

Pathways to Learning for Students with Cognitive Challenges

CAST emphasizes the fact that all learners differ across networks with strengths and weaknesses that make each learner unique. Teachers must dig deep to reach these networks so that learners with multiple challenges have a pathway to learning uniquely suited to their learning strengths and needs. The results of using this approach can be astounding for *all students* along the continuum as each learner utilizes his or her strengths.

CAST (2002) draws upon the research of neuroscience that identifies three interconnected brain networks that control the path to learning, and carries these networks into the concepts and theory behind the Universal Design for Learning (UDL):

- **Recognition networks** that receive and analyze information
 - The “what” of learning which interpret patterns of sound, light, taste, smell, and touch.
 - This has implications for the way information is presented.
- **Strategic networks** that are specialized to plan and execute actions
 - The “how” of learning which includes mental and motor patterns.
 - This has implications for student's actions and expression.
- **Affective networks** that are specialized to evaluate and set priorities
 - The “why” of learning which reflect emotion and motivation.
 - This has implications for the ways we engage students.

The following material provides suggested pathways for students as they access the general curriculum. UDL can be reflected in the way information is presented, students are expected to express themselves, and how students are engaged in learning.

References

CAST (n.d.). Retrieved January 5, 2004, from <http://www.cast.org>


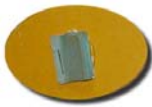
Rose, D., and Meyer, A. (2002). *Teaching Every Student in the Digital Age: Universal Design for Learning*. Alexandria, NA: Association for Supervision and Curriculum Development.






Denham, A. (2004). *Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting*. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: <http://www.ihdi.uky.edu/IEI/>






Pathways to Reading for Students with Cognitive Challenges



Multiple, flexible means of presentation, expression and apprenticeship, and multiple, flexible options for engagement (CAST)

One starting point for accessibility is to have all materials digitally available which facilitates the ability of the user, both teacher and student, to manipulate and utilize appropriate materials, e.g. large print, graphical text, audio, etc.

Read by ... or read using ...	Pathways to reading in all areas of the curriculum
... listening. 	<ul style="list-style-type: none"> • Listen to someone read (teacher, volunteer, peer). • Listen to a tape. • Listen to a digital book or electronic text.
... exploring objects, or props.	<ul style="list-style-type: none"> • Provide objects connected to content material to support the reading experience – read with your hands. • Use objects to “read” the text – place the objects in order to tell the story, or give information about the concept being taught. Take a digital picture to record a snapshot of the event. • Use puppets – finger puppets, characters mounted on Popsicle sticks. • Mount symbols, pictures or tactile objects that represent concepts being taught through a textbook. • Provide a “fact bag/basket” or “story bag” – a collection of items representing the written material (Dacey, 2002).
... tactile cues or symbols.  Book (TSBVI)	<ul style="list-style-type: none"> • Textured cues or symbols representing characters and events from a story, or information from a text book. These cues can provide options for communication about the story or information (Texas School for the Blind and Visually Impaired, TSBVI). • Read with a Story Grammar Marker (Mindwing Concepts, 2002). It is a hands-on manipulative tool that represents the essential components of a story; the Marker prompts students to remember the story sequence, and could provide grounding to the literacy process. The ThemeMaker (MindWing Concepts, 2002) is for use with curriculum material.
... responding to spoken text (change in facial expression).	<ul style="list-style-type: none"> • Watch for changes in facial expression or body posture.
... reading an adapted book (simplified content).	<ul style="list-style-type: none"> • Take a book apart and place pages in page protectors. Add page turners/fluffers as necessary (Dacey, 2003). • Add textures and objects to the pages. Use puff paint to outline graphics or underline text. • Use highlighter or highlighter strip to highlight words.

