Mobile Technology and Apps for AAC

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Brief History of AAC Technology

- 1980's – VOCA's - Devices Built from Scratch
- 1990's – Non-dedicated devices –
  - Laptops become AAC devices
- 2000's – SGD's - Hybrids - AAC Devices running Windows
- 2010 's – Tablets, Smart Phones and Apps

Early 80's – ACS devices

All Talk

Speech PAC with Echo synthesizer

Eval Pac with Scanning Board

Real Voice

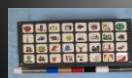## Minspeak Talker devices of the 80's and 90's

Touch

Light

Delta

Intro

Alpha

Walker

1990's Personal Computer as Communication Devices with AAC Software

Words+ Talking Screens on Desktop PC

Meyer-Johnson Boardmaker

King Software Speaking Dynamically Pro

Inman Innovations Word Power

Minspeak Synthesized Devices

Liberator - 1991

Vanguard - 1998

Pathfinder - 2000

Vantage 2001

ECO-14 2007

ECO – 2 2010

Accent 1100 with NuEye™ Tracking System
Eye-Gaze technology optimized for performance

Accent 1200 - 2013

Slide 1: DynaVox - 7 Generations

http://www.research.att.com/~ttsweb/tts/demo.php

- Original - 1991
- IIc - 1996
- 3100 - 2000
- DV4 & MT4 - 2003
- V Max & V - 2007
- Maestro - 2011
- T10 – 2013

Slide 2: Insurance Funding

As early as 1981 - Medicare has covered communication devices.

Up until 2000, Medicare coverage of AAC devices was determined by *ad hoc* decision making. Each Medicare recipient had to establish that an AAC device "fit" within one or more Medicare covered benefits categories, *durable medical equipment (DME)* or *prosthetic devices*, and was "reasonable and necessary,"

In 2001 - Medicare recognized Speech Generating Devices as items of DME, and began providing coverage based on medical need. Medicare determined that SGD's are no longer a "convenience item", but are "medically necessary".

Regional Medical Review Policy for Speech Generating Devices was issued. This policy included the name change from AAC to SGD. It described the clinical assessment and report Medicare will require SLPs to complete to support an SGD funding request.

Slide 3: Speech Generating Devices

- Definition – **Speech-generating devices** (**SGDs**), also known as **voice output communication aids**, are electronic augmentative and alternative communication (AAC) systems used to supplement or replace speech or writing for individuals with severe speech impairments, enabling them to verbally communicate their needs   - Wikipedia

- According to federal guidelines - Dedicated communication devices with limited applications – such as Environmental Control Units, Control interface for Personal Computers, limited games, and limited songs / music.

Slide 4: Laptops and Touch Screen PC's as Communication Devices (2000's)

- Freedom 2000 with EZ Keys
- ATI Mercury
- Freedom Lite Convertible
- GUS Communicator 6000
- Words+ Tuff Talker
- ATI Optimist
- Words+ Tuff Talker Convertible

Slide 5: Handheld Speech Generating Devices (2000's)

- Handheld IMPACT
- Saltillo Chat PC's –Original, PC-2, PC-4, and Silk
- blinktwice TANGO
- Words+ Say-It-Sam Handheld
- DynaVox Xpress

Slide 6: Disability Specific AAC Devices for : Aphasia and ALS

Lingraphica Products

Essence

- Laptop - AllTalk
- essence PRO
- Tablet - TouchTalk
- Accent 1200
- Handheld – Small Talk
- essence VII

Benefits of Traditional Speech Generating Devices

1. Language Representation systems
2. Research and Development of optimal hardware for individuals with disabilities
3. Multiple access techniques
4. Incorporation of current computer technology
5. Experience with thousands of customers
6. Software design by speech-language pathologists
7. Marketing experience
8. Manufacturer representatives across the country
9. Studies validating benefits of SGD's
10. Support / Training opportunities
11. Funding departments
12. Development and support of field of AAC

Events in history.

