AAC & AT in Early Intervention
Objectives

1. Identify benefits and rationale for AT & AAC with young children with disabilities.

2. Identify the members and diversity of the Early Intervention Team involved in AT & AAC development centered around family members.

3. Become aware of range of AT (Assistive Technology) and Augmentative and Alternative Communication (AAC) tools for young children.

4. Identify AT and AAC solutions for ACCESS to play, learning, and communication in daily routines.

Nancy B. Robinson, Ph.D., CCC-SLP
Assistive devices and services can be of great value in providing infants and young children with disabilities opportunities to learn and interact with their environment in ways that might not otherwise be possible. For example, assistive technology can help a child to:

- participate more actively in family, school and community activities
- play successfully with toys and other children
- communicate his or her needs and ideas
- make choices
- move independently
“AT is seen not as a tool to teach skills, or for educational purposes, but as a means of allowing infants and toddlers, whose impairments deny them opportunities for timely environmental experiences, to have these experiences known to be necessary to establish the foundations (prerequisites) for developing competence in the various domains of functioning.”

1. AT as access to experience-dependent maturation, development and learning
2. AT as prevention for secondary disability
3. AT for valid developmental assessment
Access to literacy begins at the prelinguistic stage, as with typically developing infants and toddlers...Access to books can be enhanced through modifications of physical, linguistic, and cognitive properties."

Modifications of learning environments can provide the “door” to all children to participate and to learn together.

Early intervention is needed to allow children with disabilities to have opportunities to develop critical skills for continued learning and development.

Research to date supports the use of AT in early intervention to increase participation and mastery of pre-academic skills.
IDEA 2004 Defines AT:

Any item, piece of equipment, or product system, whether acquired commercially off the shelf, modified, or customized, that is used to increase, maintain, or improve the functional capabilities of a child with a disability. The term does not include a medical device that is surgically implanted, or the replacement of such a device. (34 C.F.R. §300.5)
Defining AAC

AAC Overlaps and extends beyond AT with exclusive focus on communication:

Augmentative and Alternative Communication is a multimodal method enabling children to use gesture, vocalization, sign, and speech to enhance their communication. (Adapted from ASHA, 2005)
Barriers to use of AT & AAC

- Limited training in AT is reported consistently in surveys of EI and ECSE personnel, thus limiting use and implementation to provide ACCESS for young children. Defining AT devices too narrowly (only high tech)

- Belief that there are underlying prerequisite skills required prior to AT consideration

- AT is considered after other traditional therapies are provided

- AAC as a last resort consideration

Nancy B. Robinson, Ph.D., CCC-SLP
Assistive Technology (AT) and Augmentative and Alternative Communication (AAC) tools run the gamut from low-tech/low-cost to high-tech/high-cost solutions and tools.
FAQs about AAC for Young Children

- Who uses AAC and how do I know if AAC is right for my child?
- Who would I contact to learn more about AAC?
- How do you decide what kind of symbols or what kind of AAC device to use?
- How do I decide whether a high technology communication device or a low technology communication device is better for an individual?
- Can sign language help improve my child's communication?

Nancy B. Robinson, Ph.D., CCC-SLP
Assistive technology assessment is a flexible, collaborative decision-making process in which teams of families, professionals, and friends repeatedly revise their decisions and reach consensus about the ever-changing abilities, needs, and expectations of the person with a disability [child & family].

Bagnato & Neisworth, 1999
Building Teams

Team Members:

- Approved by the agency they are representing
- Familiar with their role in the group
- Aware of the roles of other agencies
- Provided with information on group history through oral tradition or meeting minutes
- Selected by agency directors with authority for decision making at the agency level
- May change depending on the focus of the group and legislative directives
From the field....

ECSE Team in rural community of California:

“We find that team work and collaboration is essential to meet the needs of the children with significant disabilities. We are all over the county and really need to pool our resources. It is really hard when someone comes in to the program who does not want to work collaboratively.”

