukelman, D. R., & Mirenda, P. (1998). *Augmentative and alternative communication: Management of severe communication disorders in children and adults* (2nd ed.) Baltimore: Brookes

Kangas, K. & Rotelli, L. (September 2008). Independence by Design Workshop. Presented at Stevens Point, WI.

Kangas, K.A., & Lloyd, L.L. (1998). Early cognitive skills as prerequisites to augmentative and alternative communication use: What are we waiting for? *Augmentative and Alternative Communication, 3, 211-221.*

Mirenda, P. (1993). AAC: Bonding the uncertain mosaic. *Augmentative and Alternative Communication, 9, 3-9*

Rowland, C. & Schweigert, P. (1996). *Tangible symbol systems.* Tucson: Communication Builders. Currently available through the authors and online http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Texas School for Blind and Visually Impaired. (2003). *IEP quality indicators for students with deafblindness*. Available at: http://www.tsbvi.edu/Outreach/deafblind/indicators.htm)

University of Washington (2002) Likes dislikes checklist. Available at http://depts.washington.edu/augcomm/original_modules/module_customizing/custom_vocab_likesanddislikes.htm

Warren, S.F. & Reichle, J. (1992). *Causes and effects in communication and language intervention.* Baltimore: Brookes

Wisconsin Center for the Blind and Visually Impaired (n.d.). *Powered mobility for children who are blind or visually impaired: principles and promising practice recommendations* [Brochure]. Janesville, WI: Tellefson, M.

Websites and Links

Project IDEAL (Informing and Designing Education For All Learners)
Texas Council for Developmental Disabilities (TCDD).

www.projectidealonline.org/multipleDisabilities.php
Activity Ideas for Students with Severe/Profound/Multiple Disabilities
PALAESTRA: Forum of Sport, Physical Education & Recreation For Those With Disabilities
http://www.palaestra.com/featurestory.html

Nevada Dual Sensory Impairment project
Best educational practices for students with severe and multiple disabilities
Many informational sheet to download and low tech assistive technology ideas
www.unr.edu/educ/ndsip/factsht.html

Short outline of strategies for students with multiple challenges
http://www.lburkhart.com/learned_helplessness.pdf

Hold Everything! Twenty Stay-Put Play Spaces for Infants, Preschoolers, and Developmentally Young Children with Sensory Impairments and Other Special Needs by Kay L. Clarke This 48 page manual is available for download through The Ohio Center for Deafblind Education
www.ssco.org/ocdbe/products.html

Switch and touch screen "videos" can be downloaded all are available in PC format but not all in Mac version. They include cause effect activities and interactive talking books. This resource also includes lesson plans and teaching ideas.
http://www.priorywoods.middlesbrough.sch.uk/

Short outline of strategies for students with multiple challenges
http://www.lburkhart.com/learned_helplessness.pdf

Switch and touchscreen "videos" can be downloaded all are available in PC format but not all in Mac version. They include cause effect activities and interactive talking books. This resource also includes lesson plans and teaching ideas.
http://www.priorywoods.middlesbrough.sch.uk/

Design to Learn - This resource includes strategies and materials address the educational needs of children and adults who have severe disabilities, including multiple and "low incidence" disabilities such as deaf blindness and autism.
http://www.designtolearn.com/

Communication Resources

Articles on communication for severe profound and tangible symbols
http://www.designtolearn.com/pages/articles.html

Online book about tangible symbols
http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Articles on Tangible symbol
shttp://www.mayer-johnson.com/ResearchArticles.aspx

Helen Keller National Center for *Deaf-Blind* Youths and Adults **...** and Cued Speech for the Student with Deafblindness *by* Robbie Blaha, Education Specialist, **...**
www.orientationandmobility.org/deafblind.html

Cortical Visual Impairment

Here you can find Tangible Symbols book online to download.
http://ohiolionseyeresearch.com/cortical_visual_impairment.htm
http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Organizations and Associations

Family Connect
American Foundation of the Blind and the National Association for Parents of Children with Visual Impairments
www.familyconnect.org/parentsitehome.asp?SectionID=79

Family Center on Technology and Disability
This site is Funded by the U.S. Department of Education The Family Center on Technology and Disability provides a wide range of resources on assistive and instructional technologies,
www.fctd.info

TASH (formerly Association for Persons with Severe Handicaps)
www.tash.org

The Arc of the United States
www.thearc.org

United Cerebral Palsy Associations, Inc.
www.ucp.org

Curriculum Examples

The Learning Standards and Alternate Performance Indicators for Students with Severe Disabilities Final Version
http://www.vesid.nysed.gov/specialed/publications/learnstand/lrnstdi.htm

New Jersey adapted curriculum
http://www.state.nj.us/education/specialed/cccsssd800.pdf

Books

Annual Report to Congress (2000) Implementation of the Individuals with Disabilities Education Act (IDEA).

