



*Assistive and Instructional Technology  
Supporting Learners with Disabilities*

# ASSISTIVE TECHNOLOGY SUPPORTS FOR EARLY LEARNING

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The Let's Participate! Project

## PROMOTING PARTICIPATION + EARLY LEARNING IN DAILY CLASSROOM ROUTINES + ACTIVITIES

Children learn by actively exploring and interacting with the people and objects in their daily environments. These environments include activities in the home, community and early childhood programs. Through interactions children find out about an object's sensory characteristics, its size and shape, concepts of more/less, big and small, and begin to recognize and name the sounds around them. They also learn to listen, read facial cues, share and take turns, and express their feelings and ideas. The early learning areas below focus on what children "do" to learn and grow in early childhood programs. Assistive technology supports can provide accessible tools to help them to learn about early literacy, math, science, and peer and adult relationships in their expanding world. Experiencing successful opportunities to actively discover these early concepts leads to later school success.

Throughout the daily early childhood curriculum, children participate in individual, small and large group activities, in active and quiet routines and inside and outside experiences. They are provided with opportunities to listen and to share, to create alone and with friends, to understand stories about their world and to apply what they know to new experiences. AT supports are available in each functional area (movement, communication, use of materials and positive behavior/self-regulation) to help children make the most from these learning opportunities. Assistive Technology supports include a wide range of common items found in early childhood classrooms, modifications to those items and specialized devices designed for children with disabilities. Any combination of supports can be used to help children benefit from the learning opportunities embedded in everyday activities. Look for supports that can be used across functional areas and within multiple activities.

The following are suggested environmental and AT supports that can be considered to make individual activities more accessible by practitioners who have adopted the Let's Participate! model. As supports are ever changing, feel free to add to the list below.

## SITTING & ATTENDING

In early childhood programs, children are expected to sit, attend and respond within teacher-directed structured events during large and small group activities such as circle time. There are several types of AT supports that can help children to participate more fully and independently in these activities.



*AT Movement Supports:* Since many of these activities occur while sitting on the floor, there is a range of available seating supports. Many promote “active move and sit” seating that encourages the child to move slightly while seated. These include inflatable discs and wedges, beanbag chairs and flexible floor sitters. Other adaptive seats are available that include full side and head supports. All supports a child’s ability to sit comfortably and securely while participating in a variety of activities.

**Bean Bag Chair**



**Back-Jack chair**



**Child Rite Seat**



**Cube seating**



**Discs**



*AT Behavior Supports:* As children process information through their senses and movement, some children may have trouble integrating the sensory information they receive, which can interfere with learning. There are many AT supports available to help address children’s sensory needs to self-regulate and better attend and focus for structured tasks throughout their day.

- Weights can help children become more aware of body movements and position and help children to calm and relax. Consider lap blankets, weighted toys, ankle weights and vests

- Fidget toys help children focus by keeping their hands busy as they manipulate (squeeze, push, twists/turn) them. Consider quiet items such as Tangles, koosch balls, wiki stix, and clay.
- Visual supports: pictured schedules, and activity sequences help children anticipate ‘what’s next?’



*AT Supports for Use of Materials:* Teachers are encouraged to present information in a variety of ways in order to meet the needs of visual, auditory, and kinesthetic learners. There are several ways to modify the activity and provide AT supports to maximize engagement of all children.

- Common classroom technologies such as smartboards, ipad projection, cameras provide visual and auditory interpretations of information
- Tangible props, felt boards, and high contrast items add a tactile element to verbal descriptions
- Adapted musical instruments ensure all children participate

*AT Communication Supports:*

- Use of word pictures, symbols, icons, objects relating to information presented
- Choice boards of friends, activities, toys and other choices throughout the day
- Pre-recorded AAC devices and apps provides a vocal way to initiate and make choices
- Picture/text labeled room; (objects, photos, text, symbol): organization, sign in, interest areas, cubbies
- Chip recorders (Go Talk One, Talking Brix) on topic boards for speech reinforcement