Nancy B. Robinson, Ph.D., CCC-SLP
AT & AAC Team Collaboration

- AT services are most effective in a team-based model
- Challenges include time, training and resources
- Administrative support is essential
- Effective teams require commitment to follow through on plans
- AT services require expertise among members to address multiple needs of individuals

Critical skills include:
- Communication
- Understanding of Diverse Contributions
- Time Management
- Group Facilitation Skills
- Record Keeping
- Excellence in One’s Own Discipline
- Willingness to Teach Others
- Openness to Learning New Skills

Nancy B. Robinson, Ph.D., CCC-SLP
AT and AAC solutions for ACCESS

- Switch Toys and Interfaces
- Adapted toys
- Aids for independence
- Communication Systems
- Computer Software

SWEET AT Toolkit
# Types of AT for Young Children

<table>
<thead>
<tr>
<th>Tech.</th>
<th>Purpose</th>
<th>Function</th>
<th>Cost &amp; Training</th>
<th>Sample tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>Increase access to books, games, activities</td>
<td>Communication, play, motor, literacy</td>
<td>Low: under $100, no training required</td>
<td>Page turners, slant boards, Communication symbols, daily schedules</td>
</tr>
<tr>
<td>Mid</td>
<td>Provide a voice for non-verbal; offer access to learning and social opportunities</td>
<td>Communication, play, motor, and literacy</td>
<td>Under $500 minimal training required</td>
<td>Adapted toys, basic switch, single message device, software, and touchscreen</td>
</tr>
<tr>
<td>High</td>
<td>Provide a vehicle for language development and learning through alternative methods</td>
<td>Communication, literacy, and play</td>
<td>Expensive, training required</td>
<td>AAC system, either dedicated or on a computer, iPod, iPad or other device</td>
</tr>
</tbody>
</table>

Nancy B. Robinson, Ph.D., CCC-SLP

(Sadao & Robinson, 2010)
### Every Kid Can: Technology Supports for Young Children

Mistrett, Ruffino, Lane, Robinson, Reed, & Milbourne (2004)

<table>
<thead>
<tr>
<th>Routine</th>
<th>AT/AAC tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meals/Snacks</td>
<td>Adaptive cups, utensils, universal cuff, *CS with food choices</td>
</tr>
<tr>
<td>Bath/Grooming</td>
<td>Adaptive tub, switch adapted toothbrush, laminated CS with body parts and bath toys</td>
</tr>
<tr>
<td>Changing/Bedtime</td>
<td>Velcro closures for dressing, Mounted CS: “I’m up!”, Daily routines</td>
</tr>
<tr>
<td>Playtime</td>
<td>Large knobs on puzzles, suction cups, switch toys, CS: Play choices</td>
</tr>
<tr>
<td>Book Reading</td>
<td>Apron/vest with story pictures, symbols, Adapted books, book holders, e-Books, CS: choosing story, retelling, turns</td>
</tr>
<tr>
<td>Expressive Arts &amp; Early Writing</td>
<td>Large crayons, adaptive grips, slantboard, switch adapted music player, software with music/songs, CS: choices, sequences &amp; comments</td>
</tr>
<tr>
<td>Early Math</td>
<td>Large beads, velcro/magnetic numbers, talking calculator, software/APPS for building, sorting, counting, CS: Counts, requests, comments</td>
</tr>
</tbody>
</table>

*CS = Communication System

Nancy B. Robinson, Ph.D., CCC-SLP
Every Kid Can: Technology Supports for Young Children. Mistrett, Ruffino, Lane, Robinson, Reed, & Milbourne (2004)