- **Q: What significant event happened in April, 2010 to change the field of AAC and Mobile Technology?**
  A) Eyjafjallajokull volcano in Iceland erupts
  B) explosion on a BP oil drilling rig off the coast of Louisiana
  C) Apple releases the iPad
  D) Kyrgyzstan President Bakiyev fleas Bishkek amid deadly protests

  A: C) Apple release the iPad

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iPad history

iPad Time Line   In just over 3 years ....
April 3, 2010 - The first iPad was released - Depth and weight unprecedented. Apps introduced.
2011 – 2nd generation – Front and rear facing cameras
   Face Time
2012 - 3rd generation – Retina display – 5-megapixel camera – voice dictation & 4G
November 2, 2012 - iPad Mini released
2013 - 4th generation – All digital connector replaces 30-pin – Siri voice recognition

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An iPad can:
 shoot video, take photos, play music, and perform Internet functions such as web-browsing and emailing. Other functions—games, reference, GPS navigation, social networking, ability to download and install apps.
As of June 2013, the App Store has more than **900,000** apps by Apple and third parties.

2010 – iPad hits the market

- Consumer (family) comments
  - Benefits of iPad vs. traditional SGD's

- Weight differential (ounces vs. many pounds)
- "Coolness"
- Screen quality
- Apps – Usability
- Cost   (hundreds vs. thousands)
- Marketing

What is Mobile Technology

- Definition according to Wikipedia.

- Mobile Technology - refers to 3 types of devices

  - Personal Digital Assistants (PDA's)
  - Smart Phones
  - Tablet computers

Personal Digital Assistant

- A **personal digital assistant** (**PDA**), also known as a **palmtop computer**, is a mobile device that functions as a personal information manager. PDAs are largely considered **obsolete** with the widespread adoption of smart phones

Smart Phones

A mobile phone with more advanced computing capability and connectivity. The first smart phones combined the functions of a personal digital assistant (PDA) with a mobile phone. Later models added: portable media players, compact digital cameras, pocket video cameras, and GPS navigation units. Many modern smart phones include high-resolution touch screens and web browsers with high-speed data access provided by Wi-Fi and mobile broadband.

Tablet Computers

A mobile computer with display, circuitry and battery in a single unit. Tablets are often equipped with sensors, including cameras, microphone, accelerometer and touch screen, with finger or stylus gestures replacing computer mouse and keyboard. An on-screen, popup virtual keyboard is can be used for typing. Tablets are typically larger than smart phones at 7 inches or larger, diagonally

How Mobile is It ?

- V Max SGD (2007)

  - Weight 6 lbs. 14 oz.

- "You can put handles on a refrigerator, too"

  iPad : Weight:
  1.5 lbs. &
  getting lighter ?

Limitations of Off-the Shelf Mobile Technology in serving as AAC devices.

- Durability
- Speech volume
- Touch sensitivity adjustment
- Access techniques
- Apple – unlockable when purchased
  - (although locking app is available)
- Android – locking feature

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Tablet Communication Devices

ACCI Choice Communicator
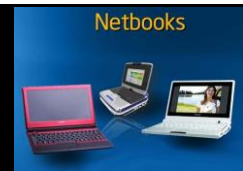
Saltillo Nova Chat 7

PRC Accent

Evaluating SGD's and Mobile Technology

- Batavia and Hammer's 17 criteria for evaluation of assistive devices

- Affordability	Flexibility
- Compatibility	Learnability
- Consumer Repairability	Operability
- Dependability	Personal Acceptability
- Durability	Physical Comfort
- Ease of Assembly	Physical Security
- Ease of Maintenance	Portability
- Effectiveness	Securability
	Supplier Repairability

PRAT iCAT Workbench AT Reviews

- DynaWrite
- Chat PC Silk
- Xpress
- iPad
- Proloquo2Go
- Predictable
- Lingraphica

Netbooks

Laptops to Netbooks

PSION TEKLOGIX

	iPad	Netbook
Total size	9.5" x 7.5"	8.9" x 6.5"
Can use pointers	No (requires finger)	Yes (any pressure)
Weight	1.5 lb.	2.1 lb.
Power button	Accessible, easy	Somewhat accessible
Menu button	Accessible	None
Startup time	Instant on	20 seconds
Processor speed	1 GHz	1.33 GHz
Storage space	16, 32, 64, 128 GB	Flash drive 32 GB
Battery life	10 hours	5 hour
Keyboard	On-screen / docking	Built-in real keyboard

	iPad	Netbook
Internet connectivity	Wireless, or w/3G	Wi-Fi (regular) and Ethernet (wired)
Switch/scanning capability	None but Bluetooth switch interface	Regular USB ports
Web page compatibility	'Standard' pages only	Any
Internal speaker	Pretty good but not loud enough at McDonald's	Not loud enough for AAC; requires external speaker
Built-in mike	Yes	Yes
Webcam/camera	Yes	Yes
External CD/DVD	No	Yes
Price	$499 - $899	About $550
Applications available	900,000+, only from Apple Store	Any Windows software

iPad Memory - How many Gigs do you need ?
- A) 16
- B) 32
- C) 64
- D) 128

We use a lot of AAC apps- that coupled with graphic intense articulation and language apps fills up a device quickly.
I have an iPad 2 with 32 that is maxed. I have an iPad 4 with 64 that I have not maxed.
On the 32, I have to swap out AAC apps all the time b/c the pictures and voices take up too much space.
I have not had to do that on the 64 so far.

