

# **Supports: Tools and Strategies**

Boston Public Schools Access Technology Center at Emmanuel College,  
in collaboration with  
Maureen P. Dacey, M.Ed., CCC-SLP Easter Seals of Massachusetts, 10/11/01

# Supports: Tools and Strategies

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## Tools and Strategies for Classroom Management/Environment

### *preparation*

- **brainstorm ideas** – in a variety of areas, vocabulary, background information, etc.
- **reduce or simplify steps** – limit the number of steps for students who cannot handle a lot of information at once; break down assignments into sections to make it less stressful
- **clear directions and expectations** - many students can't handle confusion
- **“you need” list** - post or make available a personal or class list of items needed to complete a task
- **template/model** – show the finished product to make expectations clear
- **student planner/notebook** – provide individual planners/schedules to stay organized, record homework etc.
- **schedule** – post, preview and review list tasks to be completed during work period or entire day
- **project calendars** – to keep everyone on track
- **high interest content** – use student’s interests when creating examples for activities, e.g., sports, shoes, games
- **work space** – clearly define the student’s work space, with no distractions with other materials
- **water** - provide a water bottle for each student to have at their desks to keep them hydrated
- **music** – use background music to stimulate, facilitate learning & promote relaxation; if student is bothered, seat away from source
- **quiet objects** – give student small object to hold and manipulate (e.g. Koosh ball) for active kids to fiddle with instead of making noise with pencils, etc.
- **physical activity** – provide frequent periods for exercise and breathing, even if only beside desks for short periods; for highly active students allow for movement activity (e.g. shoot nerf basketball through hoop), interspersed with seated assignments or after completing certain number
- **social stories** - can alleviate anxiety about activities/tasks; write/draw or create on computer a storybook describing the steps of any activity, academic or nonacademic, to allow the student to preview and be prepared for what is to come; a comic strip format can be very effective (see Contributors, Carol Gray)
- **Team communication** – consult involved specialists so that everyone is aware of the student's goals
- **task definition strategies** - e.g., **KWL charts** – create a table; students list ""What I know, What I want to know, and What I learned"
- **limit assignments** - assign one assignment at a time to reduce confusion
- **repetition** - have students repeat lesson objective

### *presenting information/completing tasks:*

- **use drama** - be dramatic, using large body movements and facial expressions, and move around frequently
- **multi-modal presentation** – offer information in variety of forms - visual, auditory, tactile, etc.
- **interactive lessons** – allow students to come up to the board, use body movements, etc.
- **sense of smell** - connect smells with new material – e.g., pop popcorn when presenting new information to enhance memory/learning
- **vary language** - address diverse learning needs by altering language of presentation/questioning as needed
- **card holders** - mount plastic or wood card holders on student’s desk to display steps of activity; use words, pictures, photos, or symbols
- **coding systems** - to support student completion of work, use colors, numbers, symbols or words for each step in a process
- **define terms** – for often used terms, post their definitions and be sure to use them consistently

- **link material** – explicitly show students how new and old material is linked; e.g., KWL "What I know, What I want to know, and What I learned"
- **repeat exposure** - some students require constant repetition, and benefit from multiple exposure to materials
- **plot progress** – use charts, graphs etc to monitor their own work or class products; can use text, graphics, Picture Communication Symbols, etc.
- **timer** – set a kitchen or visual timer to help student to pace themselves through multi-step task
- **post-its** – use sticky notes for sequencing events “first”, “next”, and “last”
- **“Did I...?” or “To do...” lists** - students check off as they complete tasks or check off what they must do before asking a question or receiving teacher feedback
- **color code** - use colors to identify topics, subjects, etc.
- **flashlight or light pointer** - to focus attention on target area of task
- **multiple input modes** – offer different options for student to obtain information e.g. text, drawing, spoken
- **alternative products** – allow student different options for products e.g., project or audio taped information instead of written report
- **limit choices** - many students are overwhelmed by too much stimulation/information or too many options
- **reference charts** – post content information/tables on walls and have smaller desktop versions
- **repetition** – repeat major points during lessons
- **simplify directions** – reduce the complexity of instructions to keep the focus on the content
- **role play** - for problem solving or acting out content material in story format
- **rubrics** – teacher or students create a matrix of performance standards; possibly add graphics; post on the wall; to make expectations clear for grading
- **repeat student’s name** – say student’s name often, especially when asking her/him to answer questions
- **range of concepts** – present a range of concepts in one area, from simple to complex

### *classroom environment*

- **praise** - find positive things to say about students outside of academic arena; welcome each student personally as they enter the room each day; sit in a chair if needed to be at their eye level; comment on their clothing, their bright smile, their kindness to someone else, etc. (William Glasser, **Schools Without Failure**)
- **sharing time** - include a time for students to share something nice about one another; write comments on the board/easel or discuss with other students why some students have different needs/sensitivities; to promote a compassionate attitude
- **eye contact** – maintain eye contact with students to keep attention, let them know they’re noticed
- **exercise** – get up and stretch, walk around, and move hands/arms/shoulders periodically when working for long periods
- **nonverbal signals** - create a “high sign” for a student who needs special reinforcement to remind him/her about behavior issues; student may give a sign to indicate the need to take a break, etc.
- **mnemonic devices** – use for classroom rules, e.g., the 5 Ps or any easily remembered word/letter combination with the first letters standing for rules
- **model expected behaviors** – or have students model behaviors, e.g., how to ask good questions, then reinforce/praise
- **consistency** - maintain the same rules, expectations and routines as much as possible throughout the day
- **post lists** – create visuals of expected behavior, rules etc.; show alternative behavior options; tape small version of list to desk if needed
- **ear plugs, headphones, study carrels** – limits auditory and/or visual distractions
- **preferential seating** – near teacher; away from door/window, etc.

- **30 second check** – students sit straight up hands folded, eyes on speaker for 30 seconds; for older students, have a routine for attentive behavior, e.g., "Show me you're awake and ready to learn!" (meaning sitting up straight, leaning a bit forward, alert and ready to listen)
- **prepare for transitions** - provide verbal, visual and auditory cues, e.g., red flag means almost time for music
- **reinforce appropriate behaviors** – encourage good behavior as much as possible
- **behavior modification program** - however, if needed, reinforce with stars, stickers, teacher sign off for each completed task, etc.; may be used in combination with fostering self-management skills
- **break choices** – allow a specific number of breaks that the student can take as needed during the day
- **label** - using pictures, words, photos, or symbols to indicate where items belong in the class to help students be more independent in retrieving and returning items
- **materials in place** – create a consistent place for everything - "A place for everything and everything in its place."
- **bins or baskets** – to separate items or organize a space; can use for student's individual work "to do" and work "done"; clearly label
- **push pins labels** - children hang their name on the pin at a choice area; when all pins are full, the area is full
- **objects** – when objects are gone that area is full
- **black/white board or easel** – post homework or other information for repeated or prolonged reference
- **overhead projector or large monitor with computer** - for whole class lessons
- **rip-stop nylon** – use with mounting spray to post papers when wall space is limited
- **hold class meetings** - for group dynamics, problem solving, social skills, etc.; students are often able to monitor each other and themselves through discussions; the **Story Grammar Marker** is a terrific tool for problem-solving & solving disputes (see Reading/Decoding, Low Tech)

## Tools & Strategies for Communication

### *Skills:*

speaking  
listening

receptive language  
auditory processing

expressive language  
social use of language

### **No Tech**

Communication

- **body posture** - position, movement, or muscle intensity of arms, legs, head or body; use body proximity (stand close to student) or physical touch to maintain attention
- **facial cues** – enhance meaning by adding exaggerated facial expressions, making eye contact, smiling, frowning, raised eyebrows, grimacing etc.
- **gestures** – interpreted body movements that are familiar to the general population (e.g., “hold it”, “come here”, “ok”); can supplement student’s verbal communication skills or be used to enhance instructor’s auditory information
- **pointing** – using index finger (or hand, foot etc.) extended towards a target; helps focus attention, provide visual referent; simultaneously point to pictures, words, objects or symbols that correspond with spoken language
- **actions** – student or instructor physically moves about the environment or interacts with materials or others
- **intonation** – different pitches or tones of voice; variation maintains interest, shows emphasis, consistency
- **sign** – formal gestural system using hands and body to convey specific words and phrases
- **non-symbolic acts** – similar to gestures, these movements are part of the action sequence interpreted as communicative (e.g., reach for something, push away, extend an item to show it, hold arms up to be picked up)
- **closed set** - limited set of responses for student to select answer from; verbal or visual multiple choice
- **pause time** - allow adequate wait for student to formulate response; can be helpful for some students not to speak in the interim
- **dramatization** - exaggerated physical movement with oral expression
- **guided modeling/practice** - extensive practice of oral expression
- **multiple opportunities** – lots of chances to practice a skill
- **peer models** - allow student to hear others answer question before their own turn to become familiar with the content and format expected
- **choral responses** – students answer in unison
- **singing** – using music or songs to learn or produce information
- **kinesthetics** - movement, breathing, and relaxation techniques
- **questions** - ask specific questions to focus students’ responses and increase involvement
- **simplify language** - reduce amount of auditory distractions; use consistent terms for familiar routines or activities
- **repetition** - repeat main points frequently