Read by ... or read using ...	Pathways to reading in all areas of the curriculum
... turning a page.	<ul style="list-style-type: none"> • Turn pages using a page fluffer, paper clips, or weather stripping to assist with motor issues. (Creative Communicating).
... textured graphics.	<ul style="list-style-type: none"> • Create a story in textured pictures. • Create content material in textured pictures. For discussion on government, build a textured graphic of a flag.
... pointing to a symbol representing the topic.	<ul style="list-style-type: none"> • Create cards with symbols on them representing people, places, or events. Use Boardmaker (Mayer Johnson) or Writing with Symbols (Widgit) to create the cards.
... images.	<ul style="list-style-type: none"> • Use an inquiry box (Dacey, 2002) to explore a story or facts about a topic. • Create a book of images from the story or content material.
... symbols. 	<ul style="list-style-type: none"> • Use symbols to represent material that is not actually present. • Manipulate laminated symbols with Velcro on a storyboard.
... by discussing drawing or creating. 	<ul style="list-style-type: none"> • Discuss a book illustration or student work. • Read a sentence about the work – make it auditory, use symbols, make it tactile – make a cue.
... augmentative communication – 	<ul style="list-style-type: none"> • Use switches to support the reading process. Layer facts or information for multiple access. • Use communication displays to read information. • Repeating a sentence using a communication device. • Read a passage. • Include video clips (Speaking Dynamically Pro, Don Johnston,) as support for reading.
... using sign language 	<ul style="list-style-type: none"> • Manually sign a story or reading passage. • Use manual sign for emphasis. • Co-sign (provide the manual sign within or under the hand of the individual. The individual is reading or experiencing the manual signs.
... using Braille 	<ul style="list-style-type: none"> • Read using TACK-TILES, a system of Braille using LEGO-type building blocks. • Read using Braille.
... repeating lines.	<ul style="list-style-type: none"> • Repeating a line from a story – use graphics, sentence strips, augmentative communication.



Read by ... or read using ...	Pathways to reading in all areas of the curriculum
... a sentence strip.	<ul style="list-style-type: none"> • Read a sentence strip to go with a story. • Make it tactile. • Make it auditory using a communication device.
... using technology. 	<ul style="list-style-type: none"> • Create a story or content material with Microsoft PowerPoint - a talking book. • Videotape a story; add captions and audio. • Convert digital text to MP3 (textHELP!, 2002). Read a book! • Read photos with a description using an alt tag. • Create dynamic displays for communication. • Use multi-media tools to create interactive documents for student use, e.g. Classroom Suite, IntelliTools.
... symbols or images supported with text. 	<ul style="list-style-type: none"> • Read using symbols – a book, a summary, a sentence, a word. Read using the computer, read using the printed page, read using a switch. • Enlarge the graphic, make it tactile. • Keep up with the news (Symbol World, Widgit). • Read class material.
... text supported with symbols.  Look carefully at the insect	<ul style="list-style-type: none"> • Read text supported with symbols read it on paper or on the computer with audio and highlighting. • Emphasize the text, reduce the size of the graphic. • Eliminate the graphic to reduce the level of support.
... text supported with photos, pictures, or sounds. 	<ul style="list-style-type: none"> • Make text come alive with the use of photos. • Add sound. • Add video.
... a text-reader. 	<ul style="list-style-type: none"> • Use digital text and read with a text reader. • Read from the web, or cut and paste text into a text reader. • Read from scanned material. • Search for electronic text from non-copyrighted material.
... just a few words.	<ul style="list-style-type: none"> • Select words from a passage that students can read, highlight the words. • Create material that has a reduced number of words in simple language. • Read words of high interest.
... summarized text.	<ul style="list-style-type: none"> • Summarize the text – use the auto-summarize feature of the word processor. • Write a few sentences from the focus material.



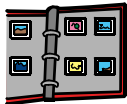

Read by ... or read using ...	Pathways to reading in all areas of the curriculum
<p>... an outline or a visual concept map.</p> 	<ul style="list-style-type: none"> • Read an outline of the material highlighting key points. • Provide a concept map or graphic organizer. • Give it audio.
<p>... text presented at lower reading level.</p>	<ul style="list-style-type: none"> • Present grade level content at a lower reading level. • Start-to-finish readers (Don Johnston)
<p>... getting help with a word.</p> 	<ul style="list-style-type: none"> • Using an individual scanner for occasional words. • Use a handheld dictionary or speller. • Use a Personal Digital Assistant (PDA).
<p>... with more background information.</p>	<ul style="list-style-type: none"> • Link to the web for further information about a topic before reading. • Provide background information.


