Assistive Technology and Early Childhood Education

Idaho Assistive Technology Project
UI Center on Disabilities and Human Development
Nora Jehn, Training Coordinator
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800-432-8324
Handouts

- [http://www.idahoat.org/Services/Training.aspx](http://www.idahoat.org/Services/Training.aspx)
  - “Current Trainings Being Offered” tab
Idaho Assistive Technology Project

www.idahoat.org

• Information and Referral
• No-cost assistive technology (AT) assessments and technical assistance for school-aged children (3-21)
• AT training
  – Inservice, regional, on-demand webinars on the Idaho Training Clearinghouse AT Learning Community
• Statewide AT Lending Library (Idaho AT4ALL)
• 4 Demonstration Sites
  – Coeur d’ Alene, Moscow, Boise, Idaho Falls
Assistive Technology

• Definition
  – any item, piece of equipment, or product system, whether acquired commercially or off the shelf, modified, or customized, that is used to increase, maintain, or improve functional capabilities of individuals with disabilities
Assistive Technology for Young Children

- Play
- Communication
- Language
- Mobility
- Literacy
- Computer Access
- iPad/iPod Touch Apps
Play

- We know that play is crucial to child development. This is just as true for children with disabilities, but access to play may be limited by their disability and opportunity. The great news is that almost every play material can be adapted.
Switch-Adapted Toys

• Switch-adapted toys

Just a few of the hundreds of switch toys available. Check them out from an AT library, or you can even make your own!
Art Materials

- Slant board
- Triangular Crayons
- Grips
- Paint stamps
  - Commercial, potato
- Easy grip brushes
  - Simple or advanced brush types
- Adapted scissors
  - Big handled, self-opening
Adapted Art

As a parent of a child with a disability, I routinely throw away lots of art that was obviously made by an able-bodied instructional assistant in my daughter’s name, and cherish those pieces of art that she obviously did herself.

Nora Jehn
Games and Educational Toys

- Adapted card play
- Adapted dice (tactile or virtual)
- Knobbed Puzzles /audio puzzles
- Magnetic board games
- Talking globe with raised relief

GeoSafari Talking Globe

iChoose app
Virtual Play

• Apps
  – See iPad apps handout for music, art, and games

• Software
  – Virtual Puzzles
    • Switch It Jigsaw Maker - Inclusive Tech
  – Switch games for multiple players
    • Switch in Time
      – Switch Lanes
      – Super Switch Hitter
      – Switch Jam
A Few Resources for Adapted Play and Art

• Idaho Assistive Technology Project AT Lending Library
  – www.idahoat.org, 800-432-8324

• AbleNet
  – www.ablenetinc.com

• Different Roads to Learning
  – http://www.difflearn.com

• Fun and Function Special Needs Toys
  – http://funandfunction.com

• FlagHouse
  – http://www.flaghouse.com

• Constructive Playthings
  – http://www.cptoy.com/cgi-bin/pf.sh/2.0/index.html
AUGMENTATIVE AND ALTERNATIVE COMMUNICATION (AAC)
“Everyone Communicates”
Augmentative/Alternative Communication (AAC)

**Definition:** Augmentative/Alternative Communication is the use of technology to support, enhance and supplement the communication of individuals who are not independent verbal communicators in all situations.
Critical Questions

• Is the child’s speaking skills keeping him/her from effectively interacting with others in various environments?
• Is the child’s speaking skills limiting his or her opportunity for speech and language practice?
• Could AAC provide new opportunities for the development of both speech and language ability?
If the answer to any of the previous questions was yes....

AAC should be considered!
Communication is vital to academic success

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Receptive Communication/Listening

Expressive Communication/Augmentative Communication

Oral and Written Language Development

(Koppenhaver, Coleman, Kalman & Yoder, 1991; adapted from Teale & Sulzby, 1989)
Continuum of AAC Devices

1. Eye gaze board/frame
2. Communication board or book
3. Simple voice output
4. Voice output device with levels
5. Voice output device with icon sequencing
6. Voice output device with dynamic display
7. Device with speech synthesis that use typing

Communicator looks or gazes at a symbol to communicate to a partner that symbols mean.