## Low Tech

### Communication

- **manipulatives** – use objects, pictures etc. to enhance spoken language
- **symbols** - add photos, colored line drawings, or written words to supplement spoken language
  - **objects** – actual items or 3-D parts of items; may be mounted on cardboard or other surface
  - **photos** – pictures taken with a digital or regular camera
  - **line-drawings** – color or black & white pictures that represent words and phrases; with or without text labels; does not require reading; BoardMaker software is good source (see high tech)
  - **words/text** – prepared words or text composed or dictated by the student
- **pointer** – light or stick pointer to help to focus attention on relevant information
- **highlighter** - use tabs, flags, highlighter tape or pens to draw attention to target information
- **expressive communication supports** – tools that are primarily intended to facilitate the student’s output or expression of wants/needs, information, social comments
  - **choice board** – can be used with any of the different symbols, mounted or displayed on a board in the classroom or on a portable surface; provides an opportunity for the student to have control and input; choice ideas: computer programs, partner to work with, order of work activities, free time activity etc.
  - **Picture Exchange Communication System (PECS)** (Pyramid Educational Consultants; Mayer-Johnson Inc.) – structured program using discreet trials and passing symbols to partners; starts at level of basic wants/needs and gradually builds to longer utterances and different communication purposes; often used by people on Autism spectrum who may have difficulty engaging their partner or pointing
  - **topic boards** – vocabulary related to a specific topic; includes symbols representing different parts of speech and communicative functions; can be easier for the student who can’t/won’t turn pages or who needs more focused vocabulary to improve participation
  - **large vocabulary communication book** – contains personal vocabulary and academically related terms; can encompass over 1000 pictures and requires page flipping to combine words or pictures for a message; a comprehensive book that can be used to support a wide range of academic and non-academic interactions
  - **white board** - written text or text with drawings on erasable board which can be spoken by student; helps with retrieval of information and to provide a closed set of options for a student who has difficulty generating appropriate responses when needed
  - **notebook** - written text or text with drawings in notebook to be spoken at appropriate time; same uses as above, but does not need to be erased
  - **letter board** – portable board with printed alphabet (regular or keyboard layout); facilitator can point to letters to spell out spoken words; student can provide letter cues when his or her speech is not understood
  - **conversation book/pages** – small book or page containing pictures (and text) that provides information about who the student is, their likes and dislikes and personal information; contains more social and personal vocabulary and can resemble a scrap book or photo album; offers students who have difficulties engaging in conversation an opportunity to set a topic and engage in less formal conversation
- **receptive communication supports** – tools that help improve the student’s understanding of incoming of information
  - **schedule** (Hodgdon) – sequence of symbols representing significant activities; helps prepare students for transitions, gives information about what is going to happen, and is a visual reminder of the day’s events
  - **mini-schedule** (Hodgdon) – sequence of symbols representing tasks within an activity; fosters independence, provides information about expectations, and is a static reminder of what to do next; student can mark their place in the sequence by using a reusable sticky tab on the current item, or covering or removing completed items

- **calendar** (Hodgdon) – pictures and/or text displayed for a period of a week or a month at a time; helps mark significant events from home and/or school in a non-transient way; fosters discussion about past and future events
- **school/home supports** (Hodgdon) – page of symbols or text representing common home or school activities; student uses it as a basis of conversation when out of that context; can replace teacher to parent daily journal by putting information in a format that the student can access and understand and share
- **remnant box** – receptacle for scraps of items related to the day’s activities; student uses it as a basis of conversation when out of that context; partners can comment on the items to model appropriate vocabulary and engage in a social interaction
- **color/picture coding** – colors or pictures are added to objects with numbers to signal time for students who are not able to use numbers functionally (e.g., use different color markers represent 5” intervals on a timer – “You have ten minutes till lunch – set the timer on the green”; place symbols on the hands of the clock – when they match up with the symbols on the perimeter, it’s time for a specific activity)
- **“no” communicator** (Hodgdon) – dark post-it, “X” or other tangible representation of “no”; used to cover up items or objects or choices that are not available rather than simply saying “no”
- **instruction book/display** – large pictures with text representing common instructions or requests (e.g., “line up”, “wait”, “one more minute” etc.)
- **write-on wipe-off board** - written text or text with drawings on erasable board to enhance auditory input, provides a visual correlate for spoken language; reinforces spelling skills
- **notebook** - written text or text with drawings in notebook to enhance auditory input, provides a visual correlate to spoken language
- **letter board** – portable board with printed alphabet (regular or keyboard layout); facilitator points to initial letters or spells out key words to enhance spelling skills

## **Mid Tech**

### Communication

- **tape recorder** - tape record messages, answers, etc.; useful for student who has trouble “performing” in a timed response situation (e.g., reading aloud, answering questions etc.); also helpful for longer pieces of information (e.g., reading a paragraph of text); may be motivating
- **head phones** – corded or cordless versions can help student focus on computer or other auditory equipment
- **assistive listening device** – student wears headphones and receiver and instructor wears transmitter, to help eliminate auditory distractions; volume is adjustable
- **portable voice recorder** – single message or series of messages recorded on a small palm held device; reminds students of what they need to do or get; allows for quick recording and repeat listening
- **Can-Do recorder** (AbleNet) – small device that records and reads messages placed on magnetic strips of corresponding cards; words, phrases or sentences can be easily recorded and changed; students can practice speech sounds, words; place picture or word on card and have student name first, then check their answer by sliding it through
- **digitized voice-output communication aids (VOCA’s)** – communication devices which use recorded speech paired with symbols to allow students to express themselves verbally; available in a great variety of styles, capabilities, and cost to match with student need
  - **single message/target voice output communication aids** - capable of one recorded message and/or has one target to select; good for students who have difficulty making an accurate selection from a field or who has physical access issues; e.g. **Step-by-Step Communicator, One-Step Communicator, Big Mack** (AbleNet); **Recording Picture Frame** (Radio Shack)

- **single level, multiple message voice output communication aids** - capable of retaining only one set of recordings at a time; less expensive than multi-level devices, but they need to be reprogrammed for each new activity; broad range of number of possible symbols depending on the device, so students at very different ability levels can satisfactorily use these; e.g. **Tech Four, Partner Four (AMDI) Twin Talk, Cheap Talk 4, 8, Switch Module (Enabling Devices) Mini-MessageMate, MessageMate 20, MessageMate 40 (Words +)**
- **multiple level voice output communication aids** - capable of retaining more than one set of recordings at a time; each target can hold a multiple recordings, accessed via choosing a different level; more costly than the single level devices, but minimizes the need for repeated recording; wide range of target numbers on the display depending on the device selected; e.g. **Tech Speak, Tech Talk (AMDI); Go Talk (Attainment); Cheap Talk 8 with levels, Cheap Talk 4 with levels (Enabling Devices); Multi-Level MessageMate 40 (Words +)**

## **High Tech** Communication

- **dynamic display voice-output communication aids** – computer based system that changes displays by selecting targets via touch screen, mouse or alternative access techniques; e.g. **DynaMyte, DynaVox (DynaVox Systems); Freestyle, Gemini (Assistive Technology, Inc.)**
- **spelling based voice output communication aids** – user types in text, which is then spoken for communication partner; e.g., **LightWriter (Zygo Industries), LINK (Mayer-Johnson Inc.)**
- **text to speech software** – software that speaks what is typed; speaks letters, words, or sentences or any combination of these; e.g. **IntelliTalk II (IntelliTools)**
- **BoardMaker (Mac/Win) (Mayer-Johnson Inc.)** – 3500+ picture symbol dictionary with text labels; 10+ languages; available in Win and Mac platforms; useful for creating many of the low-tech communication supports above, overlays to go with mid-tech devices, as well as classroom visual supports
- **Print ‘n Communicate (Mayer-Johnson Inc.)** – 21+ ready to print category based communication boards; requires BoardMaker software; useful as a starting point to which you add individualized message for a student’s large vocabulary communication book (low-tech supports above)
- **Speaking Dynamically Pro (Mayer-Johnson Inc.)** – software that allows for the creation of communication messages using text, symbols or any combination of both; messages can be seen, spoken and/or printed

<h2 style="margin: 0;">Tools and Strategies for Comprehending, Composing and Organizing</h2>
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***Skills:***

organize	format	sequence	create	use personal knowledge
comprehend	integrate	compare	generate	recognize information / answer
summarize	synthesize	use / understand	grammar	use / understand topic vocabulary

**No Tech**

Comprehending, Composing, and Organizing

***learning***

- **finger tap** – use hand or finger movement for syllable counting
- **preview** - provide overview of material to be covered, including main ideas, vocabulary etc.
- **multi-modal presentation** – use as many input modes as possible to provide information (visual, auditory, tactile etc.)
- **visualization** - teach imagery techniques for comprehension; provide specific instruction on pictures the student can use in their minds to help reinforce a concept
- **define terms** - define often used terms (post if possible) and use them consistently
- **connect information** – overtly note the link(s) connecting previously mastered knowledge to new material, record if possible
- **interesting content** - incorporate students’ interests as examples; e.g., sports, fashion, games, collectibles
- **repeat exposure** - provide multiple opportunities to see materials, have access to the content, see the materials used in different ways
- **simplification** - reduce or simplify the number of steps for a student, eliminating less important steps to improve the student’s focus on the more important goals of the activity

***responding***

- **guiding question** - provide thought provoking questions, written or verbal, to help guide student’s response
- **choice of response mode** - allow student a choice of methods for demonstrating knowledge; e.g., text, drawing, oral, multimedia
- **closed set** – offer a limited set of responses for student to select answer from (verbal or visual multiple choice) rather than open set (e.g., fill-ins) for students who have difficulty generating information
- **group writing** – students work in a group to generate ideas; different student take different roles, relying on individuals’ strengths
- **brainstorm** - individually or in groups generate ideas freely; if recording, write topic in the middle of page then quickly free associate, listing all responses without judgement; related ideas branch out from the topic and can later be grouped into clusters; add appropriate picture/symbols (e.g., spider, tree, flower, etc.)