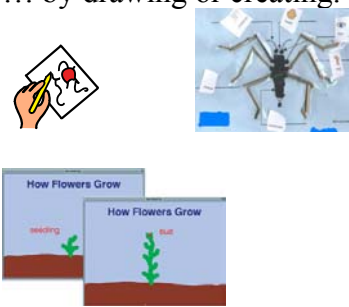



Pathways to Writing for Students with Cognitive Challenges






Multiple, flexible means of presentation, expression and apprenticeship, and multiple, flexible options for engagement (CAST)


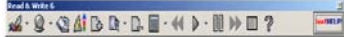
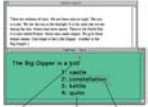
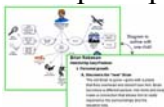
One starting point for accessibility is to have all materials digitally available which facilitates the ability of the user, both teacher and student, to manipulate and utilize appropriate materials, e.g. large print, graphical text, audio, etc.

Write by ... or write using ...	Pathways to writing in all areas of the curriculum
<p>... objects or manipulatives.</p> 	<ul style="list-style-type: none"> • Use objects or manipulatives connected to content material to describe an event, give information, present a math problem or solution; use non-slip matting to keep them in place. • Use objects or manipulatives to “write” words or numbers – place the objects in order to “tell” the story, or give information about the concept being taught. • Collect the items in a bag or basket to represent a collection of information. Take a digital picture. • Collect items to describe a character in a novel or event in history. • Collect items to describe a process or manipulatives to demonstrate a sequence. • Pair the objects with words, symbols, or numbers. • Take a digital picture as a snapshot of the “text.” • Have a peer scribe to record the event. • Provide a choice of two objects to give a “written” answer to a question – accept direct selection, gesture, eye gaze or other mode of student communication.
<p>... tactile cues or symbols.</p>  <p>(Texas School for the Blind)</p>	<ul style="list-style-type: none"> • Textured cues or symbols can represent events or characters from a story, or information from a text book. These cues can provide a record of a story, an opinion, facts or information. They can provide a means of communication about the writing. • Mount tactile cues or objects that represent concepts being taught on a background using Velcro as a method to “write.” Allow student to manipulate these. Have a peer add words or a number sentence. • Sequence or organize thoughts and information using graphic symbols for a variety of audiences and purposes. • Provide a choice of two tactile symbols to give a “written” answer to a question – accept direct selection, gesture, eye gaze or other mode of student communication. • Respond to literature or class material using tactile cues or symbols.

Write by ... or write using ...	Pathways to writing in all areas of the curriculum
<p>... tactile cues</p>  <p>great job / needs more work</p>	<ul style="list-style-type: none"> • Use the student's mode of communication to make a "written" comment when an adult or peer edits work with a student.
<p>... tactile materials.</p>  <p>(Wikki Stix, Nordin)</p>	<ul style="list-style-type: none"> • Explore sand and tactile materials to provide kinesthetic feedback. Use them to draw or write numbers. • Use finger paint as a means of expression - make a print and publish the image. • Write with Wikki Stix - create tactile graphics which adhere to almost any smooth surface and provide a raised line effect. Use them to form numbers, or as points or lines on a graphing map (Dacey).
<p>... textured graphics.</p>	<ul style="list-style-type: none"> • Write with textured pictures. The student can select pictures that are relevant to a process or an event. Make a collection or place them in order. Add Velcro or magnets to the back and mount them on an appropriate surface. • Provide a selection for the student to make a choice as to an answer or an opinion. • Arrange a selection of graphics to write a poem, or give information. Arrange numbers or patterns.
<p>... images.</p> 	<ul style="list-style-type: none"> • Write using a photograph. • Generate a simple label for the photograph or image and use synthesized speech to describe it (Karen Sturm). • "Publish" it for others to read. • Use an inquiry box to publish a student story or facts about a topic. • "Publish" the work and display it within page protectors and have page separators or fluffers to allow access for those with physical challenges. • Create a book of images from the story or content material. Make the images digital and provide ALT tags so that a description is available to individuals who are visually impaired. • Create a book of patterns; make it tactile.
<p>... using stamps.</p> 	<ul style="list-style-type: none"> • Write with a name stamp; use scented ink. • Write the date with a date stamp. • Write using picture stamps. • Write using number or fraction stamps. • Use coin stamps. • Write using stickers.