Rule of thumb for any tech- buy a big as you can afford.

Angela Standridge, MA CCC-SLP, ATP
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Access and Peripherals for Enhancing Mobile Technology to serve as AAC devices

- Keyboards
- Switch Access
- Speakers
- Cases

Apps – Where did they come from ?

- 2002 - First apps developed by Blackberry
- 2008 – iTunes App Store emerges for iPhones
- 2010 – Android Market begins
- 2012 – iTunes – 25 billion downloads
- – Google Play – 15 billion
- May 2012 – The most popular mobile game had over 1 billion global downloads

Article Source: http://EzineArticles.com/7760835

Capabilities of Mobile Technology & Apps

- Major Tablet brands: iPad – Kindle – Nook - Galaxy – Surface

- Multi-purpose apps – Music, Movies, Internet access, personal and interactive Games, U-tube entertainment and instruction, Education, Rehabilitation, Fitness, Weather, Note taking, Calendar, Social Media, GPS, etc. infinitum

PC vs. Apple – Microsoft strikes back

- Benefits of the Microsoft Surface Tablet over the iPad
  - Built-in Stand
  - Built-in manual keyboard
  - USB port
  - Windows OS
  - Price
- Limitation
  - Apps

App Stores

- Apple   iTunes
- Android Android Market became Google Play, Amazon.com, many others
- Microsoft - Windows Store

The Advent of AAC Apps

- Proloquo2Go – The Granddaddy of AAC Apps
  - Palm Pilot – the Granddaddy of PDA's
  - Benefits of Proloquo2Go
    - Comprehensive
    - Large Library
    - Programming ability
    - Keyboard for Spelling
    - Word Prediction

Apps beyond PLQ2Go

- Basic – Digitized Speech
- Scanning
- Spelling
- Comprehensive

Digitized AAC APPS

Aphasia

My Choice Board

Alexicom

Scanning –capable

- Go-Talk
- Tap Speak Choice
- Proloquo2Go

Spelling apps

- Speak It
- Verbally
- Predictable

Blog Comment: Verbally is good, but Predictable has many more features. I like how social media and email is integrated. There are more text to speech and auditory feedback options. There's even a write pad that can be enabled that integrates word prediction with character recognition. Access methods can customized for both touch and scanning.

predictable 3 ~ iOS

Comprehensive

- Proloquo2GO
- Touch Chat Suite
- Sono Flex

AAC App features

- Tremendous variety from simple (Yes/No) to complex (Proloquo2Go)
- Typically somewhat easier to program than traditional SGD
  - (Ex. Behaviors for a button – 10 vs. 225)
- Inexpensive software (Free – a few hundred dollars)
- Limited support
- Limited training information
- No funding support

How to Decide ?

- Cost
- Design
- Recommendations
- Reviews

Reviews

- iTunes / Google Play / Windows Store
- PRAT iCAT Portal
- AT Tech Connect   http://www.aactechconnect.com/
- SLP Geek http://www.geekslp.com/
- ASHA Leader – "In search of the perfect speech/lang. app"
  - http://www.asha.org/Publications/leader/2012/120403/Internet--In-Search-of-the-Perfect-Speech-Language-App/

Miss-Apps

- Crashers
- Amateur Hour
- House of Straw (Poor Architecture)
- Identify Thieves

Miss-Apps   Lead to   Dis-App-pointment

Hybrids - The AAC Manufacturers Big 6 (now 4) Check In

- Saltillo – Nova Chat series
- tobiiATI – iSeries
- PRC (Words +) LAMP Words for Life
- DynaVox (Toby Churchill) T-10

Saltillo Nova Chats

NOVA chat 10 has the largest display of any Chat communication device. It offers the well-known Chat Software on an Android platform. Like all "Chats," NOVA chat 10 offers a durable yet sleek portable design, with features that include a 10.1" display, switch scanning, Social Chat, IVONA speech synthesizer, and many other Chat features.