**Low Tech**

Comprehending, Composing, and Organizing

***materials***

- **veltex** (P & A Sales) – soft material for securing items backed with velcro; eliminates the need for soft Velcro and allows for more flexible placement; make a veltex glove to place story characters (backed with velcro) or other elements; a veltex covered board holds cards with main ideas, key words, etc. that can be moved, removed, added to etc.
- **magnifying glass** – a fun way to “find” information; adds motivation and makes it easier for students with visual limitations

- **notebook** – a specific location to record key points from a lesson; student can refer to it when preparing a presentation, reviewing material for discussion or completing related lessons
- **exemplars/models** - post examples of completed assignments (past student work or instructor created), noting scores awarded and provide a rationale for each
- **materials list** - personal or class version list of items needed to complete task
- **posted information** - post written directions for hardware and software use; post homework on the board; post visual reminder of topic; clearly define and post the goal and purpose of the activity; record auditory information in a visual form to remind students and decrease repetition

#### ***organizing time or space***

- **student planner** – personal calendar and notebook for student to keep record of events, assignments, important dates etc.
- **visual schedule** – order of student turn-taking, daily schedule, order of tasks
- **check lists** - “Did I...?” or “To do...” lists which students check as they go
- **prompt cards** - to illustrate the steps required to complete a task, including materials needed
- **environmental labels** - using pictures, words, photos, or symbols to designate where items belong in the class or student’s personal space (i.e. locker, desk, notebook)
- **basket/bins** - use bin or baskets for work “to do” and work “done” clearly defined
- **push pins hangers** - use push pins under photos of choice areas in class - students hang their name on a pin, when pins are full the area is full
- **object location markers** – associate objects with specific activity choices (i.e. paintbrush for easel, disk for computer); students select activities by their object and when the objects are all selected that area is no longer an available option; teacher shows the object when referring to the activity to enhance understanding
- **pencil holder** – velcro pencil to the desktop to keep it from rolling off; cut slits into foam (i.e. window insulation foam) for holding pencils and secure foam to desk

#### ***organizing information***

- **color coded template** – assign specific colors to parts of speech
- **color code** – assign specific colors for the main idea or other key information, e.g., character, setting, problem, etc on key points as they are read
- **highlight** - main ideas or other key information (e.g., character, setting, problem); to focus on key points as they are read; highlight the target vocabulary words from a larger field of text; highlight syllables
- **tab/flag** – use removable sticky tags to designate main ideas or other key information (e.g., character, setting, problem); place on key points as they are read; show where specific information can be found by matching colored flags placed on the worksheet and the related text
- **colored tape** – color code like items (e.g., easiest books = red tape on spine)
- **index cards** - segment components so they can be physically manipulated; create sentences from individual word cards, diagram sentences, recognize answers to comprehension questions from a field, record vocabulary words; use text alone or text with pictures/symbols
- **sentence strips** – segment components of paragraph or story so they can be physically manipulated; for sequencing stories, retelling story, recognizing answers to comprehension questions
- **sticky notes** – different colored post-its for main terms, headings etc; for sequencing events “first”, “next”, and “last”; reminders in relevant locations; cover unused parts/simplify computer screen; cover specific sounds in words or words in sentences; post as reminder in relevant locations; use to record brainstormed ideas on large mural or poster paper (later group into categories, with links made with colorful markers and illustrations added); colored stickies can be used to label headings/categories; record possible responses or choices on separate sticky notes, when the student selects one they place the note in the answer spot
- **colored pens** – edit work; use in note-taking to differentiate vocabulary, types of information, sections etc.

#### ***graphic organizers for information***

- **word splash** - display selected terms randomly and at different angles; a starting point for students to brainstorm and generate complete statements which describe the relationship between each term and the broader topic.
- **graphic organizers** - done by hand or with software (see High Tech); the following descriptions of graphic organizers were taken from the Inspiration software manual:
  - **concept maps** – hierarchical diagram representing concepts from the most general to very detailed, linked by descriptions of the relationship
  - **idea map** – visual brainstorming to generate ideas and develop thoughts
  - **web** – main idea branches out and connects different pieces of information; good for story analysis
  - **matrix** - create a chart/grid to show attributes, compare/contrast, show similarities/differences visually e.g., names of animals on the horizontal axis, characteristics of the animals on the vertical axis
  - **Venn diagram** - 2 or more overlapping circles which are used to show similarities and differences visually, e.g., circle A (characteristics of desert climate) is different from circle B (characteristics of coastal climate) and where they overlap (section C) is the list of shared characteristics
  - **continuum** - use for time lines of historical events, degrees of something, shades of meaning, rating scales; e.g., continuum of low to high tech tools for education

### *learning*

- **word dice** – words written on each side of a cube (i.e. made from milk cartons) for sight word development, vocabulary, synonyms etc.
- **personal materials** – student is provided with a personal version of class material, to increase focus, allow to manipulate materials, customize for their needs etc.
- **illustrations** - use drawings to aid in determining text meaning; express understanding of information through drawings; use to generate ideas
- **pictures** - use photos, pictures, and symbols with words to convey ideas and promote recall of information; (e.g., **BoardMaker** – Mayer-Johnson Co.)
- **word wall** - lists of words posted with or without pictures and definitions; words can be organized into groups (e.g., by topic, parts of speech)
- **objects** – use actual objects to enhance meaning of text or understand and recall specific vocabulary; make representations of significant people, places or things using clay, paints, or collages
- **Story Grammar Marker** (Discourse Skills Productions, Inc.) – to preview/review story narrative and support reading of text; this interactive, tactile tool made of yarn, bead, and objects is used to represent narrative structure; students each use smaller versions of the Markers to work along with the teacher; aids in organization/recall; also a terrific tool for problem-solving & solving disputes; different versions for older versus younger students
- **visuals with speech** - add objects, photos, colored line drawings, or written words to supplement spoken language
- **word rings** – laminated vocabulary cards or sentence strips hooked onto large metal book rings; keeps relevant vocabulary together
- **word windows** - bind together letter cards (e.g., b, c, f) and word families ('at') – student flips cards to form new words (e.g., bat, cat, fat); repeat with sentences, creating new sentences by flipping word cards to change the content
- **story starters** – student is provided with part of a sentence or paragraph, which s/he then completes; good for student who have difficulty initiating topics or generating ideas
- **vocabulary list** - create a personal vocabulary list for a student with words that need to be reviewed
- **word games** – provide fun ways of learning key vocabulary, definitions or spelling words by using word searches, crossword/math puzzles, and mazes created and printed from the web ([www.Puzzlemaker.com](http://www.Puzzlemaker.com))

## Mid Tech

Comprehending, Composing, and Organizing

- **personal recorder** – small, hand held, recorder to record homework assignments, things to remember etc.
- **hand-held talking dictionary/speller** – e.g., **Franklin Homework Wiz & Speaking Homework Wiz**, dictionary/thesaurus; spell check; create personal word list; words appear on small screen; target words, definitions, and synonyms can be pronounced aloud in speaking version; offers practice in cursive and print handwriting; arithmetic tutor & calculator; **Speaking Language Master, Special Edition** a more sophisticated device which can be customized for different learning disabilities and has adjustable speech speed; ideal for blind users; an extra large screen is provided for visually impaired students (these and other versions available from Franklin Electronic Publishers)

## High Tech

Comprehending, Composing, and Organizing

- **Power Point slide show** (Microsoft Office) - create slide show presentation of information; one slide per word for word identification, review of definitions etc.; set the timing for moving from one slide to another at a pace appropriate for the student and increase the time as s/he improves
- **real symbol icons** - create easily recognizable icons for specific computer programs using screen shots
- **Inspiration (K-12) & Kidspiration (K-3, talking feature; Touch Window access)** (Inspiration Inc.) – provides a variety of formats for visually representing, organizing, recording and relating ideas and concepts (see “graphic organizers” above)

## Tools/Strategies for the Mechanics of Writing/Drawing

writing mechanics

**Skills:**  
produce drawings

spelling

### **No Tech**

Mechanics of Writing/Drawing

- **time** - allow more time to complete assignments
- **reduce quantity** – require less output
- **model** - teacher/peer/aide writes the word to show student how to form letters
- **fill-ins** – allow student to fill in key words as opposed to writing entire sentence
- **modify** – simplify written forms; make templates for student to complete
- **multiple choice** – offer field of potential answers to circle as opposed to writing
- **warm-up exercises** – for hands/arms prior to writing

### **Low Tech**

Mechanics of Writing/Drawing

- **vertical/slanted surfaces** – angles the writing surface for easier viewing or reaching; may allow access from varying positions (e.g., sitting, standing, kneeling)
  - **slant board**
  - **notebook** - turned sideways, sloping toward student
  - **easel** - table top or large standard easel
  - **book holder** – keeps book upright, opened to appropriate page; lucite version protects the page by displaying it behind the lucite board
  - **chalkboard** – small, personal version or wall mounted; large/small chalk, for writing/erasing
  - **wall** – tack papers on a wall; use varying sizes and types of paper, e.g. worksheets, mural paper, wallpaper
  - **velcro cloth** (P & A Sales) – adhered to boards, walls, or other slanted surfaces; items can be attached with velcro
  - **felt board** – adhered to boards, walls, or other slanted surfaces; flat and folding flannel boards are available; items can be attached with velcro
  - **card holder** – small plastic or wooden strip with a notch or clip for holding flash cards, playing cards, pictures, etc. upright
- **tactile materials** - provides sensory and kinesthetic feedback
  - **sand** – trace letters, numbers etc. with finger in sand
  - **finger paints** - trace letters, numbers etc. with finger in finger paint
  - **sandpaper** – cut out letters, numbers etc. for finger tracing; can be mounted on cards
  - **puff paints** – write out letters, numbers etc.; when dry, this 3-D paint can be traced
  - **glue** – write out letters, numbers etc. to create a raised version to trace with finger; add glitter, sand, salt or any other material to create different textures
- **clipboard** - to hold papers for drawing, writing, etc.
- **non-slip pads** - keeps objects from slipping on table/wheelchair, e.g., between slantboard and table; on seat of wheelchair; under clipboard with writing paper (e.g., **Dycem** – Therapro; Contact brand **Rug Lock, Grip Liner**<sup>TM</sup> - grocery/variety stores)