Write by ... or write using ...	Pathways to writing in all areas of the curriculum
 <p>Fraction Stamps, Primary Concepts</p>	<ul style="list-style-type: none"> • Write numbers by arranging cards. • Write using a stencil. • Trace or copy a word or number.
<p>... by drawing or creating.</p>  <p>(BuildAbility, DonJohnston)</p>	<ul style="list-style-type: none"> • Create a drawing or collage about a topic. Add labels or audio information. • Create a pattern in math; make it tactile. • Read a sentence about the work – make it auditory, use symbols, make it tactile. • Use drawing software such as Microsoft Paint, or Kid Pix Studio. • Write using the multimedia properties of BuildAbility that uses Drawmation™ technology – the drawing is recreated by the click of a button and creates an animated product or movie of the strokes. Text, sound and speech can be added. The properties of the software can be adjusted to compliment student need. Create a pattern and watch it grow.
<p>... word walls.</p>	<ul style="list-style-type: none"> • Provide words for a word wall (Dacey, 2002). Back the words with Velcro or magnets. • Make a math wall with numbers, signs and denominators.
<p>... augmentative communication (AAC).</p>  <p>(Abelnet)</p>	<ul style="list-style-type: none"> • Provide background knowledge; provide opportunities for engagement and active participation in the literary process (Karen Erikson). • Use communication displays to read information. • Use the dynamic properties of AAC devices to write and read – create prose, poetry, lists, journals, numbers, etc. • Use an on-screen keyboard to write. • Use word prediction, abbreviation expansion, to speed up the writing process. • Use switches - layer facts or information for multiple sentences.
<p>... using sign language</p> 	<ul style="list-style-type: none"> • Manually sign a story as a means of writing. Videotape the event. • Use sign language for math.
<p>...using Braille.</p>  <p>(TACK-TILES)</p>	<ul style="list-style-type: none"> • Write using TACK-TILES or Braille. Create sentences with these materials or use the overlay created for IntelliKeys (IntelliTools).

Write by ... or write using ...	Pathways to writing in all areas of the curriculum
<p>... a sentence strip.</p> <p>I saw a cumulus cloud.</p>	<ul style="list-style-type: none"> • Choose a sentence strip to go with a story or math concept. • Support it with a graphic. • Make it tactile with puff paint or glue. • Make it auditory using a single communication aid.
<p>... text supported with photos, pictures, or sounds.</p> 	<ul style="list-style-type: none"> • Make text come alive with the use of photos. • Add sound. • Add video.
<p>... symbols or images supported with text.</p>   <p>Laminated Boardmaker graphics with Velcro.</p>	<ul style="list-style-type: none"> • Write using digital symbols – a word, a sentence. • Print the work and texture to the symbol creating a textured product. • Prepare a grid for the student to select symbols to create a sentence. Customize it from simple to more complex reflecting individual need and the content being taught. • Allow the student to hear their work. • Customize features to manipulate the size, type and color of the font or graphic. • Create a custom “environment” (Writing with Symbols 2000) that allows further independence. • Use the scanning properties and switch access. • Use graphic software with different input methods – use an alternate keyboard, joystick, trackball. • Manipulate laminated symbols with Velcro on a storyboard. • Write using symbols that can be manipulated and mounted.
<p>... using technology.</p>   <p>IntelliKeys, IntelliTools</p>	<ul style="list-style-type: none"> • Create a story or content material with Microsoft PowerPoint - a talking book (Dacey, 2002). Import graphics and add voice output; create a repeated math pattern. • Videotape a story; add captions and audio. • Read photos with a description using an ALT tag. • Create dynamic displays for communication. • Use multi-media tools to create interactive documents for student use, e.g. Classroom Suite (IntelliTools). Build in supports according to student need - speech output, single-switch scanning. • Write using IntelliKeys with a custom overlay related to the topic. Use word processors such as IntelliTalk 3 (IntelliTools) that allows students to combine graphics, text, and speech to support and enhance writing skills, or use software with the support of symbols. • Use a text reader to help the writing process.



