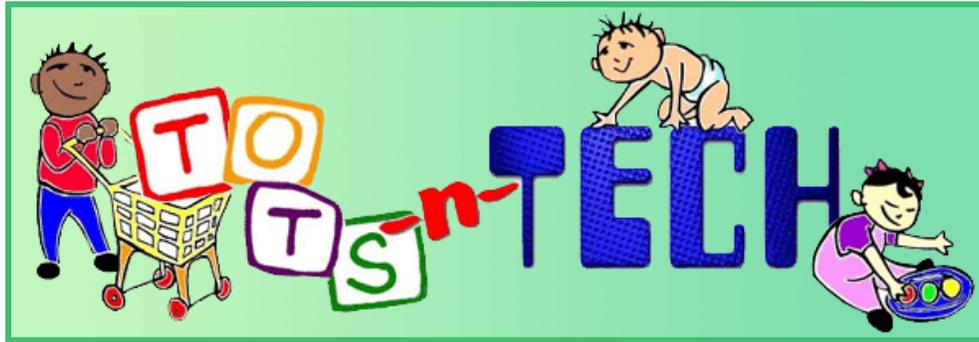


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USING ASSISTIVE TECHNOLOGY WITH INFANTS & TODDLERS

When people envision Assistive Technology (AT) as computers, specialized equipment such as gait trainers or power chairs, or communication devices that speak sentences, their views reflect high technology devices that are used by adults and children with disabilities for functional skills such as communication, mobility, or learning. AT actually consists of a range of devices or materials defined in IDEA as: **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.** Equipment such as a highchair that is adapted with towel rolls to help the child sit up is, by IDEA definition, AT as is a special spoon with a curved handle purchased at a local discount store. Anything that helps or can potentially help a child to perform a skill or participate in an activity is AT. Infants and toddlers are likely to depend on the simpler forms of AT — like towel rolls to provide trunk support when sitting, an infant bathseat used by parents of all babies to provide sitting support in the bathtub, or a home-made communication device. These simpler forms of AT are more likely to be available in local stores such as Wal-Mart, Target, K-Mart, or Babies-Are-Us or through catalogs or internet sites selling things for infants and toddlers.

Consider AT As A Part of A Continuum of Adaptation Intervention Strategies

AT is an intervention of using a specific material, device, or piece of equipment. This intervention strategy fits within a continuum of environmental intervention strategies that enable individuals to participate and learn. For example, a child may be independently able to play with toys by manipulating them with her hands or by activating them with an adapted device such as a switch. A child may get around by walking or running or by operating a power chair by using a joystick. These interventions fit within a continuum of interventions, an Adaptation Hierarchy, diagrammed below:

Facilitating Children's Participation and Learning



When a total continuum of adaptations is considered, AT fits most easily into categories of environmental accommodations involving equipment or positioning and adapting materials. Other types of adaptations such as adapting an activity or the instructions to participate assist children to learn and participate but are not specifically considered AT.

Use the Continuum to Generate Possible Interventions for Child Participation & Learning

The Adaptation Hierarchy provides a continuum for thinking about various types of interventions that might be used with infants and young children when they have difficulty performing skills or participating in activities or routines in the settings where they spend time. As illustrated in the figure, to identify potential intervention strategies, start at the top and work down to the bottom of the hierarchy. Interventions such as re-arranging a room or using AT by providing “access” to activities via positioning equipment are much less intrusive than having an adult help the child. The whole purpose of the Hierarchy is to provide a framework for generating ideas to help children perform functional skills or participate in activities and routines with the same amount of adult assistance as would be required for any child of the same chronological age. The number and type of ideas that are generated will be dependent on the creativity of group members as well as their knowledge and experience. When one professional on a child’s team (or available to consult with the child’s team or provider), has an in-depth knowledge of both low and high-tech AT devices, the number and quality of suggestions generated are likely to be more effective.

Make a Plan for Embedding AT Opportunities Into Activities/Routines

Both families and EI providers are likely to focus on developmental skills that infants and toddlers may need to learn. However, it is equally important to identify the activities and routines in which those skills will be practiced and used. This is particularly important when teaching children to use AT. A number of different formats have been designed or can be designed by linking assessment to intervention. Identifying an activity/routine into which the use of AT will be embedded and outlining the steps of the activity helps plan where the AT will be used and how the child will be taught to use it. Making a written plan also helps the caregiver, child care provider, or adult who is with the child in the activity/routine know what to do and when to provide opportunities for AT use.