- **finger grip ruler** – regular ruler with ridge in the center to grasp easier and keep fingers out of the way while drawing a line (office supply, LoTTIE Kit, educational supply)
- **highlighters** - use in place of pen/pencil to indicate important information, to draw, etc.
  - **markers** – individual colored pens
  - **tapes** – thin highlighter tape can be unrolled and cut to any length to cover words, sentences etc.
- **tabs** – individual dispenser of colored tabs can be placed next to or over important info, mark a page etc.
- **word walls** - to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
- **word rings** - another way to reinforce topic/story vocabulary by putting text, drawn/cut-out/scanned pictures/drawings, story characters, Picture Communication symbols, etc. on oaktag cards; then create rings with the cards using binder rings, shower curtain rings, pipe cleaners or yarn
- **handwriting instruction books/guides** – provides instruction on how to write (e.g., **Beginning Connected, Cursive Writing**, Calvert School Store)
- **tracing** - “writing” letters in sand, finger paints, salt, beans, etc. to practice letter formation and provide kinesthetic feedback
- **tactile letters** - made with sandpaper, puff paints, glitter, glue, etc. for tracing, to practice letter formation and for kinesthetic feedback
- **3D outlines** - enhance lines to make them tactile using puff paints, glue, hot glue
- **magnetic alphabet** - arrange into words for writing, spelling on magnetic surface (e.g, cookie sheet)
- **magnetic alphabet board** - for use with magnetic letters/numbers/words
- **magnetic printer paper** - to create magnetized letters, words, graphics, etc. (office supply)
- **Scrabble/letter tiles** – to arrange into words for writing, spelling
- **letter/number representations** – made out of clay, paints, collages; for tactile and visual reinforcement; make a clay alphabet/numbers; have students make their own
- **dot-to-dot letters** – letters written in dots for student to connect and complete
- **pencil grips** - stabilizes student's grip on pen or pencil; commercially made or make your own with a piece of foam or non-slip material; (e.g., **Rug Lock** office supply, grocery)
- **adapted pens/pencils** – soft, padded thicker grip (**Dr. Grip** office supply); small, oval, fits in palm (**EvoPen**, **TheraPro**); triangular pencils
- **lighted pen** - battery-operated, with a light at the tip to support visual tracking while writing (**Nightwriter** Electro-Optix)
- **writing implements** – try markers, paints, fat crayons/pencils, grease pencils, crayons, markers, finger paints, paints, Chunky brushes (big handles); experiment with what works best for the student
- **paper position** – vary the standard positioning may not work for all students
- **enhanced line paper** - commercial raised line paper or adapt your own paper by printing lines in a color, then laminating the paper and gluing over the lines to enhance them, e.g., **Right-Line Paper** - Wide Rule or STOP-GO red/green (Therapro)
- **dry erase board / small chalkboard** - write and erase surface for students to communicate quick messages with wipe-off markers/chalk and erasers; use with erasable crayons for more drag
- **plastic writing guides** - keeps pen/pencil within a limited rectangular space (ILA, LoTTIE Kit)
- **stencils/templates, tracing paper** – to serve as guides for practice
- **rubber stamps & stamp pad** - for letters/numbers/name (Educational Insights, LoTTIE Kit)
- **Magic Rub Erasers** - easier to use than regular erasers; don't tear paper (Sanford/Eberhard Faber/LoTTIE Kit)
- **correction/cover-up tapes** - to correct mistakes in writing if erasing is a problem (office supply, LoTTIE Kit)
- **tape** - to hold writing paper in place on desk (office supply)

- **prewritten words/phrases on labels/cards/paper**- for answering questions or other writing tasks
- **peer/aide note taker** – use carbon paper, NCR paper
- **keyguard** - flat board with cutouts for keys which sits on keyboard and provides more control for user; prevents unwanted choices
- **large print keyboard labels** – stick-on labels make letter/number/function keys more visible; upper case and lower case (with color-coded vowels) available; available in white on black (high contrast) or black on beige (to match keyboard); e.g., **Zoom Caps** - (Don Johnston)
- **alternative keyboard keyguards** - provide more control for user to prevent unwanted choices, e.g., **IntelliKeys** and **Discover:Board**
- **mouth stick** – for typing/computer control if use of hands is extremely limited

## Mid Tech

Mechanics of Writing/Drawing

- **digital voice recorder** - record homework assignments, etc. (office/electronic supply)
- **AlphaSmart** – portable battery-powered word processor with option of data transfer to desktop computer; simple, easy-to-use word processor; 4/ lines of text on screen; additional software available for more features (e.g. **Co:Writer** word prediction)
- **DreamWriter** (Brainium Technologies) – portable battery-powered word processor with option of data transfer to desktop computer; 3 models; more features, but also more complex to use than AlphaSmart; 4 or 8 line display (model 150) to 18 line display (model 500); keyboarding, spell check, math drills, etc.; access features include sticky shift key, calculator, spell check, dictionary, daily schedule (model 500)
- **Hand-held talking dictionary/speller** – e.g., **Franklin Homework Wiz & Speaking Homework Wiz**, dictionary/thesaurus; spell check; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting with animated on-screen guide; arithmetic tutor & calculator; **Speaking Language Master, Special Edition** a more sophisticated device which can be customized for different learning disabilities and has adjustable speech speed; ideal for blind users; an extra large screen is provided for visually impaired students (these and other versions available from Franklin Electronic Publishers)
- **tape recorder** - record answers to tests, etc.; record class lectures (if permitted by teacher)
- **alternative large key keyboard** - for physical/visual/cognitive issues or young children, e.g., **Big Keys Keyboard** (Mac/PC, ABC or QWERTY order, Greystone Digital) or **My First Keyboard** (PC, ABC order, KidTech)
- **full-featured alternative keyboard** - large, accessible touch membrane board offers a choice of keyboard overlays plus a wide variety of commercial and teacher-made overlays, allow students to "write" on the computer by pressing letters/pictures/words, includes speech output, e.g., **IntelliKeys** (IntelliTools) or **Discover:Board** (Don Johnston)
- **switch, trackball, joystick** – alternative to keyboard control of computer

## High Tech

Mechanics of Writing/Drawing

- **"Easy Access" (Mac) or Accessibility Features (WIN)** - Both Mac & PCs have keyboard control panels that are already on the computer or on Utility CDs, which come with the computer. They allow the user to use sequential keystrokes when two keys need to be held down together. They also allow for slowing or stopping the repeat function of keys, using the keyboard to control mouse/cursor movement and other features.
- **one-handed typing programs** – e.g., **Five Finger Typist** (SoftDawn Software c/o Mayer-Johnson)

- **word processing software** - **Imagination Express** (Edmark) has a record feature for students to record narration for pictures; then the student can use the recorded text to support writing or a peer can assist in typing in text
- **computer draw/paint software** - allow students to be artists even if they can't manipulate a drawing tool; used with the mouse; (e.g., **Kid Pix Studio Deluxe (K-6)**, **Corel Draw K-12**), **SuperPrint Deluxe (K-6)**)
- **word prediction software** - anticipates the words the student wants by offering a list of words to choose from and limiting key strokes (**Co:Writer**, Don Johnston; **Read & Write**, TextHelp)
- **Microsoft Word Forms feature** - can be used to create templates for students to complete on computer or on hard copy (go to View, Toolbars, Forms)
- **touch sensitive screen** - selections are made by touching the screen as opposed to mouse clicking - e.g., **TouchWindow** (Edmark)
- **multimedia software** - can be used to create on-screen activities for students, e.g., **PowerPoint**, **IntelliPics**, **HyperStudio**, **Kid Pix Deluxe**, etc.
- **Discover:Switch** (Don Johnston) - provides physical access to all software programs, including on screen keyboard, offers text-to-speech output
- **Discover:Ke:nx** (Don Johnston) – box and software which allow for keyboard/mouse alternatives, e.g., switch, trackball, etc., to be used with any computer program
- **head control of computer** - user can write with on-screen keyboard, **HeadMouse** (Origin Instruments) or **HeadMaster Plus** (Prentke Romich)
- **on-screen keyboard software** – input via switch, mouse, joystick, trackball, or Eye Gaze, etc., provides access to a keyboard image on screen and letters are selected one at a time through direct selection or a process of scanning/highlighting the keys for selection, e.g., **Discover:Screen** (Don Johnston), **On Screen** (R.J. Cooper)
- **scanner** (plus optical character recognition & word processing software) - "writing" is done by manipulating scanned-in text rather than typing in text, e.g., **OmniPage Pro** (ScanSoft)
- **voice recognition software** – user speaks into microphone, which translates speech into text; used for specific cases of intensive physical limitation or learning disabilities, e.g., **Naturally Speaking** (Dragon Systems/Lernout & Hauspie)
- **JOUSE** (Prentke Romich) - joystick-operated mouse that is controlled by mouth; attaches to desk; sip and puff mouse activation
- **Eagle Eyes** (Boston College) - allows for control of the cursor on the computer through eye movement using electrodes (for drawing and spelling)
- **eye gaze** - allows for computer control through eye movement; used for communication, environmental control, word processing, games, etc.; e.g., (LC Technologies/Eyegaze Systems)

## Tools and Strategies for Numeracy

### Skills:

exploration	probability	whole number computation	estimation
problem-solving	geometry	number sense & numeration	fractions & decimals
evaluating for accuracy	spatial sense	patterns & relationships	measurement
information organization	logical & critical thinking	strategy identification & statistics	
concepts of whole numbers			

### No Tech

#### Numeracy

- **simplify presentation** – keep presentation of problems clear and not too many per page
- **write out problems** - eliminate need to copy problems and have students record answers only
- **additional time** – allow needed extra time to complete task
- **peer/adult support** - read problem & record response
- **cross-age tutoring** – pairing older/younger students can benefit both
- **mental arithmetic** – if writing presents a barrier have student narrate mathematical processes to peer/adult
- **visualization** – teach imagery techniques, e.g., have students narrate math process
- **mnemonic devices** – to aid memory, create chants, rhymes, raps, etc., where 1<sup>st</sup> letter of word represents a step
- **“Finger Math”** (PRCVI & Chisenbop) – assist mastery of mental calculations, method of using one’s hands much like the abacus
- **multi-modal instruction** – use as many input modes to provide information (visual, auditory, tactile, etc.)