<table>
<thead>
<tr>
<th>Purpose</th>
<th>AT/AAC tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positioning</td>
<td>Mat, wedge, beanbag, adaptive chair</td>
</tr>
<tr>
<td>Mobility</td>
<td>Walkers, stander, scooter</td>
</tr>
<tr>
<td>Communication</td>
<td>Visual schedule, photo book, picture board, VOCAs, AAC device, iPad</td>
</tr>
<tr>
<td>Computer Use</td>
<td>Adapted keyboard, keyguard, keyboard overlay; switch interface, adapted mouse, touch screen monitor</td>
</tr>
<tr>
<td>Hearing</td>
<td>Visual and tactile materials, Assistive listening device</td>
</tr>
<tr>
<td>Vision</td>
<td>Magnifying glass, large print, high contrast, raised lines</td>
</tr>
<tr>
<td>Play</td>
<td>Velcro cuff to pick up items, confine items in box, tray, label items with pictures, words, stabilize with shelf liner, Dycem</td>
</tr>
<tr>
<td>Literacy</td>
<td>Adapted page turners &amp; fluffers, modified books</td>
</tr>
</tbody>
</table>
Integrate AT and AAC solutions

- Inclusion in typical environments with peers of same age is required both in Early Intervention and ECSE.
- Recognize of the role of family members to determine the individual needs of each child.
- Consider cultural background in providing AT and AAC systems.
- Consider benchmark requirements for young children that may include DRDP or California Preschool Learning Foundations.
- Activity-Based Intervention provides framework to plan use of AT and AAC Tools

Nancy B. Robinson, Ph.D., CCC-SLP
Activity-Based Intervention

Intervention strategies are needed that can be quickly learned and easily used, be integrated or mapped onto daily activities and routines, and produce desired child progress. (Macy & Bricker, 2007)

Activity-based intervention is based on the premise that meaningful learning and development occurs within typical daily routines (Bricker et al., 1998).

Providing opportunities for child with disability to use AT or AAC tools to participate in an activity such as announcing the time for a game with single message VOCA provides the context for learning and generalization of a skill.
Learning Occurs in Context of Daily Activities
<table>
<thead>
<tr>
<th>IFSP Goals</th>
<th>Snack &amp; Mealtime</th>
<th>Bath time</th>
<th>Story Book Reading</th>
<th>Circle/Music</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase participation and build social interaction/turn taking.</td>
<td>Use sign language or gesture to request “more”</td>
<td>Talking picture frame with picture of child in bath and simple message to beg</td>
<td>Adapted story with velcro-attached pictures or objects to remove.</td>
<td>Record message on “Big Mack” to enable child to say “My Turn” in circle time.</td>
</tr>
<tr>
<td>Express range of communication functions.</td>
<td>Laminated picture placemat provides choices for food</td>
<td>Suction-holder basket with pictures of bath toys for choices</td>
<td>Familiar story with predictable phrases, such as “Good Night Moon.” Allow child to complete sentence, “Good night______” and give picture to hold.</td>
<td>Record 3-4 messages on Tech 4 for child to choose favorite songs in circle time.</td>
</tr>
<tr>
<td>Develop breadth of semantic concepts to support more diverse communication.</td>
<td>Expand use of picture placemat to describe foods, textures</td>
<td>Expand use of pictures of bath toys to describe actions (wash, swim, float, wet/dry, etc.)</td>
<td>Record favorite story on sequenced voice output device, such as Step-by-Step and take turns “telling story” as child hits the switch.</td>
<td>Prepare object board to go with songs in circle time. Have child choose object to go with song, in response to question, “What tickles? “ and child can choose object from board to feel &amp; touch.</td>
</tr>
<tr>
<td>Build greater complexity of language structure to support more complex communication.</td>
<td>Use picture board at mealtime to build sentences, “I want more juice”, “Tommy likes fish crackers”, etc.</td>
<td>Laminated picture board near bathtub to model phrases about bath, “More water”, “Blow bubbles”, “Wash toes”, etc.</td>
<td>Provide story overlay from favorite book (see websites for prepared overlays). Take turns pointing to pictures to tell the story and build short sentences.</td>
<td>Record song or other group activity on voice output device such as Go Talk or Tech 4 with sequenced steps. Provide turns for child to “say” parts of song or activity.</td>
</tr>
<tr>
<td>Build phonological awareness/foundations for literacy development.</td>
<td>Use pictures of foods that begin with same sound, emphasize P (popcorn, pizza, punch), etc.</td>
<td>Foam letter shapes to play with in bathtub. Emphasis sounds of bath time, “Pop”, “Bubble”, “Hot”, “Boat” etc.</td>
<td>Read repeated line stories with sounds, the train goes “Choo Choo” and record on Tech 4. Allow child to hit switches and make sounds.</td>
<td>Record animal sounds in song such as “Old McDonald”. Allow child to “say” sounds of animals at appropriate points in song.</td>
</tr>
</tbody>
</table>