Write by ... or write using ...	Pathways to writing in all areas of the curriculum
 <p>All-Turn-It Spinner, AbleNet</p>	<ul style="list-style-type: none"> • Write using a sentence starter or the start of a math problem. • Use Microsoft Word Forms feature to create templates. • Use a Touch Window. • Use an On-screen keyboard. • Use a head mouse. • Use an eye-gaze system. • Use Discover:Switch (Don Johnston) allowing alternative access. • Use voice recognition. • Write a poem using the All-Turn-It Spinner (Abelnet) with a custom overlay displaying words or facts from a concept being worked on in class. Activate it with a switch. • Create an overlay for a math activity.
<p>... virtual manipulatives for working with numbers..</p>	<ul style="list-style-type: none"> • Use websites that offer virtual manipulatives for math to provide models and graphical support to learning. • Use software that supports virtual manipulatives, e.g. IntelliMathics, IntelliTools. Create interactive displays or allow student to manipulate the tools. It is single switch accessible.
<p>... accessibility features.</p>	<ul style="list-style-type: none"> • Activate the accessibility features that come with both Mac and Windows platforms to customize access to the computer.
<p>... word prediction software.</p>  <p>(textHELP!)</p>  <p>Co:Writer, Don Johnston.</p>	<ul style="list-style-type: none"> • Use word prediction, word completion, macros, and abbreviation/expansion to create written material for those students who take more time to complete work or where access may be an issue (textHELP!). • Create dictionaries that support curriculum topics to support student vocabulary (Co:Writer). • Use word prediction with a portable keyboard.
<p>... an outline or a visual concept map.</p>  <p>(Inspiration)</p>	<ul style="list-style-type: none"> • Create a concept map or graphic organizer to support math concepts. • Create an outline form to support writing. • Add audio.
<p>... using a pencil</p>	<ul style="list-style-type: none"> • Use a pencil with a pencil grip. • Use highlighter. • Write using scented pens for sensory stimulation. • Use raised lines for both letters and numbers. Add puff paint to the lines; use embossed graph paper. • Write on heat sensitive paper.

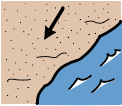

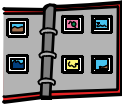

Write by ... or write using ...	Pathways to writing in all areas of the curriculum
... just a few words.	<ul style="list-style-type: none"> • Write using a select number of words. • Use magnetic words and arrange them to give the desired information.
... getting help with a word.	<ul style="list-style-type: none"> • Use a picture dictionary for support. • Use a handheld dictionary or speller to get help on a word. • Use a Personal Digital Assistant (PDA).
... with more background information.	<ul style="list-style-type: none"> • Link to the web for further information about a topic before writing. • Provide background information.




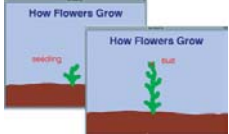



Pathways to Presenting for Students with Cognitive Challenges






Multiple, flexible means of presentation, expression and apprenticeship, and multiple, flexible options for engagement (CAST)



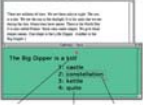

One starting point for accessibility is to have all materials digitally available which facilitates the ability of the user, both teacher and student, to manipulate and utilize appropriate materials, e.g. large print, graphical text, audio, etc.

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
<p>... objects or manipulatives.</p> 	<ul style="list-style-type: none"> • Use objects or manipulatives related to content material to describe an event, give information, or explain a math concept. • Use containers to display the objects or organize the information. • Add a graphic label to the display; have audio output available using a communication aid. Make sure the student can activate the message through the use of a switch as appropriate to the presentation. • Collect the items in a bag or basket to represent a collection of information. Take a digital picture. Have a print copy of the picture available and/or a digital copy with a text label or ALT tag. • Collect items to describe a character in a novel or event in history. • Collect items to describe a process or manipulatives to demonstrate a sequence. Display them in an organized manner. Add a graphic label to the display; have audio output available using a communication aid. Make sure the student can activate the message through the use of a switch as appropriate to the presentation. • Consider a “remnant box” (Dacey), a container to collect scraps of items related to the days activities. Use it as a means of creating a journal composed of objects. Organize the objects and place them into page protectors or display wallets or pockets. Put them into a 3-ring binder and add page fluffers/turners to help with motor issues. • Use objects or props as a means to support other methods of presentation.
<p>... tactile cues or symbols.</p>  <p>(Texas School for the Blind)</p>	<ul style="list-style-type: none"> • Textured cues or symbols can provide an opinion, fact or information. • Mount tactile cues or symbols on a background using Velcro as a means to anchor the cues. Have a peer add a written caption. Display them in an organized manner. Add a graphic label to the display; have audio output available using a communication aid.