### Low Tech

#### Numeracy

- **modified paper** - bold line, raised line, assorted graph, enlarged graph (purchase or via photocopier)
- **rubber stamps** – student with writing difficulties record answers and practice number order, sequence, & targeting skills
- **finger pinch ruler** – for students with fine motor difficulties, allows ruler to be grasped with finger pinch
- **math matrix** – charts/tables; number fact sheets, 100’s, place value, combinations & formulas, large print/Braille, bold lined, colored & raised; addition, subtraction, multiplication, division, e.g., Multiplication and Division Table (APH)
- **Mathline** (Howbrite Solutions, Inc.) - tangible number rod(s) with gliding markers to visually demonstrate relationships, basic concepts, operation sense, size, quantity and calendar skills. K-12
- **number lines** - raised, large, tactile, life size; used to show size, order, all types of numbers together (positive, negative, fractions, decimals, and whole), scale, i.e., thermometer, graphing, i.e., axes
- **computational aides** – abacus, counters, manipulatives, beads, Cuisenaire rods, base ten blocks, Unifix cubes, fraction bars, discs, chip trading, marbles, dice for probability, algebra tiles, coins and bills
- **plastic writing guides** - keeps pen/pencil within a limited rectangular space; hold vertically to isolate one row of numbers (ILA, LoTTIE Kit)
- **containers for counters** – for sorting, categorizing by number, color, size, etc.
- **enlarge worksheets/print** – eliminates visual distractions, may reduce anxiety when presenting numerous problems

- **flash cards** – for practice and peer challenges
- **tactile numbers / signs** – magnets, flannel board/numbers, etc.
- **highlighter** – a visual marker to emphasize key numbers, steps etc.
- **highlighter tape** – for tracking down or across columns & charts, or to draw attention to items/figures
- **personal chalk/white board** – reduces frustration for students with writing/erasing difficulty, practice/error free, visual support
- **mathematical games** – student/teacher made; to foster mathematical communication as students explain and justify their moves
- **sports math** – high interest, functional activities, e.g., keeping score, recording and figuring game statistics, player averages
- **tangrams** - ancient Chinese, manipulative piece puzzle, consisting of 7 geometric shapes used to develop spatial coordination & patterns. (educational supply)
- **geoboards** – tool for investigating geometry, patterns, comparing, fractions, number recognition & operations; rubber bands are used to create shapes/designs. (educational supply)
- **graph paper** – various sizes of grids; also available on the computer (Onion Mountain Technology)

### Mid Tech

#### Numeracy

- **calculator** - hand held, talking, with printout, large display, large keypad, graphing (education, office & vision supply)(APH)
- **talking calculator** – will speak numbers as they are entered for verbal reinforcement
- **tape recorder** - to record, counting, math facts, (i.e. multiplication rap), combinations, formulas
- **overhead projector** – large, visual support
- **digital measuring tape** - digital display in numbers of length measured
- **Coin-u-lator** (ParentBanc) – buttons on the face look like coins, for coin recognition, counting, & matching game, addition & subtraction; LCD screen

### High Tech

#### Numeracy

- **Access to Math** (Mac) (Don Johnston) – teacher customized and/or program generated, printed or on-screen, talking worksheets; Gr. 1-8; auditory and visual supports; Alternative input features: key equivalents; automatic navigation and Discover setups.
- **Big:Calc** (Mac) (Don Johnston) large, on-screen, talking calculator; Gr. K-5; Access features: flexible auditory and visual reinforcements, versatile screen layouts; access customized single switch scanning; Ke:nx; touch screen.
- **Blocks in Motion** (Mac) (Don Johnston) - creative activity program for sequencing skills, problem solving, logical and critical thinking, and exploration of concepts. Gr. K-8. Access features: mouse, key equivalents, single switch, alternative mouse, touch screen, Discover setups, Ke:nx.
- **MathPad** (Gr. K-2) & **Math Pad Plus** (Gr. 3-5) (Mac/Win) (IntelliTools) customizable electronic addition, subtraction, multiplication & division worksheets. Access features: mouse, IntelliKeys, switches
- **IntelliMathics** (Mac/Win) (IntelliTools) allows user to investigate mathematical relationships and solve problems as they move, rotate, color & sort on-screen manipulatives, e.g., attribute blocks, geometric shapes, base ten blocks, coins, & dice into sorting bins, e.g., Venn Diagrams, counting boxes, etc. Access features: mouse IntelliKeys, switches
- **calculator** - computer based, on-screen

- **image enhancer** - dark line drawings (drawn with a pencil or china marker, photocopied, or printed out) on special paper are enhanced/raised to make them tactile, e.g., geometry problems, maps, etc., **Swell Form Graphics Heating Machine & Swell Touch Paper** (American Thermoform Corp.) & **Tactile Image Enhancer & Flexi-Paper** (Repro-Tronics, Inc.)
- **Unifix Software** – (Didax Media) onscreen manipulatives w/ auditory support, access features: single switch e.g.; Unifix Cubes, counting bears, people, etc.

## Tools & Strategies for Physical and/or Cognitive Access

### Low Tech

Physical and/or Cognitive Access

- **vertical/slanted surfaces** – angles the writing surface for easier viewing or reaching; may allow access from varying positions (e.g., sitting, standing, kneeling)
  - **slant board**
  - **notebook** - turned sideways, sloping toward student
  - **easel** - table top or large standard easel
  - **book holder** – keeps book upright, opened to appropriate page; lucite version protects the page by displaying it behind the lucite board
  - **chalkboard** – small, personal version or wall mounted; large/small chalk, for writing/erasing
  - **wall** – tack papers on a wall; use varying sizes and types of paper, e.g. worksheets, mural paper, wallpaper
  - **velcro cloth** (P & A Sales) – adhered to boards, walls, or other slanted surfaces; items can be attached with velcro
  - **felt board** – adhered to boards, walls, or other slanted surfaces; flat and folding flannel boards are available; items can be attached with velcro
  - **card holder** – small plastic or wooden strip with a notch or clip for holding flash cards, playing cards, pictures, etc. upright
- **tactile materials** - provides sensory and kinesthetic feedback
  - **sand** – trace letters, numbers etc. with finger in sand
  - **finger paints** - trace letters, numbers etc. with finger in finger paint
  - **sandpaper** – cut out letters, numbers etc. for finger tracing; can be mounted on cards
  - **puff paints** – write out letters, numbers etc.; when dry, this 3-D paint can be traced
  - **glue** – write out letters, numbers etc. to create a raised version to trace with finger; add glitter, sand, salt or any other material to create different textures
- **clipboard** - to hold papers for drawing, writing, etc.
- **non-slip pads** - keeps objects from slipping on table/wheelchair, e.g., between slantboard and table; on seat of wheelchair; under clipboard with writing paper (e.g., **Dycem** – TheraPro; Contact brand **Rug Lock, Grip Liner**<sup>TM</sup> - grocery/variety stores)
- **rubber stamps & stamp pad** - for artwork/writing letters/numbers/name; for students with limited mobility, may be faster than writing
- **roller stamps** (TheraPro) - to create patterns/artwork, roll stamps in ink then on paper or other surface; can use two hands
- **finger grip ruler** – regular ruler with ridge in the center to grasp easier and keep fingers out of the way while drawing a line
- **highlighters** - use in place of pen/pencil to indicate important information, to draw, etc.
  - **markers** – individual colored pens
  - **tapes** –thin highlighter tape can be unrolled and cut to any length to cover words, sentences etc.
  - **tabs** – individual dispenser of colored tabs can be placed next to or over important info, mark a page etc.
- **velcro** – secures item in place (e.g., attach a switch to one hand with Velcro, the other hand hits the switch); velcro can also be used to attach puzzle pieces to the puzzle back attached to wall or floor for greater control

- **adapted scissors**
  - **electric scissors** – battery powered; scissor blades open and close rapidly when turned on; switch adapted version available from AbleNet
  - **loop scissors** - pliable plastic handle in the shape of a loop rather than finger holes; blunt tip
  - **Fiskars** - for use by either hand, blunt tip
  - **children’s scissors** - for small hands, right or left handed versions available, rounded tip
  - **OLO™ Rolling Scissors** – eliminates the cutting motion, for right or left hand
  - **Squizzers** - child-sized, short blades, easy to use
- **built up handles** – use foam pipe insulation from the hardware to add thickness to handles of paint brushes, foam brushes, crayons, markers etc.; slip ½ inch sewing elastic through pipe insulation and tie, then wrap elastic around the back of the hand to hold handle in the student’s palm
- **page turners** - clothes pins clipped to pages; sponges glued to page separate pages from each other; paper clips on pages used with magnetic wand
- **enhanced controls** – build up or replace existing switches on commercial battery-powered games using epoxy
- **Universal cuff** (TheraPro) - holds crayons, markers, paint brush, utensils, toothbrush, etc.
- **Ergo Rest** (Keyboard Alternatives and Vision Solutions Inc.) – arm support for drawing, painting, and keyboarding
- **keyguard** - flat surface mounted over the keyboard with cutouts for individual keys; user can rest their hands on the surface and access the keys using their finger or other pointing implement (e.g., eraser end of pencil); helps prevent accidental selection of keys due to dragging or leaning on keyboard; keyboard labels may be useful to make keys more visible; specialized keyguards are also available for many alternative keyboards (e.g., IntelliKeys, BigKeys)
- **large print keyboard labels** – stick-on labels make letter/number/function keys more visible; upper case and lower case (with color-coded vowels) available; available in white on black (high contrast) or black on beige (to match keyboard); e.g., **Zoom Caps** - (Don Johnston)
- **adaptive devices** – specially designed equipment to serve a particular function and help to compensate for physical challenges; often available from specialty catalogs but some also can be in retail stores
  - **eating/drinking** - foam handles, deep sides, cup with cut out rim
  - **dressng** – buttonhook, elastic shoe laces, velcro in place of buttons, etc.
  - **hygiene** – adapted toothbrush, raised toilet seat, etc.
  - **cooking** - spoons with big grips, etc.
  - **sporting equipment** - lighted bell ball, Velcro mitt, etc.