Beukelman, D. R., & Mirenda, P. (1998). *Augmentative and alternative communication: Management of severe communication disorders in children and adults* (2nd ed.) Baltimore: Brookes

Brawder,D. & Spooner,F. (2006). *Teaching Language Arts, Math , & Science to Students with Significant Cognitive Disabilities.* Baltimore: Brookes

Copeland, S. & Keefe, E. (2007). *Effective Literacy Instruction for students with Moderate or Severe Disabilities.* Baltimore: Brookes.

Council for Exceptional Children. (1998). What every special educator must know. The international standards for the preparation and licensure of special educators (3rd edition). Reston, VA. Council for Exceptional Children.

Dacey, et.,al. (2002). The Student Access Map: Ensuring access to the general education curriculum. (on- line). http://www.boston.k12.ma.us

Daniels & Stafford (1999). Creating Inclusive Classrooms. Children's Resource International, Inc. Washington, D.C.

Downing, J. E. (2008). *Including students with severe and multiple disabilities in typical classrooms* (3rd edition). Baltimore: Paul H. Brookes.

Downing, J.E., (2005) *Teaching Communication Skills to Students with Severe Disabilities* (2nd) Baltimore: Paul H. Brookes

Erickson, K. (2001). 9th Summer Seminar on Literacy in AAC, Gustavaus Adolphus College, St. Peter, MN Individuals with Disabilities Education Act (IDEA) of 1987

Ford, A., Schnorr, R., Meyer, L., Davern, L., Black, J., & Dempsey, P. (1989). *The Syracuse community-referenced curriculum guide for students with moderate and severe disabilities.* Baltimore: Paul H. Brookes.

Giangreco, Michael F., Cloniger, Chigee J., and Iverson, Virginia Salce. (1998). Coach: Choosing Outcomes and Accommodations for Children: A Guide to Educational Planning for Students with Disabilities. Paul H. Brookes Publishing Co., PO Box 10624, Baltimore, MD 21285-0624. 379 pp

Gierach, Jill E. (Ed.). (2009). *Assessing Students Need for Assistive Technology*. Milton, WI: CESA 2. www.wati.org

Jackson, R. (2005). *Curriculum Access for Students with Low-Incidence Disabilities: The Promise of Universal Design for Learning.* Wakefield, MA: National Center on Accessing the General Curriculum. Retrieved 3/15/09 from http://www.cast.org/publications/ncac/ncac_lowinc.html

Kangas, K.A., & Lloyd, L.L. (1998). Early cognitive skills as prerequisites to augmentative and alternative communication use: What are we waiting for? *Augmentative and Alternative Communication, 3, 211-221.*

Koppenhaver, D. (2001). 9th Summer Seminar on Literacy in AAC, Gustavaus Adolphus College, St. Peter, MN.

Korsten,J.E., Foss, T.V., Berry L.M., (2007) *every –move Counts Clicks and Chats emc3,* EMC, Inc.

Kraat, A, (1985). Communication interaction betweens aided and natural speakers: A state of the art report. Toronto: Ontario: Canadian Rehabilitation Council for the Disabled.

Mirenda, P. (1993). AAC: Bonding the uncertain mosaic. *Augmentative and Alternative Communication, 9, 3-9*

Musselwhite, C., (2001). Can We Chat: Co-planned Sequenced Social Scripts. Special Communications, Linda Burkhart Publications.

NICHY (1997). Are There Shortages of Special Educators? (Available on-line) http://www.nichcy.org/pubs/newsdig/nd27txt.htm

Rainforth, B.(2000). Preparing Teachers to Educate Students with Disabilities in Inclusive Settings: Course Design in the Absence of Local Models of Inclusive Education. Journal of the Association for Persons with Severe Handicaps, 25, 83-91.

