

Assistive Technologies: Cognitively Disabled

Class 6

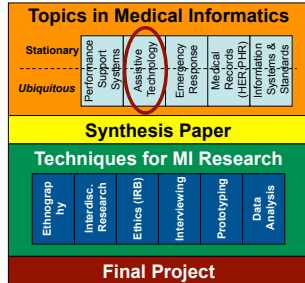
Agenda

- 3:00-3:25 Presentation by Aaron
- 3:25-3:30 Announcements
- 3:30-3:50 Assistive technologies for the cognitively disabled

Announcements

- Thanks to Melissa Dawe for her help
- Quiz grading will be done by Friday
- Reading for Week 4 out by Friday

Where are we?



What is an assistive technology?

Assistive Technologies - Holes in Research

- The rate of abandonment of assistive technology is high (35%)

Weaknesses of existing research

- Studies of AT abandonment usually group together all disabilities: physical, learning, cognitive, etc., and thus may give a misleading impression on abandonment of devices for cognitive disabilities
- Research generally takes a binary *adoption vs. abandonment* approach, ignoring usage contexts, perceptions of effectiveness
- Studies don't include "regular" technology re-purposed as AT

Methods used for evaluating ATs

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Semi-structured interviews with teachers and parents of young people with cognitive disabilities (diverse network of caregivers)

Interviews conducted in the classroom or in the home

Interviews lasted 45 - 90 minutes
(family interviews were generally longer, more in-depth)

What would you ask?

What questions would you ask elders with dementia about ATs?

What questions would you ask young people/caregivers with cognitive disabilities about ATs?

What would you ask?



Linsey Can:	Linsey has Difficulty:
Connect socially with people on the phone	Learning phone numbers, using cell phone menus
Make lots of friends	Understanding social cues to get off the phone, not call people too much
Remember to charge her phone	Understanding why it's dead when it hasn't been charged
Re-start phone application by pressing an icon	Restarting phone application by navigating PocketPC Menus
Remember her daily schedule	Telling time
Hold a job (2), ride the bus independently	Reading, consistently recognizing numbers

Is there an "ideal" user with a cognitive disability?

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Type of Disability			
Down Syndrome	Autism	Other/Unidentified	
5	4	12	
Age			
12 - 15	15 - 18	19 - 21	22 - 24
5	6	9	2
Gender			
Male	Female		
12	9		

Types of ATs available

	Examples	#
Communication	Aug Comm Device, Picture Symbols	21
Writing	Word prediction, spelling, e.g. AlphaSmart	10
Prompt/Scheduling	Picture Schedules, timers, watches	10
Reading	Screen reading software	9
Educational Software	Games, software & on-line	8
Alternative Input	Keyboard e.g. IntelliKeys, switch	6
Math (Calculator)		3
Reading & Writing	Write Out Loud	3
Remote Communication	Cell phone	3
Entertainment	Talker used as a toy	1
Medical Monitoring	LifeLine System	1
Navigating Web/Email	Voyager Suite by AbleLink	3

AT Adoption Process

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Multiple stages

- Rogers identifies: awareness, persuasion, decision-making, incorporation

Multiple individuals involved

- AT specialists or speech therapists often identify potential technology
- Teachers often involved in trial period and decision-making stage
- Parents expected to incorporate the device into the student's life (or maintain it after the student left the school system)

AT Specialists Recommend

➔

Teachers Trial Study

➔

Families Incorporate

Things to keep in mind with AT adoption?

Things to keep in mind with AT adoption?

Different goals among stakeholders

- Parents want school to identify, provide cutting-edge technology
- Teachers deal with limited resource pool

Portability

- Families cited lack of portability as reason for abandonment
- Bulky, cumbersome devices aren't appropriate in mobile settings

Easy to Learn, but Expandable

- Low learning curve, high ceiling
- Many users with cognitive disabilities can master technology
- Simplicity also important in support, documentation

Simple to Update and Replace

- Break-downs are inevitable
- Highly customized software should support simple re-configuration

Things to keep in mind with AT adoption?

Increased Independence and Safety

- Technology used as a lifeline to caregivers
- Technology as a proxy caregiver (supporting, prompting)

Appropriate Social Interaction

- Sometimes technology (video games) can reduce social interaction
- Parents hope technology can guide more appropriate social behavior

Design implications of AT acceptance information?

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Usability of technology lifecycle

- Usability design, evaluation should include configuration, use, upgrade, and replacement

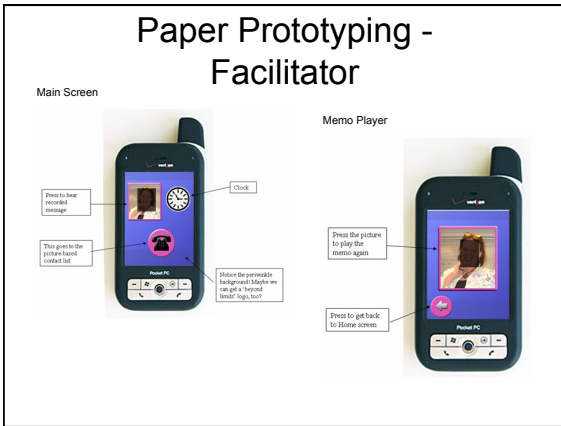
Out-of-the-box usefulness, yet highly customizable

- Don't require extensive configuration before showing value
- Functionality can increase in complexity over time
- Support incremental customizations

Paper Prototyping - Target Population



Paper Prototyping - Facilitator



Reality Testing Benefits (or drawbacks)

- Most of the early problems were platform-related, not software application related
 - Accidentally press the power button
 - Accidentally pop out storage card
 - Accidentally initiating a call when backlight is dark
- These are often “between task” breakdowns, would be hard to discover except through realistic use
- We can “compensate” for platform-level breakdowns by adding capabilities in the software (e.g. large icon for Linsey to re-launch applications if system restarts)

Looking forward

- Week 3: Assistive Technologies
 - Quiz: Friday – September 12
- Week 4: Qualitative Field Methods
 - September 17 **NO CLASS – Field Exercises**
- Week 5: Exercise Informatics and Final Projects Discussion