## Mid Tech

Physical and/or Cognitive Access

- **switches** - translates an action into a machine readable signal for battery operated or electric items; when activated, it connects 2 wires to permit electrical current to flow between them; when released, the switch separates the ends of the wires to interrupt the flow of electrical activity; e.g., **Jelly Bean, Specs, Big Red, String** (AbleNet); **Buddy Button, Microlite, Cap, Grasp, Cup, Leaf, Pillow** (Tash); **tape recorder foot pedel** (Radio Shack)
- **switch accessories** - items that allow the switches to operate different devices or expand the application of the switch
  - **battery adapters/interrupters** (Tash, AbleNet) - switch jack plugs into one end of this cord, while the copper disk on other end is placed between battery and its contact; required for all corded switches used with battery operated items

- **battery switch interface** – battery interrupter and switch plug into this unit to allow for different types of activation; optional for use with corded switches and battery operated items; e.g., **Switch, Latch and Timer** (AbleNet)
- **cordless switches and receivers** – certain switches use infrared technology and can be used with compatible receivers (separate ones used for electronic and electric devices); e.g., **Cordless Switch and Receiver** (AbleNet)
- **electrical switch interface** – unit that links a switch to electrical toys/devices; allows for variations in types of switch activation: direct (item is active as long as the switch is being depressed); latched (each hit of the switch toggles item on/off); or timed (each switch hit activates item for pre-set time before turning it off); required for all corded switches used with electrical items; e.g., **PowerLink 3 Control Unit** (AbleNet)
- **switch interface** – connects the switch to the computer for operating switch software; e.g., **Switch Interface Pro** (Don Johnston Inc.)
- **mounting device** (Tash, AbleNet) - attach to wheelchair or table for easier access to switches, AAC devices or other device
- **switch operated devices** - these items can be operated using a switch for students with significant physical or cognitive challenges who are unable to use the typical controls
  - **Slide Projector Control Adapter** - switch control of slide projectors
  - **All-Turn-It Spinner** (AbleNet) – touch of a button or switch spins the dial and the spinner randomly points to one of 6 targets on the overlay; comes with number and dice overlays; optional overlay creation kit provides blank write-on/wipe-off overlays to make any targets
  - **Scissors** – see adapted scissors above
- **alternative computer access tools:** computer input options; some may require an additional interface to connect to the computer
  - **switches** - see above
  - **joystick** – an alternative to mouse control for the computer; stick control is pushed forward, right, left, or pulled back to control on-screen cursor; must be able to move the stick, track the cursor on-screen, and click a button on the joystick base to select an item; some use an "+" shaped frame to help control the stick movement, and others allow movement at any angle; e.g., Penny & Giles
  - **trackball** – alternative to mouse control for the computer; user rolls a mounted ball (using open hand, fingers) to control the on-screen cursor; must be able to move the ball, track the cursor on-screen, and click a button on the trackball base to select an item; e.g., Penny & Giles
  - **mouth stick** – long stick held in the mouth and with a rubber tip on the end for touching targets; can be used for paper based materials or for typing/computer control
  - **head mouse and Head Master Plus** (see "high tech")
  - **Touch Window** (Edmark) – student touches the screen (mounted over the monitor screen) to operate the computer
  - **Big Keys** (Greystone Digital) – black text on large (1") color keys; ABC or QWERTY format
  - **My First Keyboard** (Kidtech) - ABC order and large colored keys make typing easier
  - **IntelliKeys** (IntelliTools) – 8.5" x 14" touch membrane keyboard; used in conjunction with other IntelliTools software, this keyboard can be used with picture and text targets in any configuration or size as well; keyguards also available
  - **Discover Board** (Mac/Win) (Don Johnston) – talking alternative keyboard with large programmable keys; four additional overlays (mouse controls, numbers, book reading and QWERTY layout) and software for creating customized overlays are provided
  - **Discover Switch** (Mac/Win) (Don Johnston) – switch with on-screen keyboards accessed via scanning; 40 ready-to-use keyboards and software for creating customized boards are provided

## High Tech

### Physical and/or Cognitive Access

- **Easy Access** (Mac) - available in control panels or on Utility CDs (provided with computer); functions include: allowing user to use sequential key strokes rather than simultaneous (e.g., shift and a letter for capital); slows or stops the repeat function of keys; using the keyboard to control mouse/cursor movement; etc.
- **Accessibility Options** (Win) – available in control panels; functions include: allowing user to use sequential key strokes rather than simultaneous (e.g., shift and a letter for capital); slows or stops the repeat function of keys; using the keyboard to control mouse/cursor movement; etc.
- **Click-it!** (Mac/Win) (IntelliTools, Inc.) – software that allows the creation of “hot spots” in most computer programs so the student can access via touching the Touch Window or overlay (alternative keyboard), or scanning (with a switch),
- **Discover Board and Switch** (Don Johnston) – see mid-tech above
- **HeadMouse** (Origin Instruments) – replace the standard mouse for students who cannot use their hands
- **HeadMaster Plus** (Origin Instruments) - head control of computer, user can write with on-screen keyboard
- **Eagle Eyes** ( Boston College) - allows for control of the cursor on the computer through eye movement
- **voice recognition software** – allows student to speak commands rather than typing them using the keyboard or mouse; for specific cases of extreme physical limitation (and rarely for learning disabilities); e.g., **Naturally Speaking** (Dragon Systems)
- **Biggy** (Mac/Win) (R.J. Cooper) – control panel that allows you to enlarge the cursor and change it’s look; easier to follow on-screen

## Tools and Strategies for Reading and Decoding

### *Skills:*

reading mechanics

decode

interpret drawings

use research tools

### **No Tech**

Reading and Decoding

- **strategic reading** - teach students to look for particular information, e.g., review title/chapter headings, locate main ideas, etc.
- **reduction** – reduce the amount of reading required
- **time** - adjust allotted time for assignment
- **physical/verbal** - enhance meaning of reading with gestures, exaggerated facial expressions and intonation during group reading
- **choral reading** – students read together
- **peer tutor** - or adult, to support or read to student
- **finger tap for syllable counting** – kinesthetic and auditory reinforcement
- **discuss drawings** – draw student’s attention to the illustrations, show how it relates to the text; locate of specific vocabulary within the illustrations
- **reading preview** – focus on vocabulary development, story line, background information, etc.
- **student interests** – use sports, games, characters etc. as reading material
- **high interest/low reading level** - locate books that are easy to read but interesting to facilitate fluency in reading and motivation

### **Low Tech**

Reading and Decoding

- **word walls** - to reinforce frequently used words and topic/story vocabulary; create on blackboard, whiteboard, or cards posted on walls; words may be grouped together by category and color-coded
- **word rings** - another way to reinforce topic/story vocabulary by putting text, drawn/cut-out/scanned pictures/drawings, story characters, Picture Communication symbols, etc. on oaktag cards; then create rings with the cards using binder rings, shower curtain rings, pipe cleaners or yarn
- **word dice** – words written on each side of a cube (i.e. made from milk cartons) for sight word development, vocabulary, synonyms etc.
- **highlight tape** – removable transparent highlighter tape, highlighters, etc.; identify target vocabulary words within a larger field of text
- **post-its** - to cover (delete) sounds or to add letters and change the word
- **magnifying glass, word windows, mini-flashlight** - for visual tracking of words/letters
- **Scrabble/letter tiles** – to arrange into words for writing, reading
- **magnetic word sets** – to create sentences, poems, etc.
- **magnetic printer paper** - to create magnetized letters, words, graphics, etc. (office supply)
- **stickies, index cards, sentence strips, etc.** - segment components of stories/words, so they can be physically manipulated e.g., sequencing parts of stories, manipulating word families, etc.
- **adaptive surfaces** – support reading materials for optimal access (e.g. slant boards, easels, non-slip padding)

- **modify worksheets** – simplify format; reduce amount of text; reword in simplified language
- **enlarge print materials** – on photocopier
- **word searches and crossword puzzles** – increase motivation (www.Puzzlemaker.com)
- **colored acetate filters** – laid over text, these can make a tremendous difference for students who have Scotopic Sensitivity Syndrome (SSS - a sensitivity to light which affects depth perception); especially helpful for students with autism/Asperger's Syndrome, e.g., **Transparency Pockets** (office supply stores) or filter kit from *See It Right* which includes multi-colored sets & instructions (See It Right); **special colored glasses** - may be necessary for some students with severe SSS
- **removable sticky arrows** – put arrow in section of text where answer will be found
- **graphic organizers** – to preview/review story narrative, vocabulary, characterization, etc.; e.g., concept maps, Venn Diagrams, story boards, sequence grids, & webs (place topic in center circle, brainstormed related ideas branch out from the topic and can later be grouped into clusters; pictures/symbols can also be used as templates, e.g., spider, tree, flower, etc.)
- **enhance/adapt/modify books:**
  - **objects and actions** - to enhance meaning of text or specific vocabulary; toys or other objects and role playing can provide cues to meanings of words
  - **cut apart and remake books** - use graphics without text, for student to “tell” the story from the pictures
  - **make props** – copy book and cut graphics out; velcro to the pages the book so the book becomes interactive (e.g., students can match characters/objects to the picture in the book, choose the correct picture when asked by teacher, do interactive worksheets, etc.)
  - **simplify text** - paste over original text associated to allow student to read independently
  - **add line drawings** – add line drawings over text so student "reads" via the symbols
  - **clear drawings/photos** - which correspond to text or relate to content
- **Story Grammar Marker** (Discourse Skills Productions, Inc.) – to preview/review story narrative and support reading of text; this interactive, tactile tool made of yarn, bead, and objects is used to represent narrative structure; students each use smaller versions of the Markers to work along with the teacher; aids in organization/recall; also a terrific tool for problem-solving & solving disputes; different versions for older versus younger students
- **colored pens** - for note-taking, to differentiate vocabulary, types of information, sections etc. or to highlight after the fact

## Mid Tech

### Reading and Decoding

- **mini flashlight** - to support visual tracking while reading (electronics/office supply, department stores)
- **tape record text** – for students to hear/review story content or to read along with text
- **books on tape** – to preview content/sequence of story/text (library, audiotape purchase or rental stores, Recordings for the Blind and Dyslexic)
- **video taped versions of stories** – to motivate, make story come alive, and to preview/review story content
- **card reader/recorder** – electronic device which speaks aloud text written on a card; provides auditory feedback to support vocabulary/math skills, **Let's Go Activity Pak - Say It!**, includes **Can-Do** recorder (Ablenet)
- **hand-held talking dictionary/speller** – e.g., **Franklin Homework Wiz & Speaking Homework Wiz**, dictionary/thesaurus; spell check; create personal word list; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting; arithmetic tutor & calculator; **Speaking Language Master, Special Edition** a more sophisticated device which can be customized for different learning disabilities and has adjustable speech

speed; ideal for blind users; an extra large screen is provided for visually impaired students (these and other versions available from Franklin Electronic Publishers)

- **songs** - teach students original or other songs, then use overhead device with song lyrics on the overlays; students read as a group; students take turns tracking the words with a pointer
- **alternative keyboard** - large, accessible touch membrane board offers a choice of keyboard overlays plus a variety of commercial and teacher-made overlays, allow students to "write" on the computer by pressing letters/pictures/words, includes speech output, e.g., **IntelliKeys** (IntelliTools) or **Discover:Board** (Don Johnston)