There are two ways to approach embedding AT into the activities/routines in settings where children and families spend time. One approach considers all the different types of adaptations or AT that may be needed to make a particular routine/activity successful.

Incorporating Multiple Types of Adaptations/AT into a Single Activity/Routine:

In the approach, illustrated below and on the next page, the activity or routine is broken into steps so that a variety of adaptations or types of AT that may be needed to make the activity/routine successful are identified. The framework for this approach includes:

Steps	Problem?	Adaptation/AT	What Caregiver Will Do	What Child Will Do

Steps of the Activity/Routine: Watch the caregiver do the routine/activity with the child and write down the steps. For example, for bathtime, the steps might be 1) lay the child on the bed, remove clothing, go to the bathroom, run the water in the tub, place child in tub, etc. Every routine or activity has a beginning and an end — the beginning may be getting undressed and the end may be getting into P.J.’s or into bed/crib. Different caregivers may have different ways of doing an activity/routine so the steps may differ from person to person. If you can’t observe the activity or routine, then interview the caregiver, asking them to describe how the activity/routine takes place.

Problem? Identify whether each step is or is not a problem. Frequently AT can be used to address a particular problem via positioning or special devices. For example, if washing the body is a problem, a child may be able to help or wash independently (dependent on age) by using a bath mitt instead of a washcloth.

Adaptation/AT: For each step, describe one or more adaptations/AT that might be tried — for example, the bath mitt or Soap on a Rope .

What the Caregiver Will Do: For each step, describe what the adult will do to help. This help may include verbal directions/reinforcement, physical guidance, placement of objects, time delay, etc.

What the Child Will do: Again, for each step, describe the expectations for the child — e.g., sit, wash self, play with toys, etc.



Caregiver Child Interaction Plan

Routine/Activity: Story time Location (if outside the home) _____ Date: 4/15/2007

Is this routine going well? Yes No (circle one) Focus: Routine or Creating Opportunities (circle one)

What I would like to see happen during this routine:

I would like Rhonda help select the book, go to where we are going to read, and then listen, turn the pages and point to pictures in the book.

Embedding in AT-Assisted Skills In Activities/Routines Tracking Sheet

Date: 4/15/09

Child's name: Alyssa

Provider Name: BGF

Caregiver Name: Susan

Steps in the Routine	Problem (y/n)	Adaptations that could be used	What will the adult do	What will the child do
Begin reading by deciding what story to read	Y	Create a <u>schedule</u> to help the child transition. Let the child pick out the book using a <u>choice making device</u> – picture board or switch.	Show her the schedule board with pictures of bath, reading, and bed and take her hand and point to reading. Say "this is next." Encourage her to be able to point to the different pictures on her own.	Allow her arm/hand to be moved; Look at the picture. Eventually move her arm herself so that her hand is on the picture.
			Show her the communication board with pictures of covers of 3 books; Ask her which book she would like to read; Watch her eyes to see where she looks; Encourage her to touch the book cover or take her hand and have her touch the cover where she is looking.	Look at a book picture and move her arm to touch the picture independently or with help.
			Use a 2 or 3 position switch (or 2 or 3 switches) with voice output so that she can hit a switch and make a choice of book. Wait for her to hit the switch and if she does not, follow her gaze and help her activate the correct switch.	Hit the switch independently or with help
Go to reading area	Y	<u> Scooter </u> for moving. Stabilize your child while they walk by tying magazines or newspapers around their legs. Build a Scoot-a-bout so the child can independently move from one place to another. Have the child hold on to a <u>hula hoop</u> to increase stability.	Try a variety of ways of helping the child to move independently (depending on the child's abilities).	Move independently from the bathroom/bedroom area to the family room.