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
	<ul style="list-style-type: none"> • Include ways that the student may be asked for more information or to answer a question in the student mode of communication.
<p>... tactile materials.</p>   <p>(Wikki Stix, Nordin)</p>	<ul style="list-style-type: none"> • Add tactile materials to provide kinesthetic feedback to a display. Use them to add emphasis to the display. • Write with Wikki Stix - Use them to form numbers, or as points or lines on a graphing map (Dacey). • Use tactile materials as a means to support other presentation types.
<p>... textured graphics.</p>	<ul style="list-style-type: none"> • Display information with textured pictures or charts in the form of a poster. The student can create pictures that are relevant to a process or share what they have learned. Display the graphics or place them in order. Add Velcro or magnets to the back and mount them on an appropriate surface. • Add a graphic label to the display or a texture; have audio output available using a communication aid. • Highlight information using WikkiStix, glue or puff paint. • Use a flashlight to highlight certain information.
<p>... images.</p> 	<ul style="list-style-type: none"> • Display information using photographs. Have them available in hard copy. Generate a simple label for the photograph or image with words or graphics; have audio available through a communication aid or tape with switch access if needed. • Display the work in poster form or within page protectors in a binder. Have page separators or “fluffers” to allow access for those with physical challenges. • Use an inquiry box to display student work. By manipulating the box, all sides are visible. Again, add captions, labels, and audio; color code information to help with accessibility. • Display the images in digital form; create audio captions; provide ALT tags so that a description is available to individuals who are visually impaired. • Create a book of patterns; make it tactile.
<p>... using stamps.</p> 	<ul style="list-style-type: none"> • Use stamps to add information to a display as appropriate. • Add a name with a name stamp; use scented ink. • Add a date with a date stamp.

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
 <p>Fraction Stamps, Primary Concepts</p>	<ul style="list-style-type: none"> • Add numbers with stamps.
<p>... by drawing or collage.</p>    <p>(BuildAbility, DonJohnston)</p>	<ul style="list-style-type: none"> • Create a drawing or collage about a topic; display the information on a poster. Add labels or audio information. • Create a pattern to explain a procedure; make it tactile. • Display a sentence about the work – make it auditory, use symbols, make it tactile. • Add a drawing to a presentation using drawing software such as Microsoft Paint, or Kid Pix Studio. • Create a presentation using the multimedia properties of BuildAbility that uses Drawmation™ technology. Import pictures or photographs and annotate the work with drawing strokes, text and audio.
<p>... augmentative communication (AAC).</p>  <p>(AbleNet)</p>	<ul style="list-style-type: none"> • Encourage students to use augmentative communication devices to make an oral report. Make sure students have had multiple opportunities to use the vocabulary during the course of instruction. Be sure there is a way for students to answer questions generated from the presentation. • Use communication aids - layer facts or information for multiple sentences which support the presentation.
<p>... using sign language</p> 	<ul style="list-style-type: none"> • Use manual sign as a way to present. Videotape the event. • Augment with other forms of presentation such as objects and graphics.
<p>...using Braille.</p>  <p>(TACKTILES)</p>	<ul style="list-style-type: none"> • Create written material to present using TACKTILES or Braille. Create sentences with these materials or use the overlay created for IntelliKeys (IntelliTools). • The use of IntelliKeys and a TACKTILE overlay paired with a talking word processor provides audio or graphics.
<p>... a sentence strip.</p> <p>I saw a cumulus cloud.</p>	<ul style="list-style-type: none"> • Use sentence strips to present information or a process. Have students read the information or display it on a poster. • Support it with a graphic. • Make it tactile with puff paint or glue. • Make it auditory using a single communication aid.
<p>... text supported with photos. pictures, or sounds.</p>	<ul style="list-style-type: none"> • To make a poster more appealing use photos. • Add sound.

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
 <p>... symbols or images supported with text.</p>   <p>Laminated Boardmaker graphics with Velcro.</p>	<ul style="list-style-type: none"> • Add video. • Create a poster sharing information with printed symbols. • Create a writing grid for the students to be more independent in producing written work. Customize it reflecting individual need and the content being presented. Read the graphics to make an oral presentation. • Keep it digital and the student can present with auditory support. Use a projector and enlarge the view so that the audience can see it clearly. • Remember to consider a variety of input methods – use an alternate keyboard, joystick, trackball, head mouse or touch window. • Manipulate laminated symbols on a storyboard by adding Velcro to the back. Use fabrics that will allow the Velcro to adhere. Use these to present material – facts or a process. • Write using symbols that can be manipulated and mounted.
<p>... using technology.</p>   <p>IntelliKeys, IntelliTools</p>	<ul style="list-style-type: none"> • Create a presentation using Microsoft PowerPoint. Import graphics and add voice output; use animation features. Use a single switch to advance the slides. • Help the student create a Microsoft Word document using word prediction tools and import graphics. Save it as a webpage. Once loaded on the server it can be viewed as a presentation on-line. The student can present the material orally or with a text reader. • Videotape a student completing a project; add captions and audio, and use it as a presentation. • Use multi-media tools to create interactive documents for student use, e.g. Classroom Suite (IntelliTools). Create a template and help students to add their work – words or pictures. Build in supports according to student need - speech output, single-switch scanning. • Write using IntelliKeys with a custom overlay related to the topic. Use word processors such as IntelliTalk 3 that allows students to combine graphics, text, and speech to support and enhance writing skills, or use software with the support of symbols. Print and mount the work. • Use a text reader to help the present the information. • Write using a sentence starter or the start of a math problem. Have student complete the information as a way of presentation.