Similar to Eye Gaze, but not specifically reliant on eye movement.

Capable of delivering many messages, requires physical manipulation to change levels.

Usually one button, delivering one message or a sequence of messages.

Capable of sentence building.

iPad, Dynavox, Tobii etc…

iPad, Lightwriter, Dynavox etc…
Eye Gaze Board

Communicator looks or gazes at a symbol to communicate to a partner that symbols meaning
Communication Board or Book

Similar to Eye Gaze, but not specifically reliant on eye movement
Simple Voice Output

Usually one button, delivering one message or a sequence of messages
Voice Output Device With Levels

Capable of delivering many messages, requires physical manipulation to change levels
Voice Output Device with Dynamic Display

iPad, Dynavox, Tobii etc…
Devices With Speech Synthesis That Use Typing

iPad, Lightwriter, Dynavox etc…
iPad/iPod for Communication

• Apps for communication
  – TapSpeak Button
    • Record audio for unlimited duration, then communicate single messages by tapping big red circle.
  – Tap to Talk
    • Simple
  – Proloquo2go
    • Full-featured AAC app
AAC Tips

• Most AAC users multiple modes of communication (verbalizations, gestures, and devices)
• Switch play may help develop motor skills necessary to run a communication device
• Model, model, model, use of communication device
  – Initiating, self-talk, talking to others
• Have a system always within reach
• Work up to 200 communication opportunities a day
• Use mix of light, mid, and high tech
• Have a strategy in mind
AAC on the GO ....

School - Community - Home

• Accessible
• Easy
• Adaptable/Flexible

• Individuals will use a variety of ways to communicate!!
  • Gestures, verbalization, AAC
National AAC Experts

• Caroline Musselwhite
  – www.aacintervention.com

• Linda Burkhart
  – http://www.lburkhart.com
Idaho AAC Summer Camp

• Contact: Anne M. Kuhlmeier, CCC-SLP, ATP
St. Luke’s Elks Children’s Rehab
Phone: 208-706-5548
E-mail: akuhlmeier@ierh.org
For children who struggle to understand language, making language visual helps build comprehension.
Visual Schedules

- Improve the understanding of language
- Provide choices
- Provide information about activity
- Provide information about people & their whereabouts
- Help with transitions
- Help complete a task
- Increase independence
Visual Schedules
Visual Schedules

- Visual Schedules promote INDEPENDENCE (the ultimate goal) by reinforcing individual to complete task/tasks on his/her own without requiring additional cues
  - A young child may have a schedule depicting toys to be played with that day in order...blocks, play dough, bubbles...
  - A school age child may have a schedule depicting fun places they like to go to be visited in a sequence...McDonalds, park, movies...
    - Steps in an academic task
    - Steps in a functional task
    - Schedule of the day
    - Schedule of the hour
Visual Schedules
To learn more about visual schedules and engineering the environment for AAC, visit the on-demand trainings on the Idaho Training Clearinghouse, Assistive Technology Learning Community!

HTTP://ITCNEW.IDAHOTC.COM/ASSISTIVE-TECHNOLOGY-.ASPX
SEATING AND MOBILITY

children have a natural desire to explore their environment
Wheelchairs

- Power or manual
- How soon?
Mobility Devices for Young Children with Visual Impairments

• Kiddie canes
• Modified walkers
• Push toys
  – Toy lawn movers
  – Corn poppers
LITERACY
Adapted Books for Young Children

• Tactile books
• Book holder
  – Props book up in more vertical position
  – Velcro back of the book – will stick to carpet
• Page fluffers
  – add space between each page for ease of turning
    • Ethafoam
    • Chip bag clips
    • Paper clips
Adapted Books for Young Children

• Audio Books
  – Amazon has 1,000 audio books for Baby-3
  – Audible.com has 994 downloadable audiobooks for ages 0-4

• E-Books
  – Tar Heel Reader, [www.tarheelreader.org](http://www.tarheelreader.org)
    • Over 18,000 free e-books with audio support on a variety of subjects with audio support
  – Storyline Online, [http://storylineonline.net](http://storylineonline.net)
    • Free e-books read by members of the Screen Actors Guild
  – One More Story, [www.onemorestory.com](http://www.onemorestory.com)
    • 65 e-books with audio support
    • Small subscription fee
Books for iPad