Nancy B. Robinson, Ph.D., CCC-SLP
# Ecological Model in AT and AAC Action Plan - Preschool

<table>
<thead>
<tr>
<th>IEP Goal</th>
<th>Circle</th>
<th>Art</th>
<th>Play Centers</th>
<th>Story Time</th>
<th>Snack</th>
</tr>
</thead>
<tbody>
<tr>
<td>Develop vocabulary</td>
<td>Greet each child using VOCA message</td>
<td>Request art supplies using VOCA</td>
<td>Request favorite toys in play with VOCA</td>
<td>Place props from story on Velcro strip when named in story</td>
<td>Provide Visual “Placemat” for choosing foods</td>
</tr>
<tr>
<td>Develop early phrases and sentence development</td>
<td>Complete routine phrase, “Good morning to ____” on Velcro strip with each child’s picture</td>
<td>Describe artwork using adj. phrases with VOCA</td>
<td>Complete phrase on Velcro strip, “I want to play with____” with picture of favorite toy.</td>
<td>Select 2 -3 pictures to answer questions about story: “mouse ran under” etc.</td>
<td>Point to 2 pictures to talk about snack (using ALS) such as “Cookie yummy”, “More juice”, etc.</td>
</tr>
<tr>
<td>Develop phonological awareness &amp; literacy skills</td>
<td>Target a specific sound each week, find object that begins with “P”, etc.</td>
<td>Provide VOCA with repeated sounds as part of art activity, “Pat, pat play dough”, etc.</td>
<td>Provide picture and printed word for each center and toy to build “word awareness”</td>
<td>“Read” target sounds such as “p” with VOCA</td>
<td>Provide picture and word placemats for child to choose, interact and take turns at snack time.</td>
</tr>
<tr>
<td>Oral narrative development</td>
<td>Choose pictures to “tell story” about weather, yesterday, etc.</td>
<td>Describe art projects to peers using picture board or VOCA</td>
<td>Provide VOCA for child to take turns in centers: dress-up, store, etc.</td>
<td>Repeat foods eaten by Very Hungry Caterpillar</td>
<td>Review sequence of activities from the day during snack time, using pictures or VOCA</td>
</tr>
<tr>
<td>Social interaction skills</td>
<td>Provide VOCA near classroom door for morning greeting</td>
<td>Provide Communication Board to socialize</td>
<td>Express turns, reactions in play with VOCA</td>
<td>Program VOCA with sequence of story for child to “read”</td>
<td>Provide Communication Board to socialize; Program VOCA or AAC device with “small talk”</td>
</tr>
</tbody>
</table>

Nancy B. Robinson, Ph.D., CCC-SLP
1. Families are involved in the development and implementation of assistive technology devices for young children.

2. Assistive technology devices are infused in the child’s daily routines across the home, childcare, and other educational settings.

3. AT tools are easy to use and can be adapted to the environments of the child and family.

4. Families are able to obtain the AT devices from providers, a lending library, and/or information with directions on using the equipment or activity.

5. Assistive technology assessment and intervention is addressed in a team-based collaborative manner with the family as an integral member of the decision-making team.

6. AT is a consideration for every child during the development of the IFSP/IEP.

7. AT is a strategy to foster learning and independence.

8. Families and professionals have access to ongoing training opportunities to increase their knowledge and awareness of AT use and benefits.