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
 <p>All-Turn-It Spinner, AbleNet</p>	<ul style="list-style-type: none"> • Use a Touch Window to present facts. Hook the computer up to a projector to allow everyone to see. • Use an On-screen keyboard. • Use a head mouse. • Use an eye-gaze system to give information. • Use Discover:Switch (Don Johnston) allowing alternative access and a means to present information via an on-screen keyboard. • Use voice recognition to create written material. • Use the All-Turn-It Spinner with a custom overlay displaying words or facts from a concept being worked on in class. Activate it with a switch.
<p>... virtual manipulatives for working with numbers..</p>	<ul style="list-style-type: none"> • Use websites that offer virtual manipulatives for math to provide models for use during presentation. Have students invite participation from the audience to participate to see if they have understood the concept. • Use software that supports virtual manipulatives, e.g. IntelliMathics, IntelliTools. Create interactive displays or allow student to manipulate the tools. It is single switch accessible.
<p>... accessibility features.</p>	<ul style="list-style-type: none"> • Activate the accessibility features that come with both Mac and Windows platforms to customize access to the computer.
<p>... word prediction software.</p>  <p>(textHELP!)</p>  <p>Co:Writer, Don Johnston.</p>	<ul style="list-style-type: none"> • Use word prediction, word completion, macros, and abbreviation/expansion to create written material for display on posters etc.
<p>... an outline or a visual concept map.</p>  <p>(Inspiration)</p>	<ul style="list-style-type: none"> • Create a concept map as a means of presentation. Have the student focus on one part of the web for a presentation. • Create an outline form to support the presentation. • Add audio.
<p>... using a pencil</p>	<ul style="list-style-type: none"> • Use a pencil with a pencil grip to support student writing. • Use highlighter to highlight important facts. • Write using scented pens for sensory stimulation as the student prepares information. • Use raised lines for both letters and numbers. Add puff

Present by ... or present using ...	Pathways to presenting in all areas of the curriculum
	paint to the lines; use embossed graph paper. <ul style="list-style-type: none"> • Write on heat sensitive paper and display the information.
... words.	<ul style="list-style-type: none"> • Give an oral report; make it just a few words. Supplement the oral report with a poster to support the speaker. • Record the presentation and play it using a tape player or computer so that it can be used as support if required. • Provide graphical support to the presenter as cues. • Provide objects or props as a means of support.
... with more background information.	<ul style="list-style-type: none"> • Link to the web for further information about a topic before writing. Provide a website for support to the listener / audience. • Provide background information by printing pictures or information for others to read. Make a poster with the information. • Create a custom overlay to be used with an adaptive keyboard, such as IntelliKeys to give background information on the presentation topic.

Please Note

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The following list is a collection of resources that have been used in the construction of this document. It is not an endorsement, recommendation, or warranty as to any specific product listed here.

Resources:

Augmentative and Alternative Communication (AAC) Connecting Young Kids (YAACK). [Online] Available: <http://aac.unl.edu/yaack/>

Boston Public Schools Access Technology Center (Eichleay, K., McCauley, J., and Walsh, L.), and Dacey, M. (2002). Support Lists: Tools and Strategies to Support Access to Standards Based Learning. [Online] Available: <http://boston.k12.ma.us/teach/technology/emmanuel/SupportsList.pdf>

Burkhart, L. (1993). What We Are Learning About Early Learners and Augmentative Communication and Assistive Technology. [Online] Available: <http://www.lburkhart.com/gphb.htm>

CAST (2002). Teaching Every Student. UDL Toolkits. Planning for All Learners, retrieved January 5, 2004, from http://www.cast.org/teachingeverystudent/toolkits/tk_lessons.cfm?tk_id=21