Steps in the Routine	Problem (y/n)	Adaptations that could be used	What will the adult do	What will the child do
Sit	Y	Provide a child sized bench to sit on. Make a barrel seat for your child to sit on. Position your child using bolsters . Put a box underneath the feet for support.	Identify a variety of options for ways the child may sit comfortably while reading.	Sit with sufficient support to be able to move arms and with sufficient comfort to sit for the length of the book.
Turn pages of book	Y	Use Slant board to prop book up so child/adult can see Use communication picture board or voice-output switch so child can say when to turn the page Use something attached to the book pages (felt pieces) or separate pages with daps of hot glue in order to allow the child to turn pages	Try a variety of strategies to stabilize the book and to make it easily viewed by the child. Modify the activity or material (book) so that the child may turn pages.	Turn pages of the book
Read the book	N	Make sure book is large so that child can touch picture. Program a switch to help with reading words in repetitive stories	Encourage vocalization (reading along) of objects and story in book Encourage child to move arm to touch named picture	Vocalize along with repeated words (e.g., “dog”); Look at and touch picture when named (e.g., “find the dog; where is the dog?”)
Put book away	N	Put book on low shelf or in bin so that child may easily return book	Tell the child to put the book away	Put the book away
Go to next activity	Y	Create a schedule to help the child transition. Mobility aid	Show the child/ask the child to indicate bed on the schedule board. Use mobility aid to go to bedroom	Go to bedroom/bed.