### **WRITING, DRAWING & CREATING**

Early literacy begins with drawing—a precursor to writing. Drawings become more representational and then support early writing attempts to form letters, and eventually words. AT supports can help children to draw and write, express and narrate their drawings, and follow



instructions and classroom rules. There are several tools that support children in early drawing, writing and creating:

*Movement Supports:*

- Comfortable secure sitting at table or on floor: chairs with sides or adjustable backs
- Foot rests
- Inflatable, responsive positioning aids (peanuts, wedges, seats)
- Adjustable table height options for sit/stand
- Alternate options: on floor, kneeling at wall
- Slant boards and table easels

*Behavior/Self regulation supports:*

- Chair bands to push feet against
- Visual supports with emphasis on social interaction + creativity
- Materials and tools with a variety of textures to choose from
- Art trays to hold materials and define personal space
- Visual timers to help define activity length

*AT Supports for Use of Materials:* For this activity, consider AT supports for tools, surfaces and tablet apps. Children use a variety of materials and tools to draw and create. Select tools that are easy to use by young children: large, cone-shaped, non-roll crayons, short markers; brushes and stamps with large, easy-grip handles; adapted and loop scissors and tongs; glue sticks; large magnet letters and numbers, and enlarged tracing/maze forms. Consider enlarging tool grips and handles with cylindrical tubes and model magic clay; a universal cuff will make it possible to hold any tool.

**Tools + Grips**

**Loop Scissors**

**Tongs**

**Tracing forms**

**Universal Cuff**



Surfaces: Children may find it easier to draw while using a slant board, clip board or wall/table easel to prop up the paper, define boundaries, and keep the paper in place. Use a variety of drawing surfaces from tissue, plain and heavy lined paper to contact paper to magnetic sheets and erasable surfaces. Art trays can help contain individual and joint project materials.

**Wall easel**



**Slant Board**



**Magnets**



**Work Trays**



Tablets + Apps: There are many apps that promote drawing, writing and creativity using both real and digital tools. A simple touch can be supported with the use of various styli. Apps provide tracing and writing activities as well as multiple ways to draw, save, narrate and share all types of creative expressions.

**Crayon Stylus**



**Crayola Appitivity**

**Tools + App**



**Doodle Buddy App**

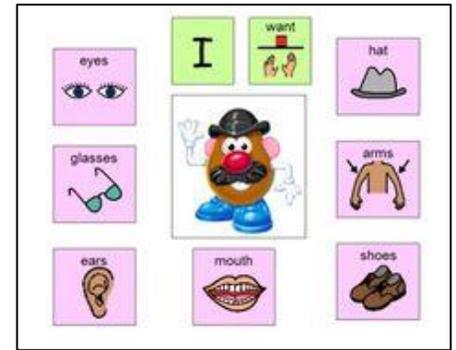


**Letter School App**



### *AT Communication Supports*

- Symbol/pictures on choice and content boards with creativity phrases, material choices, comments, interactions, teacher/child names, etc.
- VOCA devices with pictures, symbols and objects and recorded messages to initiate and interact
- AAC apps with contextual information and recorded choices



**TABLE TIME (Manipulatives):** Table time activities include activities and games for children to explore and learn about shapes, numbers, letters, sorting, connecting, pegs, puzzles, games with rules, explore using science tools, etc.

### *AT Movement Supports:*

- Chairs with sides, footrests
- Adjustable height and slant tables; sand/water
- Inflatable, responsive positioning aids (wedges, seats)
- Adjustable table height options for sit/stand

### *AT Behavior Supports*

- Weighted lap pads
- Sensory toys and items (fidget, chewy)
- Rules, activity visual supports
- Defined play space (felt, non-slip)
- Trays to confine pieces

*AT Supports for Use of Materials.* Consider items designed to be used by all children; those with easy to use features, a simple, intuitive design, that can ‘grow’ with a child and offer multiple ways of use. Toys can be grouped into 3 categories: self-correcting structured toys (puzzles, nesting boxes, shape sorters); open-ended toys (legos, magnetic letters, geo-boards); and collectibles (buttons, shells, nuts and bolts). Make sure to include both simple and complex materials. AT supports include universally designed items, those with simple switch input, light tables, magnifiers, and the use of adaptive materials for successful use.