CAST (2002). Teaching Every Student. UDL Toolkits. Planning for All Learners (PAL), Digital Content in the Classroom, retrieved January 5, 2004, from http://www.cast.org/teachingeverystudent/toolkits/tk_introduction.cfm?tk_id=41

CAST (2002). Teaching Every Student. UDL Toolkits. Planning for All Learners (PAL), UDL Training Guide, retrieved January 5, 2004, from http://www.cast.org/teachingeverystudent/toolkits/tk_introduction.cfm?tk_id=61

Cormier, C. (Undated). Adapting Popular Sound Producing Books. [Online] Available: <http://www.connsensebulletin.com/cormierv4n5.html>.

DeBaun, P.. (Undated). Story Time Tricks. Creative Communicating. [Online] Available: <http://www.creative-comm.com/index.html>

Don Johnston. (2002). BuildAbility. [Online] Available: <http://www.donjohnston.com/catalog/buildabilityd.htm>

Erickson, K., (2002). Reading Comprehension and AAC. [Online] Available: <http://www.asha.org/about/publications/leader-online/archives/2003/q2/ft030624b.htm>

Fichleay, K., and DuBuske, S. (2003). Adapting Books Assistive Technology Continuum. Boston Public Schools Access Technology Center. [Online] Available: <http://boston.k12.ma.us/teach/technology/emmanuel/ATAdaptBks.pdf>

Denham, A. (2004). Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: <http://www.ihdi.uky.edu/IEI/>

Handspeak. (2003). Visual Language. [Online] Available: <http://www.handspeak.com/>

IntelliTools. (2002). IntelliKeys. Software.

IntelliTools. (2003). Classroom Suite. Software.

Mayer-Johnson. (2003). Boardmaker / Speaking Dynamically Pro. Software.

MindWing Concepts, Inc. (2002). Linking Language to Literacy. [Online] Available: <http://www.mindwingconcepts.com/pages/products.html>

National Library Service for the Blind and Physically Handicapped (NLS). (2003). [Online] Available: <http://www.loc.gov/nls/>

Omnicores. (2002). WikkiStix for the Sight Impaired. [Online] Available: <http://www.wikkistix.com/sightimpaired.htm>

Slater Software. (2002). Picture It. Software. [Online] Available: <http://www.slatersoftware.com/pit.html>

Sturm, K. (Undated). Writing and AAC. [Online] Available: <http://www.asha.org/NR/exeres/574DB086-8BEA-46A4-A860-C9A92DF6869C.htm>

TACK-TILES. (2002). Braille System. [Online] Available: <http://www.tack-tiles.com/textHELP!> (2002). Read and Write Gold. Software.

Texas School for the Blind and Visually Impaired, Functional Academics and Basic Skills Department. (Undated) Tactile Symbols. [Online] Available: <http://www.tsbvi.edu/Education/vmi/MISC>

Texas School for the Blind and Visually Impaired. (u.d.) Tactile Math Graphics. [Online] Available: <http://www.tsbvi.edu/math/tactile.htm>

The Internet Picture Dictionary (2003). [Online] Available: <http://www.pdictionary.com/about.html>

Tobey. (2002). Language Curriculum for Student with Severe Disabilities. [Online] Available: <http://tobey.ushaonline.net./index.html>

Trelease, J. (2003). The Read Aloud Handbook. [Online] Available: <http://www.trelease-on-reading.com/pagetop>

Utah State University. (2003). National Library of Virtual Manipulatives. [Online] Available: http://matti.usu.edu/nlvm/nav/topic_t_2.html

Widgit, (2002). Writing with Symbols 2000. Software.

Widgit, (2002). Symbol World. Available: <http://www.symbolworld.org/index.htm>

Denham, A. (2004). Pathways to Learning for Students with Cognitive Challenges: Reading, Writing and Presenting. Interdisciplinary Human Development Institute, University of Kentucky. [Online] Available: <http://www.ihdi.uky.edu/IEI/>

Wisconsin Assistive Technology Institute. (Undated). Literacy and the Power of Technology. [Online] Available: <http://www.wati.org/LAPOT.HTM>

Yoder, D. E., Erickson, K. A., & Koppenhaver, D. A. (1997). A literacy bill of rights. In D.E. Yoder, Having my say. *Augmentative and Alternative Communication*, 17(1), p. 7. [Online] Available: www.gac.edu/~dkoppenh/rights.html