## High Tech

### Reading and Decoding

- **PowerPoint slide show** - create slides of words for word identification; set the timing at a pace appropriate for the student and increase the time as s/he improves the rate.
- **multimedia software** - adapt/modify books by, e.g., using story graphics alone on slides to "tell" the story, putting graphics and text together on slides, rewriting text at lower grade level, adding symbols/rebus to replace text or to enhance text, etc. e.g., **PowerPoint** (MicroSoft), **IntelliPics** (IntelliTools), **HyperStudio** (Knowledge Adventure), **Kid Pix Studio Deluxe** (Broderbund)
- **symbol/rebus software** – to enhance or replace text, e.g., **BoardMaker** (Mayer Johnson – uses Mayer Johnson Picture Communication Symbols); **Writing With Symbols** (Don Johnson - Mayer Johnson symbols); **Picture It & PixWriter** (Slater Software – rebus/pictures)
- **Picture This** – CD collection of photographic images to support language/reading (Mayer Johnson)
- **screen colors** - change the colors on Microsoft Word or PowerPoint to suit the needs of the user, e.g., dark colors on a bright background
- **graphic organizers** – to preview/review story narrative, vocabulary, characterization, etc. (see low tech), e.g., **Inspiration** (K-12) & **Kidspiration** (K-3, talking feature, TouchWindow access) (Inspiration Inc.) software; decreases frustration for students who cannot draw/write neatly; can transform a web/map to outline format with one keystroke
- **text-to-speech** - for reading text on computer, a.k.a. e-text or electronic text); text reading software will read any text file aloud; freeware/shareware programs are available, e.g., **Tex-Edit Plus(Mac)** and **Text Aloud (PC)**, which offer optional highlighting of text as it is read; software such as **Write Out:LOUD** (WIN/Mac, Don Johnston), **IntelliTalk II** (WIN/Mac, IntelliTools), **CAST eReader** (CAST), **L & H Omni 3000** (Learnout & Hauspie), **TextHelp** products, and others have many more options; word speak feature available on **MicroSoft Word** (for Mac), **AppleWorks** (for Mac, Apple Computer)
- **word searches, crossword/math puzzles, mazes** – create and print from the web ([www.Puzzlemaker.com](http://www.Puzzlemaker.com))

## Tools & Strategies for Student Self-Management

*Skills:*  
attention                      turn taking                      cooperation                      staying on topic                      waiting

### No Tech

Student Self-Management

- **physical cues** - use touch, proximity, eye contact, pointing to gain student's attention
- **sign** - use manual sign to facilitate attention to the speaker
- **gestures** - associate specific gestures with rules (e.g., one finger = wait)
- **dramatization** - exaggerate expressions, intonations and gestures to enhance meaning
- **verbal reminders** – periodically restate the topic, focus or goal of activity
- **pre-cue** – verbally remind student “you’re going to be next”
- **choral response** – students answer in unison rather than individually
- **group size** – decrease group size to minimize wait between turns; increase group size to provide more models for students to follow
- **delegate steps** – assign individual steps of the activity to multiple students to facilitate cooperation
- **clear work area** - reduce amount of visual distractions
- **interesting content** - incorporate students' interests as examples (e.g., sports, fashion, games, collectibles)

### Low-Tech

Student Self-Management

- **flashlight or light pointer** - to draw attention to information, location, people etc.
- **timer** (kitchen or hourglass) – visually designate how much time an activity will take, how much time to wait, or how much time is left in an activity; creates an objective means of “when” – it's non-negotiable
- **colors** – use sparkly material, metallics, neons or color wheel opposites to draw attention to visuals
- **sticky notes** – mark important or relevant information to reduce time spent searching
- **colored cups** – use different colored cups or other materials to signal for help, finished, working etc. rather than speaking out (e.g., green cup on desk means “I’m working”, yellow means “I’m ready”, red means “I need help”)
- **posters** – post class rules, jobs, computer use guidelines, schedule, etc.; use words and/or pictures to enhance understanding and quick recognition
- **personal supports** – create a duplicate of classroom materials for individual student to use to follow along
- **name tags** – to identify student roles when working as a team on an activity
- **clothes pin can** – for turn taking, write names of students on clothes pins, attach to edge of a coffee can, and their pin is dropped inside the can when their turn is over
- **object turn marker** – an object (stick, ball, other item) is held by the person whose turn it is; visually marks who should be speaking or participating

### High-Tech

Student Self-Management

- **social stories** - can alleviate anxiety about activities/tasks; write/draw or create on computer a storybook describing the steps of any activity, academic or nonacademic, to allow the student to preview and be prepared for what is to come; a comic strip format can be very effective (see Contributors, Carol Gray)
- **monitor** - change font size or style; alter screen colors and contrast between text and screen

## Tools & Strategies for Visual Access (Low Vision to Blind)

**Please note:** The local Vision Resources Library will provide books and materials in large print for school age children on Federal Quota. It will also provide on quota Talking Typer software and the Braille 'N Speak Scholar portable Braille input computer with training. Both are through the American Printing House for the Blind (APH). The Massachusetts Commission for the Blind provides technology for home use for adults (over 16). There must be a clear need for something in the home.

### No Tech

Visual Access

- **positioning** of student - move closer to board; check desk/chair height
- **structure** - anticipate needs for activities and try to plan ahead
- **environment** - make sure the layout is consistent, organized, and predictable

### Low Tech

Visual Access

- **lighting** – critical feature; darkened hallways aren't good; put floor/table lamps in the classroom so a student can pull one over to her/his desk; adjust lighting location, angle, contrast and glare to student needs; natural light is best; avoid fluorescent lighting; use light filters if needed
- **glare shield** – use cardboard, manila folders, etc. to reduce glare on materials/tools
- **polarized or tinted eyeglass lenses** – might help some students (see an eye care specialist)
- **marking/highlighting work materials** – for ease of access
  - **colored highlighter and note tape** – put vertically on left side of a page to encourage visual tracking from left to right (office supply or LoTTIE Kit)
  - **markers** - common items such as rubber bands, buttons, etc. can be used as markers to identify location, e.g., starting and ending points on the page
- **tactually enhanced objects/materials**
  - **tactile graphic paper** – water-based marker makes lines swell, e.g., **Quick-Draw Paper** (APH)
  - **raised line maps** – e.g., **U.S. Puzzle Map** (APH)
  - **tactile letters** – **sandpaper, puff paints, glitter, glue, Hot Glue, Wikki Stix, etc.** – for tracing, for practice in letter formation, and for kinesthetic feedback (artist supply, hardware, Therapro)
  - **enhanced line paper** – commercial raised line paper or adapt your own paper by printing lines in a color, then laminate the paper and glue over the lines to enhance them, e.g., **Right-Line Paper** – Wide Rule or STOP-GO red/green (Therapro)
  - **variety of tactile writing surfaces** – e.g., sandpaper, screen, etc.
- **“writing” letters in sand, finger paints, salt, beans, etc.** – to practice letter formation; provides kinesthetic feedback
- **dry erase board or small chalkboard**– write and erase surface for writing in large print with wipe-off markers/chalk and erasers; e.g., **Contact® Brand white Memoboard paper** (office/educational/art supply)
- **plastic writing guides** – keeps pen/pencil within a limited rectangular space (LoTTIE Kit)
- **stencils/templates, tracing paper** – to serve as guides for practice
- **highlighters for tracing** – student can trace directly over black line model

- **enlarge paper-based materials on a photocopier** – copy on 8.5” X 14” paper or 11” X 17” or **write in large print**
- **line and spot magnifiers** – highlight the desired line of text, e.g., dome-shaped **Visual Tracking Magnifier** (Optelec) which highlights 1 line of text or **Bar Magnifier** (Bausch & Lomb) which lies flat; highlights 2 lines of text
- **magnifiers** – inexpensive plastic sheets, hand held or stand-up, are widely available but may distort images; good quality versions are available as well (Optelec, Independent Living Aids)
- **slate and stylus** – manual Braille writing device, punch holes with stylus; requires special embossable paper, e.g., **Brailon**
- **Plastic Braille Paper** – a plastic-like paper developed specially for use with thermoform machines and Brailleurs, e.g., **Brailon** (APH)
- **abacus** – for kinesthetic support for math (educational supply/toy stores)
- **20/20 pen** – special point provides bold, easy to read writing; black ink provides high contrast against light colored backgrounds (vision supply)
- **using color**
- **white board vs. black board** – some students prefer white background; can also vary marker color
- **colored acetate filters laid over text** – can make a tremendous difference for students who have Scotopic Sensitivity Syndrome (SSS – a sensitivity to light which affects depth perception); especially helpful for students with autism/Asperger’s Syndrome, e.g., **Transparency Pockets** (office supply stores) or filter kit from **See It Right** which includes multi-colored sets & instructions (See It Right); **special colored glasses** – may be necessary for some students with severe SSS
- **large print books** – available from American Printing House for the Blind
- **reading stand** – desktop stand may assist viewing of written material, e.g., **PageUp** (MTM)
- **shape of word** – outline words to support early reading through shape identification
- **magnifiers**: available at some office supplies,
- **peer readers** – to read aloud to student
- **signature writing guide** – grid/guide to place over space for signature (APH)
- **enlarged graph paper** – purchase large grid graph paper or enlarge on photocopier for math
- **large print/Braille math table** – grid of multiplication tables 1-9, e.g., **Multiplication and Division Table** (APH)

## Mid Tech

### Visual Access

- **talking books on cassette** - are readily available; don't forget the library!
- **hand-held digital recorder** - to record assignments, etc. (electronic/office supply)
- **Odyssey Tactile Talking Globe** – globe with typographical features enhanced; no political boundaries; facts about countries, governments, etc. provided by speech through touch control (AccessAbility)
- **large print calculator** - (vision supply)
- **talking calculator** - speaks key inputs and totals (APH, vision/electronic supply)
- **talking scientific calculator for blind & visually impaired** – small, affordable, lightweight, with earphones; natural speech for keys and display; over 95 scientific functions, including statistics & trigonometry, e.g., **Orion TI-34 Talking Scientific Calculator** (Orbit Research/APH)
- **hand-held talking dictionary/speller** – e.g., **Franklin Homework Wiz & Speaking Homework Wiz**, dictionary/thesaurus; spell check; words appear on small screen; target words, definitions, & synonyms can be pronounced aloud if speaking version; offers practice in cursive and print handwriting with animated on-screen guide; arithmetic tutor & calculator; **Speaking Language Master, Special Edition** a more

sophisticated device which can be customized for different learning disabilities and has adjustable speech speed; ideal for blind users; an extra large screen is provided for visually impaired students (these and other versions available from Franklin Electronic Publishers)