Rowland, C. & Schweigert, P. (1990, 1996). *Tangible Symbol Systems.* Tucson: Communication Builders. Currently available through the authors and online http://osepideasthatwork.org/toolkit/InstPract_tan_sym.asp

Ryndak, D, et, al. (2001) Preparing Teachers to Meet the Needs of students with severe disabilities: Program Configuration and Expertise. Journal of the Association for Persons with Severe Handicaps, Vol.26, Number 2, 96-105.

Siegel-Causey, E. & Guess, D.(1989) *Enhancing Interactions between Service Providers and Individuals who are Severely Multiply Disabled: Strategies for Developing Non-symbolic Communication*. Kansas Special Education Unit

Stainback, S., Stainback, W., and Forest, M (1989). Educating All Students in the Mainstream of Regular Education. Baltimore, MD: Paul H Brookes.

Warren, S.F., Reichle, J. (1992). *Causes and effects in communication and language intervention.* Baltimore: Brookes

Zabala, J. (2001) SETT [on-line].Available: http://joyzabala.com/

Zabala, J. (2001) QIAT. [on-line]. Available: http://joyzabala.com/

Vendors

Vendor	Summary	Contact Information
Attainment Company	This company produces a variety of products including augmentative communication devices, software, videos, and curriculum. Programs utilize a picture-based approach for teaching low-level or non-readers the skills for active participation in their home, school and work communities. All materials are particularly appropriate for young adults.	www.attainmentcompany.com
Ability Hub	Information on adaptive equipment and alternative methods available for accessing computers.	www.abilityhub.com
Ablenet	This company develops and markets products and services to meet the needs of children and adults with severe disabilities. Products include simple technology systems and related materials that allow users to actively participate in daily activities.	www.ablenetinc.com
AblePlay	AblePlay is a website developed by National Lekotek Center which provides a unique search tool to match toys to disability categories: physical, communicative, sensory and cognitive	http://www.ableplay.org/
Clicker Crick Software	Clicker is a writing support and multimedia tool, which enables you to write with whole words, phrases or pictures. It is switch accessible.	www.cricksoft.com/us/products/clicker/
Communication Matrix	The Communication Matrix is an assessment tool designed to pinpoint exactly how a child is currently communicating and to provide a framework for determining logical communication goals	http://www.communicationmatrix.org

Vendor	Summary	Contact Information
Don Johnston Literacy Starters	Switches, computer interfaces, software from early literacy to learning disabilities, resource books.	http://www.donjohnston.com/
Dynavox Mayer-Johnson LLC Boardmaker	Mayer-Johnson, Inc. Picture Communication Symbols (PCS) used in augmentative communication. Products include educational materials, software used to make communication boards, educational materials, and overlays for different computer access devices and for speech output	www.dynavoxtech.com
Enabling devices	This company develops learning and assistive devices to help people of all ages with disabling conditions including communicators, toys and switches for the physically challenged students.	http://enablingdevices.com/catalog
Every Move Counts tm	A sensory based communication program for individuals with severe multiple differences, developmental differences and autism.	http://www.everymovecounts.net/Index2.htm
Inclusive technologies	Inclusive Technology provides special educational needs software, switches and computer access devices, simple communication aids and assistive technology for learners with a physical disability, sensory impairment or learning difficulty. Their resources include SwitchIt!, ReadIt! and Choose and Tell software series.	http://www.inclusive.co.uk click on severe and complex special needs tab
Intellitools	IntelliKeys® USB, versatile, alternative keyboards that enable users with physical, visual or cognitive disabilities to easily type, enter numbers, navigate on-screen displays, and execute menu commands.	www.intellitools.com/
Lekotec	Independent ratings of toys/play ideas for individuals with disabilities	www.lekotek.org
Rifton	Positioning and self care products	http://www.rifton.com/

Vendor	Summary	Contact Information
Sammons Preston	Positioning and self care products	www.sammonspreston.com/
SoftTouch	SoftTouch develops software for students in early childhood and students of all ages with significant disabilities. They specialize in emergent literacy and language development software with engaging use of music and animation. All software is accessible by one and two switches, touch screen, mouse and IntelliKeys keyboards.	www.ablenetinc.com/
Stages Assessment software	*Stages* is a seven-level developmental framework that describes a learner's cognitive and language abilities. Stages helps schools comply with alternate assessment mandates by providing an accessible way to assess learners with special needs. Stages also serves as a selection guide for curriculum activities (including both software and off-computer activities). The sequence of seven Stages is based on the work of Madalaine Pugliese, a nationally recognized authority in the fields of assistive and instructional technologies.	http://www.intellitools.com/