**Knob Puzzle**



**Large Pegs**



**Light Box**



**Magnet Shapes**



**Sorting Pie**



Tablets + Apps: There are many apps that promote manipulation and creativity using both real and digital tools. A Magnifying tool attached to the tablet camera can provide a way to investigate the world. Apps provide puzzle completion, geoboards and building activities for children who may struggle with real work parts.

**Shape Builder**



**GeoBoard**



**Proscope**



### *AT Communication Supports*

- Toy choice and content boards/ with related phrases, math descriptors, material choices, comments, interactions, teacher/child names, PECS
- VOCA devices with pictures, symbols, PECS and objects
- AAC apps with photos of real objects, photos of peers

### **PLAYING & SHARING**

Play is the primary way that children learn and achieve academic success. Through play children learn to plan and carry out their ideas, to move through and around obstacles, to negotiate turns and roles with peers and to create new worlds and situations where they can act out old

and new experiences. Play occurs both inside and outside using thematic materials or pure imagination. Play includes spontaneous interactions as well as group gameplay with rules.

#### *AT Movement Supports*

- Floor chairs, inflatable wedges, discs
- Chairs with sides, footrests
- Adjustable height pegs for clothes, costumes
- Push carts and wagons; modified walkers
- Scooters, ride on toys, bikes and trikes
- Walking (Magic) Rope

#### *AT Behavior Supports*

- Weighted lap pads
- Sensory materials and items
- Visual supports of activity rules, planning and carrying out play activity
- Photos of peers
- Trays to confine pieces or simplify play role
- Visual timers for transition
- Visual supports for reading emotional cues/ peer reactions
- Social stories, video modeling (Apps)

#### *AT Supports for Use of Materials*

They often participate in socio-dramatic play with their peers with adapted costumes and accessible hooks. AT supports such as switch interfaces help all children use board games, as well as participate in physical and movement games.

**Velcro Costume**



**All Turn It**



**Elefun + Switch**



**Hi Ho Cherrio**



**Wireless Switch**



### *AT Communication Supports*

- Choice and content boards/supports with emphasis on social interaction and theme content: play choices, comments, interactions, children's names
- Pecs, VOCA devices with pictures, symbols and objects
- AAC apps

## **LISTENING & UNDERSTANDING**

Children learn to listen and understand information during teacher led structured activities, such as story time and when playing with their peers. Teachers give instructions using media, books, flannel board, verbal and graphical directions. AT supports in this area help children hear and attend information and independently show what they understand.

### *AT Movement Supports*

- Floor chairs, inflatable wedges, discs
- Chairs with sides, footrests
- Beanbag chairs
- Carpet squares, taped targets

### *AT Behavior/Sensory Supports*

- FM systems help filter background environmental sounds
- Sound phones- encourages sound making by hearing your own sounds
- Microphones and amplifiers
- Natural Reader is a free software and app designed to read any computerized text
- Light boxes support understanding and knowledge of object dimension
- Lap weights
- Fidget toys
- Small quiet spaces

*AT Supports for Use of Materials.* A variety of accessible book formats (board books, audio and digital books), FM systems, audio tools for narration and reading stories expand a child's abilities. In this area we will look at multiple ways that AT supports help children hear, understand and express what they can do.

**Accessible books**



**Headphones**



**Recorder**



**StoryBook App**



### *AT Communication Supports*

- Multiple ways of providing directions: visual + auditory supports; pictures, symbols,
- Story related pictures, props
- Pecs, VOCA devices with pictures, symbols and objects
- AAC apps
- Choice boards, AAC devices and apps with images for stories; characters; re-tell sequence cards; preference vocabulary; 'W' questions

To help young children participate in everyday curricular activities, look for AT supports that also support Early Learning in the Communication and Behavior AT Categories.