Maximizing Job Success Using Assistive Technology

Kevin Berner, OTD, OTR/L, ATP
Clinical Supervisor, Easter Seals MA | kberner@eastersealsma.org
Catherine Bly, MEd, TVI
ATRC Coordinator, Easter Seals MA | cbly@eastersealsma.org

November 30, 2016

Learning Objectives

- Learn about types of AT that support work skills
- Describe best practices for assessing the best fit for technology supports for an individual with a disability.
- Describe best practices for implementing assistive technology solutions in the workplace.
- Identify technologies currently being used to support individuals with disabilities in the workplace.

What is it AT?

*"**any item**, piece of equipment or product system whether acquired commercially off the shelf, modified, or customized that is used to **increase, maintain, or improve functional capabilities** of **individuals with disabilities.**"*

(Assistive Technology Act Amendments, 2004)

Images: nuance.com, permobil.com, apple.com

Low Tech/ No Tech

- Easy to use
- Minimal learning time
- No electrical power
- Little or no training needed

Cook, A.M. & Polgar, J. M. (2015). Cook & Hussey's Assistive Technologies: Principles & Practice. 4th edition. St. Louis: Elsevier. Images: augresources.com, Pattersonmedical.com, Staples.com.

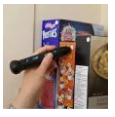
Elementary Technology:

- Battery operated devices
- Easy to use
- Minimal amount of learning time

Cook, A.M. & Polgar, J. M. (2015). Cook & Hussey's Assistive Technologies: Principles & Practice. 4th edition. St. Louis: Elsevier.
Images www.loc.gov/nls/, samsung.com, allegromedical.com, timetimer.com,

High Technology:

- Complex and programmable
- Often requires training
- May be customizable
- May be costly



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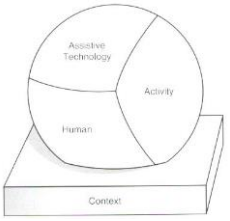
Images nuance.com, livescribe.com, enablemart.com, apple.com, amazon.com

Framework for AT Services: HAAT

- Human
- Activity
- Assistive Technology
- Context



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Applying of the HAAT Model

Cook, A.M. & Polgar, J. M. (2008). Cook & Hussey's Assistive Technologies: Principles & Practice. 3rd edition. St. Louis: Mosby. Images: kensington.com, abledata.com

BEST PRACTICES: What the Research Suggests

Assessment
Intervention/training
Assistive Technology Solutions

Best Practice: Assessment

- **Work Accommodations & AT**: Bridge the gap between job talks and skills
  - Who pays - Employer or agency? Depends on the situation!
- **AT does not need to be expensive**
  - Focus on natural context supports
  - Low tech solutions can be made or bought (some cost $0!)

- **AT is underutilized to help people with significant disabilities in the workplace. Why?**
  - Lack of training on how to use devices by staff, families, employers
  - Lack of coordination in the evaluation and selection of devices

Source: T-TAP Training and Technical Assistance for Providers, Virginia Commonwealth and ICI UMass Boston, Instructables.com

Best Practice Assessment

AT should not drive the job search process, it support skills as part of the planning process. Select appropriate AT supports based on:

Informal AT Assessments
Knowledge of Employment Service Providers, Transition Team, staff and parents, previous employers
- Location, work environment and skills required at job site
- Safety awareness and ability to complete tasks
- Job Accommodation Network options

Formal AT Assessments
- When more intensive modifications are required
- Requires assessment by a AT Specialist, OT, PT, SLP and/or behavioral professional

Best Practice: Assessment

Active engagement of clients in the AT assessment process leads to **better outcomes**
(Lenker, & Paquet, 2004; Johnston, et al., 2014; Scherer, et al., 2005)

Goal: Use assessment & outcome measurements that:
- ✓Support independence
- ✓Are client centered
- ✓Work in multiple contexts
- ✓Valid and reliable
- ✓User friendly

AT Assessment Resources

AT Accommodation Ideas www.askjan.org

JAN Job Accommodation Network

SOAR Searchable Online Accommodation Resource

AbleData Tools & Technologies to Enhance Life

Best Practice : Intervention/Training

Natural context better than clinic/school for improving independence with AT
(Burke, et al., 2013; Gentry, 2008; Gentry, et al., 2015; Harvey, et al., 2013; Raghavendra, et al., 2013)

Conclusion:

Providing services in the client's:

- Living environment
- Learning environment
- Working environment
- Community

Best Practice: Devices/Interventions

Electronic aids to daily living improve **events & task recall** for adults with:

- Secondary School and Adults with Autism Spectrum Disorder (Gentry, et al., 2010, Gentry, et al., 2015)
- Chronic neuro conditions (Gentry, 2008; LoPresti, et al., 2008; Lindqvist, et al., 2015)

images: wikipedia.com

Research Study: Using a Mobile Device in the Workplace

- 50 adults with ASD, average age 25 (range 18-60)
- 68% high school diploma, 24% with high school certificate
- Jobs range 8-35 hrs/week: stock clerk, Food prep, Teacher's aide, Library aide, grocery store, mailroom, an others
- Intervention:
  - Workplace AT assessment with worker, job coach & employer
  - Identified useful apps and functions for iPod Touch
  - Train worker to use iPod Touch functions for job
  - Compare workers using iPod touch to those received job coach alone

(Gentry, et al., 2015)

Results: Using a Mobile Device in the Workplace

- Training in the use of a iPod Touch reduced the need for job coaching support by workers with ASD without reducing functional performance on the job
- Work performance btw iPod Touch and job coach similar
- 6 participants had smartphones or PDA, but was not using them to support work tasks
- What does this mean?
  - Digital divide: Individuals with disabilities have less access to mainstream electronic devices, but may **have most to gain**?
  - Supports use of mainstream technology as compensatory strategy

(Gentry, et al., 2015)

Built-in features of mobile devices to enhance function

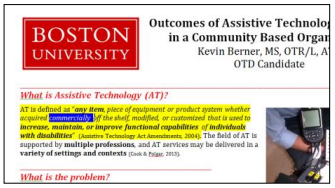
- Scheduling & Calendars
- To-do lists
- Video modeling for tasks
- Task procedures lists
- Email
- Audio instructions/Recorder
- Speech recognition

(Gentry, et al., 2015)

Best Practice: Devices/Interventions

Synthesized text-to-speech screen reading software can **improve reading rate** for :

- individuals with learning disabilities (Floyd and Judge, 2012)
- individuals with brain injury (Harvey, et al., 2013)


BOSTON UNIVERSITY

Outcomes of Assistive Technolo
in a Community Based Organ
Kevin Berner, MS, OTR/L, A
OTD Candidate

What is Assistive Technology (AT)?

AT is defined as "***any item**, piece of equipment or product system whether acquired commercially off the shelf, modified, or customized that is used to **increase, maintain, or improve functional capabilities** of **individuals with disabilities**"* (Assistive Technology Act Amendments, 2004). The field of AT is supported by **multiple professions**, and AT services may be delivered in a **variety of settings and contexts** (Cook & Polgar, 2013).

What is the problem?

images: Read & Write Gold v11.5, TextHelp.com

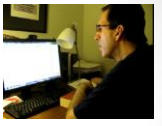
Improving Access to Devices

Speech recognition: Why?

Individuals may choose speech to address:

- Typing impairments
- Existing musculoskeletal injury
- Hope to prevent injury
- Difficulty accessing keyboard
- Difficulty accessing mouse
- Slow typing
- Difficulty navigating device
- Dyslexia
- Dysgraphia
- Learning disability
- Tremor
- Weakness
- Coordination impairment

Speech Recognition on Multiple Platforms



- **PC:** Dragon for PC, Windows Speech Recognition, Google Docs Speech Recognition
- **Mac:** Dragon for Mac, Mac OS Dictation, Google Docs Speech Recognition
- **iOS:** Siri, Dragon Anywhere service, Dragon Dictation App
- **Android:** OK Google, TalkType Voice Keyboard, Speechnotes
- **Others:** Xbox One with Kinect, Amazon Echo

Case Example: Stephanie

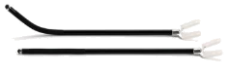
- 27 years old
- medical history of primary generalized dystonia resulting in impaired motor control
- has history of vocal cord polyps, mild dysarthria
- works administration support for a Non-Profit

Steph's Results

- Typing: 12-16 wpm
- ***Pre-training*** dictated ~60 wpm 80% accuracy
- ***Post-training*** dictated ~54 wpm 95% accuracy (missed a proper name)

Improving Access to Electronic Devices: Low Tech Solutions

- Mechanical or orthotic devices that can improve access to mainstream or rehab tech
  - Mouthstick
  - Typing Orthoses
  - Capacitive stylus
  - Universal Cuff
  - Bump-ons