• Interactive Book Apps
  – *Goldilocks and the Three Bears*
  – *Little Red Riding Hood*
  – Curious George Books
  – Dr. Seuss Books
  – *Three Little Pigs*

• iBooks
  – Picture books
    • Some have audio narration, others do not
Stages of Writing Development

• Scribbling
• Letter-like symbols
• Strings of letters
• Beginning sounds emerge
• Consonants represent words
• Initial, middle, and final sounds
• Writing is readable and approaches conventional spelling
• Standard spelling

AT can make this process possible!
Alternative Pencils
Center on Literacy and Disability, UNC, Chapel Hill

• Alphabet eye-gaze frame

• Print flip charts

• Braille alphabet flip charts

• Switch accessible onscreen keyboard

Allows equal opportunity to play with letters. Teacher can assign meaning to letters chosen randomly.
Alternative Writing Tools

- Magnetic letters or words
- Letter or word cards
- Letter and word stamps
**Cloze Pro**

[www.cricksoft.com](http://www.cricksoft.com)

- Create fill-in-the-blank writing activities for all levels
- Copy and paste text into ClozePro and then highlight words to remove
- Switch accessible
- $199
Clicker
www.cricksoft.com

• Talking word processor lets you write with pictures as well as words.
• Ready-made Clicker grids give students instant access to words, pictures and sounds.
• You can create your own in seconds or download grids from the Clicker website.
• $229
Writing with Symbols 2000
by Mayer-Johnson, Inc.

- $199.00
Pix Writer by Slater Software

• $199.00
• http://www.slatersoftware.com/pixwriter.htm
Classroom Suite

www.intellitools.com

• *IntelliTools Classroom Suite* is a multimedia software platform for delivering K-8 curriculum aligned to content standards
  – Curriculum-based, standards-aligned activities and templates
  – Activity answer tracking, record keeping, and student portfolios
  – Plus: multimedia authoring tools for both students and teachers

• $345.00

• Accessible by mouse, keyboard, switch, Intellikeys, or touch screen
Adapt the Writing Tool
Adapt the Writing Surface

- Stabilize with a clipboard
- Provide an angle with a slant board

- Give tactual boundaries with:
  - Raised line paper
  - Puffy painted lines
  - Waxed lines
  - Wikki sticks
Adapt the Writing Surface

• [www.greenbeanproducts.com](http://www.greenbeanproducts.com)

• Systematic approach to gain control of letter size, spacing, and keeping letter on the baseline
Getting Started - Webbing Ideas for Written Work

• **Kidspiration – K-5**
  • Brainstorm ideas with pictures and words
  • Create stories and descriptions using engaging visual tools
  • **Picture view** to represent ideas using symbols.
  • **Writing View**, which integrates with Picture View, helps students connect their visual thoughts to words.
• **Audio** gives students the chance to hear their work read aloud or record their own words. All menus, buttons and other text are audio supported as well, helping children read and navigate.
Writing Apps for Young Children

• Notes
  – Play with alphabet and beginning writing with onscreen keyboard
• Pictello
  – Author personalized audio stories
• iWriteWords
  – Trace numbers, lowercase and uppercase letters
• FirstWords
  – With pictures of over 30 household items, touch a letter to hear it, and drag it to the correct word position
COMPUTER ACCESS
Computer Access

• Alternative mouse
• Alternative keyboard
• Touch monitor
Switches

- Consider the voluntary movements of the child
- Consider the seating and positioning of the child
- Choose switch activation
  - Pressure, movement, sip and puff, etc.
    - Bite, blink,
- Choose switch type
  - Single, dual, multiple switches
- Choose switch position
  - Head, foot, knee, eyebrow, chin,

Switches should be used as a last resort or as a supplement to computer access
Switch Interface

- Hardware that allows a switch(es) to activate a specific keyboard or mouse function(s) on a computer

- Some switches have built-in interface
  - Intellikeys, Switch Click USB
Switch Games

• It’s hard to run a computer with switches. Make it fun to start!
iPad Introduction and Accessibility
What is an App?