- **talking portable note taker** - portable word processor which speaks text as it is typed, e.g., **Type 'N Speak** (Blazie/Freedom Scientific)
- **Braille machine** - makes teaching aids and Braille copies from a single master. e.g., **EZ-Form** (American Thermoform); requires embossable paper, e.g., **Brailon Plastic Braille Paper** (APH)
- **embossable mapmaker** - enlarged forming area lends itself to maps, signs, graphs, charts and teaching aid production; can also be used to create Braille, e.g., **MaxiForm Machine** (American Thermoform)
- **Braille labels** - can be cut to size and will adhere by pressing onto any smooth surface of plastic, metal or painted wood; use for book titles, labeling shelves, and identifying objects, e.g., **Brailabels** (American Thermoform)
- **labeling materials for use in Braille embosser** - made of plastic with an adhesive backing, e.g., **Embossables** (American Thermoform)
- **reading machines** – stand-alone devices which scan text and convert it to speech, e.g., Aladdin Ambassador & Reading Edge (Telesensory), Kurzweil/Lernout & Hauspie
- **CCTV (Closed Circuit Television)** - a stand-mounted (or hand-held) video camera projects a magnified image onto a video monitor or TV screen; use to enlarge images of classroom materials, e.g., worksheets, textbooks, literature, or even the blackboard; available in B & W or color (**ClearView**, Optelec), (**Aladdin Rainbow**, Telesensory) and other manufacturers
- **Thermo Pen I & II** – lines/drawings are enlarged when pen is used on specialized image enhancing paper (see image enhancer) (Repro-Tronics)
- **lighted pen** - battery-operated; has light at the tip to support visual tracking while writing, e.g., Nitewriter (Electro-Optix, office supply, LoTTIE Kit)
- **mini flashlight** - to support visual tracking while reading (electronics/office supply, department stores)

## High Tech

### Visual Access

- **avoid glare** - move monitor away from windows, or pull shades down & turn on lights; purchase computer **anti-glare screen**
- **large monitor** - 17" minimum; easier to track than image enlarging software, especially for young users
- **large print keytop labels, e.g., Zoomcaps** (Meeting the Challenge or Don Johnston) and **Large Print Labels** (Hoolean) - upper case keyboard labels that make letter/number/function keys more visible; available in white on black (for high contrast) or black on beige (to match the keyboard) (Hoolean offers some added color choices and Large Print with Braille enhancement)
- **font size** - adjust for student font size preference in control panels (for Finder/menu items) or in the word processor
- **bold print** - may be preferable to regular print for reading word processing
- **cursor enlargement software, e.g.** - software which has optional large, colorful and/or animated cursors; programs are available on freeware/shareware web sites as well, e.g., **Biggy** (R.J. Cooper)
- **screen magnifiers for computers** - inexpensive plastic magnifiers are widely available; special computer magnifiers can be purchased; distortion around edges is an issue; make sure students will use the device; older students, in particular, do not want to look different, e.g., **Compulenz** (Florida New Concepts Marketing); **Computer Screen Magnifier** (Optelec); **Zoomview** (APH)
- **alternative large key keyboard** - for physical/visual/cognitive issues or young children, e.g., **Big Keys Keyboard** (Mac/PC, ABC or QWERTY order, Greystone Digital) or **My First Keyboard** (PC, ABC order, KidTech)

- **full-featured alternative keyboard** - large, accessible touch membrane board offers a choice of keyboard overlays plus a wide variety of commercial and teacher-made overlays; allows students to "write" on the computer by pressing letters/pictures/words, includes speech output, e.g., **IntelliKeys** (IntelliTools) or **Discover:Board** (Don Johnston)
- **Braille overlays for the IntelliKeys standard overlays** – allows for access by Braille users, **IntelliTactiles Standard Overlay Companions** (APH), **Braille Overlays for IntelliKeys** (R.J. Cooper)
- **image enlarging software**, e.g., **ZoomText Xtra** has screen reading component as well); **Magic** (works with JAWS for speech output); enlarge all images on the computer and offer choice of magnification; Macs and PCs offer utilities which will enlarge text, but they tend to be difficult to maneuver on the screen
- **image enhancer** – dark line drawings (drawn with pencil or china marker, photocopied, or printed out) on special paper are enhanced/raised to make them tactile, e.g., geometry problems, maps, etc., **Swell Form Graphics Heating Machine** and **Swell Touch Paper** (American Thermoform Corp.) & **Tactile Image Enhancer** and **Flexi-Paper** (Repro-Tronics, Inc.); **tip** – passing drawing/diagram through the device twice improves the raised lines; put the least “busy” edge of paper in first to avoid having paper get stuck
- **tips for teaching touch typing** – place a piece of paper a couple of inches above hands so students don’t look down; use any talking word processor and an old fashioned typing book; make sure students sit at proper height, elbows are level with keyboard and wrists are straight (not arched)
- **typing program for blind users** - e.g., **Talking Typer** – (American Printing House for the Blind - available on quota)
- **graph paper** - enlarged and colored grids on disk (see Resources - Onion Mountain Technology)
- **text-to-speech software** - for reading electronic text (e-text); text reading software will read any text file aloud; freeware/shareware programs, e.g., **Tex-Edit Plus(Mac)** and **Text Aloud (PC)**, offer optional highlighting of text as it is read; software such as **Write Out:LOUD** (WIN/Mac, Don Johnston), **IntelliTalk II** (WIN/Mac, IntelliTools), **L & H Omni 3000** (Lernout & Hauspie), **TextHelp** products, and others have many more options
- **e-text/electronic text** - text which is in digitized form and can be spoken aloud by computer (see Resources)
- **screen reading Software** - **JAWS** (Job Access with Speech) software (WIN - Freedom Scientific) is a screen reader for students with severe vision; reads all text on the screen; **ZoomText Xtra** (WIN/DOS - AI Squared) has screen reading feature also; **outSPOKEN for Mac** (Alva Access Group); **tip** – when learning screen reading software, cover the monitor so you won’t cheat and use the mouse
- **Internet** – to access banking, shopping, news entertainment, schedules, etc.
- **Braille 'n Speak** - personal digital assistant (PDA); allows you to input Braille and get output through synthetic speech; small, portable and runs on rechargeable batteries; **Scholar** version is available on quota through the American Printing House for the Blind (APH); **Braille Lite Millennium** has tactile Braille display and other added features; **tip** – print out the “Help” file to support use; guide for Braille Scholar is available (APH); Braille ‘N Speak curriculum manual is a good way to learn to use the device; it must be purchased separately (Blazie/Freedom Scientific)
- **Braille printer/embosser** – for printing out Braille from computer e.g., **VersaPoint** or **Versapoint Duo** (Freedom Scientific) Duo allows for double-sided printing; requires Braille printer paper (APH)**Braille translation software** – type or scan in text then software translates text to Braille for printing out Braille materials on Braille printer, e.g., **Duxbury Braille Translation**
- **book reading devices** - scan any print materials (including graphics), then read them aloud, e.g., **OPENBook** (WIN, Freedom Scientific) and **L& H Kurzweil 1000** (WIN, Lernout & Hauspie) **regular text printer** – for printing materials in text for sighted readers, e.g., the regular classroom teacher

## Contributors and References

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- **Cusack, Susan**. Institute for Community Inclusion, Children's Hospital of Boston, (Technology Management and others)
- **Descarage, Susan M., M.Ed.**, "Assistive Technology for the Blind and Visually Impaired, Perkins Outreach Workshop May 2001, Perkins School for the Blind, 175 N. Beacon Street, Watertown, MA 02472 Sdescarage@aol.com (Visual)
- **Fragopoulos, Barbara**. Vision Resource Teacher, Irving Middle School, Boston Public Schools (Visual)
- **Georgia Project for Assistive Technology (GPAT)**. (404) 362-2024, gpat@doe.k12.ga.us (across skill areas)
- **Carol Gray**, writer of very popular books on social stories for students with autism and/or developmental delays, e.g., *Comic Strip Conversations* and *The New Social Stories* (see O.A.S.I.S. Online Asperger's Syndrome Information and Support web site <http://www.udel.edu/bkirby/asperger/socialcarolgray.html>) or do a search for "social stories" (Classroom & Student Self-Management)
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- **Miller-Tehan, Mary**. Computer Teacher, Mattahunt Elementary School, Boston Public Schools (Technology Management)
- **Molloy, Maryann** Assistant Program Director, Boston Public Schools, Unified Student Services (Social Stories - Student Self-Management, Classroom Management)
- **NCTM, National Council of Teachers of Mathematics**, [www.nctm.org](http://www.nctm.org) (Numeracy - standards/skills)
- **O'Connor, Charlene** Teacher, second grade, Harvard-Kent Elementary School, Boston Public Schools (Classroom Management)
- **O'Connor, Lyla** Vision Resource Teacher, English High School, Boston Public Schools (Visual Access)
- **Pirani, Laura** Compilation of accommodations for diverse learners taken from a variety of sources, including the MCAS (Massachusetts Comprehensive Assessment System) Accommodations on Massachusetts D.O.E. web site: [info.doe.mass.edu](http://info.doe.mass.edu)
- **Odom , Dorene**, Classroom Teacher & **Paula Pickett**, Computer Teacher, Holmes Elementary School, Boston Public Schools, **Technology Helpers - Flip Charts** for supporting students in opening & using software (Technology Management)
- **Robinson, Judy** Teacher, Learning Disabilities, Wheatley Middle School, Boston Public Schools, (Reading)
- **G'Tanya Small**, Cluster Support Specialist, Office of Instructional Technology, Boston Public Schools (Technology Management)
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