Images: amazon.com, ailmed.com, griffintechnology.com

Improving Access to Electronic Devices: Alternative Mouse

Images: apple.com, kensington.com, targus.com, enablemart.com

Improving Access to Electronic Devices: Alternative Mouse

Images: enablemart.com, tobii.com

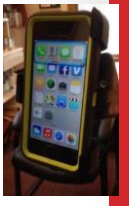
Improving Access to Electronic Devices: Alternative Keyboards

Images: enablemart.com, chestercreek.com

Improving Access: Alexander

- 26 year old male
- Has athetoid CP, limited motor control in arms/hands, some motor control in legs
- Extensive AT experience, advanced computer user
- Current phone single switch, can only answer incoming and call 10 numbers from favorites
- Client NEEDS full PDA features of smartphone for organization, networking and communication

Improving Access: Alexander



- Borrowed iPod Touch and switch adapter for trial from ATRC in Boston
- Determined best access: two 2.5" switches mounted on power wheelchair near knees
- Requested funding for Bluetooth Switch adapter, switches, mounting supplies & setup/training

Apps Improve On-Job Performance or Daily Living

Apps for Social Skills and Video Modeling, Task Sequencing and more!

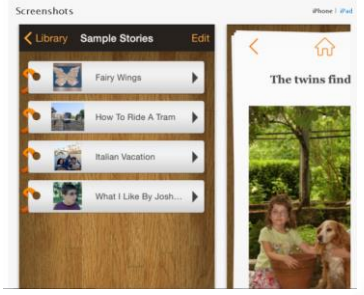
- Interview (videos to prepare for a job)
- Social Skill Builder (Older version) - series of short videos - $9.99
- Zones of Regulation ($5.99-9.99)
- Book of Me - Free
- Pictello $14.99
- Book Creator - $4.66
- Story Kit – Free

App: Pictello

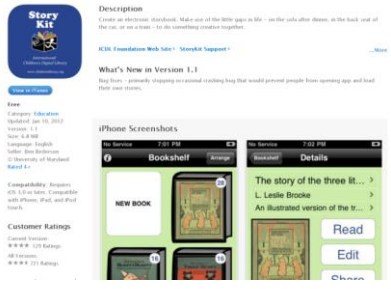
Talking Visual Story Creator

- **Pictello : by AssistiveWare $19.99**
- Natural-sounding Text to Speech voices, or record your own voice, many language options as well
-Each page in a Pictello story consists of photo or video and text, which can be read aloud with a text highlighting option
- Use wizard to create stories
- Play stories page by page or as a slideshow
- Turn on switch access for story playback
- Integrate multimedia - Add your own photos or video clips
- Export to PDF or print to share with non-Pictello users

App: Pictello



App: Story Kit



Apps for Reminders & Scheduling

First Then - $14.99
Choiceworks - $6.99
Visual Schedule Planner - $14.99
CanPlan Free

Other

- Apple and Google Calendars Free
- Time Timer $2.66
- Out of Milk
- Reminders Free

App: First, Then

First Then boards, Visual schedules, Task analyses, Social stories, Choice boards, Video models

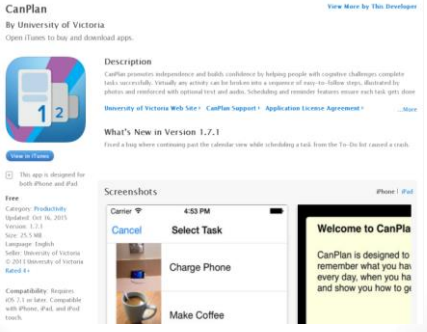
First, Then by Good Karma Cost: $14.99
The visual supports you can create and use with First Then Visual Schedule (FTVS) HD have proven to be especially beneficial for the following populations:

Those learning English as a second language
People with developmental disabilities like Autism and Down Syndrome
Individuals with learning disabilities like dyslexia
People affected by anxiety or attention deficits
Anyone with language, hearing or auditory processing deficits
Individuals affected by aphasia after a stroke

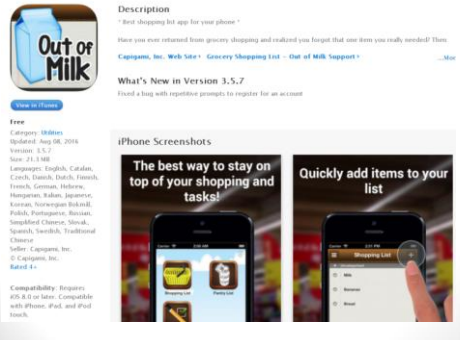
FTVS HD lets you easily and quickly create and use ALL these visual supports in just one app:

App: Choiceworks

App: CanPlan



App: Out of Milk



Apps for Time Management:

Time Timer - $2.99
Enjoy stress-free time management with the new and improved Time Timer for iPhone—an award-winning visual timer, now upgraded for iOS 8! Take advantage of the ability to customize, save and re-use timers with names, colors, alert options, timer scale options and more! The Time Timer for iPhone app has a refreshed look, new functionality and improved performance features:

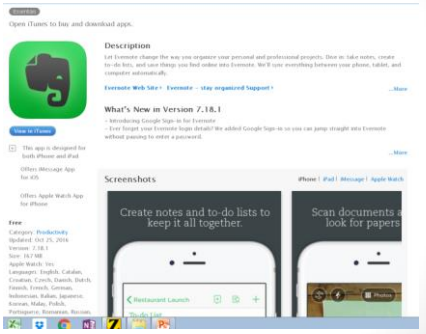
Apps for Organizing Info & Tasks

- Evernote OneNote, Google Drive, Drobox Free
- Livescribe Pen-AudioNote - $9.99 for App Pen $ 120.00
- Amazon Echo (Alexa) – Free for App Device $50-$170.00
- Apple Siri and Google Now - Free
- Stock Control – Bar code reader - $9.99

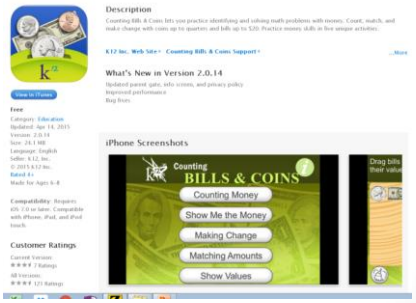
Math apps

- Counting Bills and Coins - free
- Calculator Free

App: Evernote



App: Counting Bills & Coins

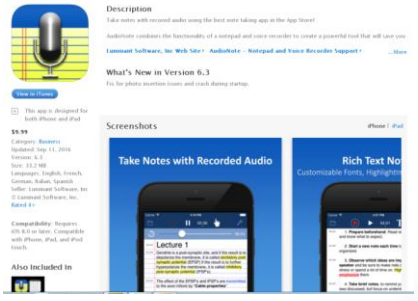


App: Stock Control

Stock Control

Type: Inventory Management
Cost: $9.99
Description: Stock Control is an easy to use and full features inventory tracking app that allows you to track items by category, attributes and location. The strong point of this app is how customizable it is. There are some fixed attributes for each item but you can also freely create whatever attributes you need. With the item loan function and its ability to search by item or location barcodes, Stock Control can also be used for asset management. It even has a function to let you know when a given item's stock level goes below a set level for easy re-ordering. You can also easily export and import your inventory data as CSV files for use on your PC or Mac. Stock Control is a very easy to use and flexible app to manage any kind of inventory or asset collection.

App: AudioNote



Concluding thoughts

- A good fit depends on many factors: The person, the activity, the context
- Person-centered assessment, trial and training can improve outcomes
- Success depends on support: Worker, Employer, AT specialist, Job coach, and environmental supports
- Technology changes ***quickly***!

Try it! Device Demo and Loan

See, Touch, and Try Assistive Technology REGIONAL CENTERS

MassMATCH ATRCs

- Provide device loans at no cost
- See a demonstration of AT devices for work
- Trial devices at home or work, borrow for 4 weeks

ATRC Locations: Call for an appointment, staff welcome!

Boston @ Easter Seals Boston office 617-226-2640
Pittsfield @ UCP of Berkshire County 413-442-1562

Easter Seals Massachusetts

- Our Mission: To ensure that children and adults with disabilities have equal opportunities to live, learn, work and play
- Our Services: AT Consulting & Professional Development, Transition and Employment Services, Contract OT, PT and Speech Services, AT Financial Loans, AT Device Demonstrations and Loans
- **ATRC Boston**
  www.massmatch.org/inventory
- **www.eastersealsma.org**

Many Thanks!

Please contact us with any questions

AT Regional Center @ Easter Seals 1-800-244-2756 x634

Randi Sargent | rsargent@eastersealsma.org
Kevin Berner | kberner@eastersealsma.org
Cathy Bly | cbly@eastersealsma.org

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