- An app, or application, is a third-party software program specifically for smartphone technology.
- Apps use the operating system of the device.
- 6 billion apps are downloaded monthly!
iPad 2 Features

- Touch screen
  - 9.7 inch LED backlit display
- Portrait or landscape modes
- Camera (stills and video)
- Dual-core A5 Chip
- 10 hour battery life
- Voice Over screen reader
- Zoom up to 500%
- Speak Auto-text (says what you are typing)
- FaceTime – video calls
- Portable
- Diversity of apps on one device
- Inexpensive
- Cool factor
Which to buy?

iPod Touch 4<sup>th</sup> generation
(newest model)
- Apple A4 processor
- 30 hour battery life
- 3.5 inch display
- 64 GB model holds approx. 14,000 songs

Disadvantages:
- Lower quality speakers than iPad
- Small screen size that makes typing difficult
- Wifi only

Price: $229-$399

iPad 2 (newest model)
- Dual-core A5 Chip
- 10 hour battery life
- Large 9.7 inch LED display
- Connect to wifi or 3G cell service
- 64 GB model holds approx. 14,000 songs

Disadvantages
- Not as portable as iTouch
- Does not have full functions of a laptop

Price: $499-$829
Cost

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What about the iPhone!

Same basic functionality as the iTouch, with a thicker body and the ability to connect to 3G wireless network.
Can make phone calls.

Price: Starts at $49 with service contract from AT&T or Verizon.

Good for older students as an all in one device.
Do you have an older model?

You may need:

• External Camera
• External Mic
• External Speakers (may be needed on new models as well)
• Stylus (may be needed on new models as well)
Optional Accessories

• Speakers (Rj Cooper, AMDI, iMainGo2)
• Switch port (RJ Cooper)
• Plastic Screen Cover
• Case (Otterbox, Rj Cooper, AMDI, iMainGo2, Apple, Various)
• Keyboard/docking station
• Printer
• Mounts, wheelchair
• Bluetooth hearing aid
• Projector adapter
Apps for Communication

• Tap Speak Button - $14.99
  – Record and play single messages
  – Stores messages for easy retrieval
• ArtikPix – Free Version - $29.99
  – Engaging articulation app flashcards
  – audio flashcards
  – Record your voice
  – Data collection
Communication

• Text and Graphics Options

Proloquo2Go $189.99

1. Import your own images or use built-in cameras
2. 8,000 vocabulary items
3. Core vocab system, basics section and side-categories
4. Every cell customizable
5. Message window allows sentence construction and read back
6. Text-to-speech enabled
7. Word Prediction available for typing Multiple voices and accents
8. List or grid view
9. Customize cells for size, color, interactivity and speech
10. Supports cut, copy and paste
11. Memory of spoken items up to one-week
Apps for Reading

Pictello/Story Kit, 14.99
A simple way to create talking photo albums and talking books

ABA Flash Cards, Free
Assists in Identifying, understanding and responding to emotions

Cat in the Hat, $3.99
Includes professional narration, background audio and enlarged artwork for each scene.
Apps for Writing

**FirstWords**, $1.99

- Develop fine motor skills
- Learn to recognize and match letters
- Learn the sounds letters make
- Learn the names of letters
- Learn how to spell words

**SentenceBuilder**, $3.99

- Helps elementary aged children learn how to build grammatically correct sentences
Hearing

• Turn your iPad/iTouch into a Pocketalker

Amplify’d
Hearing

• **iHear Clear** - $2.99  
  Amplifies sound, similar to Amplify’d

• **Ear Trumpet** - $3.99  
  Amplify and filter sound  
  Excessively loud sounds can be automatically detected and decreased

• **Amplitude** - $1.99  
  Amplify naturally quiet sounds
Apps for Reinforcement!

- High Five
- Talking Tom
- Lots of Games!
We are here to help you with assessment, training, information, technical assistance, and lending.

www.idahoat.org  800-432-8324

IDAHO ASSISTIVE TECHNOLOGY PROJECT

Feel free to come explore the assistive technology I brought and ask me questions about it.