9. Families and professionals have information on potential funding sources in AT and AAC systems.

Nancy B. Robinson, Ph.D., CCC-SLP
<table>
<thead>
<tr>
<th>AT for Literacy</th>
<th>AT for Play</th>
<th>AT for Communication</th>
<th>AT for Computers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page Fluffers</td>
<td>Battery Adapted Toy Switches</td>
<td>Communication Book Communication Photos</td>
<td>Adapted Mouse for Computer</td>
</tr>
<tr>
<td>Baggie Book</td>
<td>Battery Interrupter Plug Adapter</td>
<td>Low-Tech Visual Scene Photo Album VOCA Step-by-Step</td>
<td>Software, APPS, or online tools</td>
</tr>
<tr>
<td>Slant Board</td>
<td>Battery Operated Spinner</td>
<td></td>
<td>Adapted Computer Switch or Interface</td>
</tr>
<tr>
<td>Head Pointer</td>
<td></td>
<td></td>
<td>iPad or mobile device with touch screen</td>
</tr>
<tr>
<td>Baseball Cap/Visor</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital books with iPad APPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Online books</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

SWEET AT Toolkit
Instructions for Baggie Books/Remnant Books

- **Purpose of Baggie Books**: Baggie books are made out of zip lock bags, making them very durable and flexible regarding contents that can be individualized.

- **How to Make**: Staple closed edges of ziplock bags together, staple along edge, about ½” from the edge, and bind with colored Duck Tape (2” width available from Dollar or Hardware stores).

- **Type of Ziplock Bags to use**: Zip sealing type of plastic bags (2 ml thickness) 6”x8” size, 1 bag for every two pages of the book, plus 1 bag for title and 1 bag for props, [www.papermart.com](http://www.papermart.com) is an excellent source for the baggies.
Physical Support and Adaptations

Carpet square
Foam wedge
Book stands
PVC Book Stand

By Cynthia A. Wheeler
Providing Valuable Connections
Digital Literacy Resources for Children

- **Childrens’ Story Books Online**: Children’s books online with more than 30 illustrated children’s stories in html format at no cost.

- **Free ePub Childrens’ Picture Books**: Snee provides 16 free e-publications of children’s picture books.

- **Story Online**: Storyline Online provides 19 stories read by members of the screen actors’ guild, including modern classics such as *Stellaluna* and the *Polar Express*. Stories are read and displayed through streaming video.

- **CAST UDL Book Builder**: This site is part of the NCAGC web site and provides free access to create, share, publish, and read digital books for diverse learners.

- **Paths to Literacy**: The resources found on this web site will assist families and early childhood professionals to develop literacy tools in the form of story boxes for young children with visual impairments.

- **Inkless Tales**: A variety of online early reader/emergent and Dolch stories are available at no cost from this web site.

Nancy B. Robinson, Ph.D., CCC-SLP
Spinners
1. Dollar Store Fan
2. Fabric Shaver
3. Battery-operated pottery wheel
4. Child’s fishing game
Add a battery interrupter to a battery toy to connect to a switch for ease of operation.
Battery Interrupters

Starting at $10.95 from Enabling Devices

http://enablingdevices.com/
Plug Adapters

Starting at $7.95 from Enabling Devices

http://enablingdevices.com/
Order CD Switch Kits from R.J. Cooper @ approximately $10 each

http://www.rjcooper.com/switch-kit/index.html
Buy an Adapted Toy
(Enabling Devices & Beyond Play Examples)
Communication Books

- Photos of child’s environment
- Pair photos with icons
- Assist to make association between photo and symbolic representation
Single-Message VOCA

Express One

Can be wall mounted as a talking sign

Touch the picture or the play button to activate speech

10 seconds of recording time, volume control and a 5” x 7” touch sensitive area

Durable, light weight and extremely easy to use

~$15-20

www.attainment.com
Serial Message VOCAs

The Sequencer Communicator or Step By Step are versatile Voice Output Communication Aids (VOCA) that can be used for a series of messages, easily recordable with a bit of preparation. The device is available in two sizes with similar recording features.
Visual Scene Display: Context for Vocabulary and Interaction

SWEET AT Toolkit
Toy Adaptations

Add velcro for connecting
Add texture for touching.
Add shelf liner for stabilizing
Add knobs for grabbing
Add contact paper for durability
Add sponge curlers for gripping
Add pictures to center for labeling, organizing, and choosing toys
Add sticky back foam for strengthening
Add sound for exploring and identifying objects.