Tobii ATI   iSeries

The Tobii I-12 and Tobii I-15 are speech generating devices that enable effective communication in all forms – from voice output, environmental control and computer access, to long distance communication. A rugged design, unparalleled power management, support for touch to gaze interaction and more make the I-Series ideal for everyday use.

PRC - Words for Life (WFL) – Nova Edition

Words for Life (WFL) - NOVA Edition features the WFL 84-location vocabulary on an Android platform in a durable, sleek portable device. The WFL vocabulary is an adaptation of the Unity® language system that supports the Language Acquisition through Motor Planning (LAMP) approach.

DynaVox T10

It's so small
Just 1.9 lbs. with an average thickness less than 3/4 of an inch, it's the smallest and most portable communication tablet of its kind. It's easy to take with you wherever you go. The industry's first dedicated Speech-Generating Tablet.

Hybrid Features

- Support of Major Manufacturers
- Training
- Years of Research experience backing software
- Incorporation of tablet technology
- Locking feature – Only AAC app boots.
- Ability to Unlock to access OS
- Ability after Unlock to access Apps

Medically Necessary vs. Culturally Relevant

Augmentative Communication Device manufacturers continue to be driven by the fact that private insurance will only pay for Medically Necessary speech generating systems. Computer access, Internet access, Social Media access and all other non-speech and language accessibility continue to be denied by private insurers.

This has limited and controlled the way in which AAC device manufacturers operate.

Internet Usage

Roughly 2.5 billion people, more than one-third of the world's population, currently use the Internet, and another 2.5 billion are expected to go online by the end of this decade.

·John Negroponte in "Urgent Need to Protect the Internet"
·The Epoch Times, Sept. 2, 2013.

Current status of mobile technology use

- As of March 2012, 31% of U.S. Internet users were reported to have a tablet, which was used mainly for viewing published content such as video and news-Among tablets available in 2012, the top-selling line of devices was Apple's iPad with 100 million sold by mid October 2012 ·followed by Amazon's Kindle Fire with 7 million, and Barnes & Noble's Nook with 5 million·
- ·As of May 2013, of mobile developers – 93% were targeting smart phones versus 70% for tablets·
  - · - Wikipedia.

Emerging Consumption of Digital Media

- "Millenials are not the only ones with high daily usage of digital media (online, mobile, video, social, gaming, and so on). One can see high consumption with Gen X and baby boomers, too. Given these trends, don't count baby boomers out of digital media consumption, as baby boomers plan to maintain their youthful habits all the way into their golden years."   - Adele Lassere

  - In " Elements of Buying: A How to Reference Guide on Advertising for Business Owners".

Future Predictions

Innovation Failures – 5 of the top 10 – posted by
Gijs van Wulfen Founder of the FORTH innovation method

2. Sony Betamax (1979) Betamax was defeated by VHS video recording when over forty companies decided to use the VCR-compatible format instead.
3. Colgate Kitchen Entrees (1982). Consumers could eat a Colgate meal and then brush their teeth with Colgate toothpaste.
7. Harley Davidson Perfume (1994) "masculine, macho and a rebel" aftershave and perfume.
8. BIC Women's Underwear (1998).   'Disposable pantyhose'
10. Cocaine® Energy Drinks (2006). Not long after its launch, the FDA pulled the drink from store shelves

The EDSEL LOOK is here to stay
—and 1959 cars will prove it!
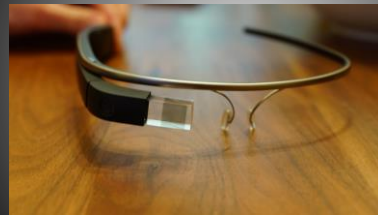
Future Mobile Technology and Apps

- AAC App-vertising
- Eye gaze access
- iWatch and Google Glass
- BCI Ipads
- Robot aided communication
- Game-based AAC-learning Apps
- GPS – environmentally-based vocab Apps
- Telerehab / social networking and cafes

iWatch (Prototype)

It's time!

Google Glass

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IN Conclusion ....

Bicycle Built for Two

AACHIE
Augmentative
And
Alternative
Communication
Historical
Interactive
Exhibit

Heroes and Super heroes
1. Indiana Jones
2. Yoda
3. Mario Lemieux
4. Sully
5. Harry Potter
6. Michael Phelps
7. Spiderman
8. Ironman
9.Thor
10. Angry Bird
11. Merida
12. Si Roberts
13. Dick Tracy
14. Mr. Magoo
15. Archie