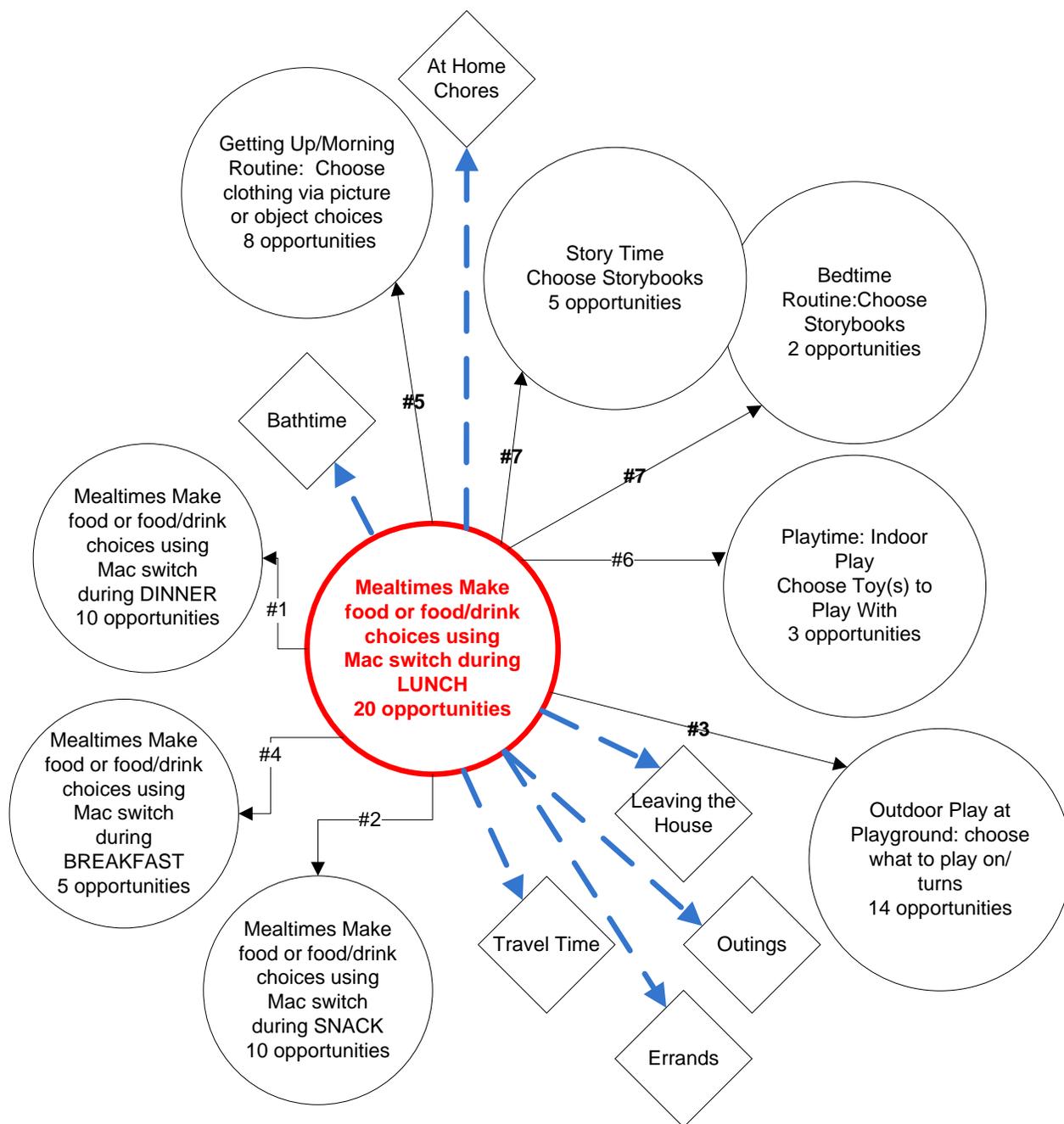
Try Out the Plan

AT is generally trial and error to figure out which options are likely to work best in which situations. For most infants and toddlers, the types of adaptations and AT needed are likely to be very simple changes or simple materials/devices that may be purchased off the shelf in community stores or hand made out of easily available materials. One source for home-made ideas is the T-n-T Ideas to Share resource. Go to <http://tnt.asu.edu> and search on keywords or by activity or routine for AT suggestions that might fit the situation with which you are working. Another option is to find the lending library in your community or state. More resources about lending libraries are also on the T-n-T website. The whole purpose of using adaptations and AT is to make a child more independent – to give a child greater control over his or her environment. By making simple devices, finding them in local stores, or borrowing them from a lending library, three important things need to be remembered:

1. A child may need to try out more than one device, adaptation, or material before it works. It is not the specific device that is important – in other words, it doesn't matter if the child can use the Big Mac voice output or a picture communication board – what matters is that the child is able to communicate across situations.
2. A child may need to learn to use the device or material itself before decisions can be made about its usefulness or feasibility. Just giving the child a picture board may not be enough for the child to understand and learn how to use it for communication.
3. More than one device/material may be needed for a child to perform a particular skill across all situations. For example, a child may make choices using a picture board, a voice output device, or by selecting objects – each of these forms of communicating choices may be needed for a child to practice across situations.

Embedding a Single Type of AT Across Multiple Activities/Routines Using Webs:

A strategy of embedding a single type of AT is usually used to create opportunities for practice and learning for functional skills such as communication or getting around. This is accomplished by making a web which represents the activities and routines into which learning opportunities will be embedded (in the circles) and numbers them from the starting point (in the diagram below Lunch/mealtimes) and numbers the order in which additional learning opportunities will be added by adding in new activities/routines. In the illustration below, routines of story book will be added in 7th after the getting up/morning routine and breakfast mealtime. Webs may include all the various activities/routines in which a child/family participate. Those that are not likely to provide a context for learning opportunities in the near future are represented in squares (e.g., chores, bathtime).



Webs are created through discussions and problem-oriented reflection between the caregiver and the EI provider. The web above illustrates the activities/routines in which the caregiver and provider agreed that choice-making opportunities for the child will be embedded. In contrast to the activity/routine plan, in this plan, the same skill is embedded across multiple activities and routines – not all at once but in a planned sequence identified by the provider and caregiver together. The sheet on the next page illustrates the plan for how the embedding will occur and identifies the potential number of learning opportunities in each activity/routine.

The sample tracking sheet below represents the overall plan for embedding AT in activities/ routines. It illustrates the possible number of learning opportunities that may be present for the child to communicate choices during the day. The sheet includes the same information as the web with the exception of the additional information of the date in which choice making learning opportunities were added to each of the planned routines. When this plan is fully implemented, more than 500 possible learning opportunities are available in a week's time.