SWEET AT Toolkit
Eye Gaze Communication Board

- Clear plastic picture frame, clipboard
- Center opening also improves eye contact
Imagine Possibilities for Increasing Access and Participation
Holding the Power in Your Hand

Using Hand-Held Technologies to Support Access

Nancy B. Robinson, Ph.D., CCC-SLP
Hand-Held Technologies

- Smart phones
- iPods
- iPads
- iPhones
- Tablets
It is the position of NAEYC and the Fred Rogers Center that technology and interactive media are tools that can promote effective learning and development when they are used intentionally by early childhood educators, within the framework of developmentally appropriate practice support learning goals established for individual children.

Complete position paper: http://www.naeyc.org/content/technology-and-young-children
“Every single child was enthralled with the iPad. Children that typically didn’t look at people, didn’t respond with objects or responded in a very repetitious fashion, were absolutely glued to the iPad. It was an amazing experience.”

Sanders, MedPress.com 2011

Research on iPads has just begun…
### What to consider when selecting an app?

#### Physical Features
- Color
- Size of objects
- Animation of objects
- Illustrations
- Background
- Vocabulary level and type

#### Other
- Cost
- Ease of Use
- Level of difficulty
- Motor requirements specified
- Directions and technical support offered
- Recommended by reviews

---

Nancy B. Robinson, Ph.D., CCC-SLP
Where to find App Reviews

- Way Cool “APP”tivities for Educational Settings
- Moms with Apps
- APPS for Children with Special Needs
- The RERC on Communication Enhancement
- Tots n Tech
- iPhone/iPAD APP for AAC

(links are active)
Sample apps to support access and participation in classroom routines

Preschool Daily Schedule

- Greeting
- Free Choice-dress up, blocks & puzzles, toys & animals
- Circle time
- Literacy Activities
- Art
- Snack
- Outdoor Play

App Suggestion

- Answer Yes No
- Tozzle, Miss Spider’s Tea Party, Peekaboo Barn, Tiny Garden
- Smarty Pants Preschool
- Itsy Bitsy & Wheels on the Bus
- Doodle Buddy
- First Then Visual Schedule
- Scene speak

Nancy B. Robinson, Ph.D., CCC-SLP
Learning goals imbedded in a daily schedule

Greeting-Says -“Hello Friend” when entering classroom (Pictello)
Free Choice-transitions to an activity (First Then Visual Schedule)
Circle time-participates in singing a song (Sing Sing)
Literacy Activities-turns pages in a book (The Cat in the Hat)
Art-scribbles (Glow Paint)
Snack-selects a snack from three choices offered (icommm)
Outdoor Play-takes turns in the sandbox (Scene Speak)
Communication Systems

- GoTalk Now, Attainment Company, $79.99 (lite)
- My Talk Mobile-free/$49
- One Voice-By Legend, $199
- Proloquo2Go-com. System, $189
- Sonoflex, iTobi, $99.99 (lite)
- Sounding Board, Ablenet, $49.99
- Speak For Yourself, $299.99
- Touch Chat-$149-com. System, Silver Kite
- Panda Pal-$45
Speech Apps*

**Elicit Speech**
- Tiga Talk
- All about sounds
- Verbs with Milo
- Artikpix
- Pocket SLP articulation
- Tic-tac-talk
- Articulate it!
- Match2say

**Adapted Speech**
- Talking carl
- Talking baby hippo
- Singing fingers
- Starfall
- Talking tom cat
- Furry friend

*list compiled by: Jessica Gosnell, MS CCC-SLP, Children’s Hospital Boston*
Resources to Explore…

Let’s Play, University of Buffalo:

AT in Early Intervention/Infants and Toddlers:

Tech for Tykes at the JFK

Tots n Tech Research Institute

Center on Technology and Disability

(links are active)

Nancy B. Robinson, Ph.D., CCC-SLP
AT & AAC are tools, not the Goal!

Nancy B. Robinson, Ph.D., CCC-SLP