ROUTINE/ACTIVITY	# Learn Opps	Order to Use	Date Start	What Will Adult Do?
BATHTIME	0			
MORNING ROUTINE (getting up, getting dressed, etc.)	8	5	5/20	Provide picture board options or actual pieces of clothing for choices by reaching and touching
BEDTIME (getting ready for bed, going to bed, sleeping)	2	7	5/29	Hold up 2 books, reach and touch for selection
MEALTIMES (appetite, level of assistance); Lunch; dinner, snack; breakfast	45	Lunch Start 1, 2, 4	4/23, 5/7, 5/12	Program Big Mac to say drink or food; picture of drink/food on switch; voice output by touching
PLAYTIME (Indoor Play)	3	6	5/22	Either program Big Mac, use actual object toy, or use pictures, reach and touch for selection
STORY TIME	5	7	5/29	Hold up 2 books, reach and touch for selection
OUTDOOR PLAY (riding a bike, playing outside, playing on playground equipment, swimming)	14	3	5/15	Use pictures fastened to noodle with Velcro for easy use; reach and touch to select.
AT HOME CHORES (cleaning, preparing meals, watching TV, caring for pets, etc.)	0			
LEAVING THE HOUSE	0			
TRAVEL TIME (riding in a car, bus; walking, etc.)	0			
RUNNING ERRANDS (grocery store, mall/store shopping, banking, wash/cleaners)	0			
OUTINGS (visit a friend/relative, eat at a restaurant/fast food, go to museums, amusement parks, zoo)	0			
TOTAL	77			

Resources to Support AT Use & Implementation

How Do I Get Ideas?

AT devices and materials used with infants and young children 1) promote participation in activities/routines; and 2) enhance functional skill performance. Ideas for devices and materials can be located by:

1. Shopping at community discount and toy stores or exploring their websites (e.g., target .com; babiesrus.com).
2. Use the Toys-R-Us Toy Guide for Differently Abled Children— <http://www.toysrus.com/shop/index.jsp?categoryId=3261680>
3. Find out about and access AT lending libraries in your state or community. These may be state sponsored and affiliated with Tech Act agencies or with Special Education departments or Part C agencies. Some lending libraries may be sponsored by agencies such as Easter Seals, United Cerebral Palsy, or affiliated with Lekotech <http://www.lekotech.org>

How Do I Learn to Use Low Cost, Low Tech Ideas — Make It-Take It?

1. Check out websites with instructions for Make-It-Take-It low technology devices/materials. The TnT Website Ideas to Share — <http://tnt.asu.edu> includes a searchable data base; Use categories of activities/routines or categories of functional skills (e.g., communication) or just keywords to find ideas and download instructions to make them.
2. Other websites with ideas and directions for equipment, toys, and other devices include:
 - <http://www.cdl.unc.edu/link/TechItEasyManual.htm> — includes a manual of ideas about how to make low technology devices or materials.
 - <http://www.lburkhart.com> — many easy to make toys or toy adaptations are featured.
 - http://www.challengingbehavior.org/do/resources/teaching_tools/toolkit_user_manual.pdf — includes numerous ideas for using AT with children with challenging behavior or communication difficulties including children with PDD or Autism.
 - <http://teachinglearnerswithmultipleneeds.blogspot.com/2008/01/diy-atadaptive-design.html> — includes directions for a variety of do-it-yourself AT ideas for children of all ages.
 - Use <http://www.google.com> for images to use for schedule boards, social stories, communication, choice-making and other applications.
 - Use <http://www.Ask.com> or <http://www.google.com> to obtain ideas and directions for particular devices/materials. Put in something like “how to make a communication board;” or “how to make a switch operated toy.”

Where Can I Find Planning Forms?

1. Use the Caregiver Child Interaction Plan (CCIP), illustrated in this *Resource Guide*, to plan for the use of various types of adaptations or AT devices within a particular activity or routine.
2. Use the *Assistive Technology (AT) Web* and the *Embedding AT-Assisted Skills in Activities/Routines Tracking Sheet* illustrated in this *Resource Guide*.
3. Other types of Early Intervention planning forms may be found on other websites such as <http://tactics.fsu.edu>.

Who Might Be Able to Help Problem Solve Ideas, Plans, & Implementation?

1. Generally, a team consisting of the caregiver and the child’s service providers are the optimal people to plan AT.
2. One member of the team — perhaps the PT, OT, or SLP should be knowledgeable about AT resources such as the availability of devices and how to access them including borrowing for trial periods and, as necessary, how to fund the purchase of devices/equipment once appropriate AT has been identified.
3. In some communities, there are individuals who are very knowledgeable about AT and who may have special certificates or degrees. These individuals can often be helpful to the child and child’s team in thinking about and considering the use of AT.