**6.S196: Principles and Practice of Assistive Technology**
**Augmentative & Alternative Communication (AAC) Exercise**
**3PM, Monday, November 26, 2012**

**Objectives:**
• Learn about alternative communication technology for people with speech impairments
• Observe users of AAC technology
• Experience forming sentences with an AAC

**Activities**
• Lab session with AAC Mon November 26

**Deliverables**
• Write a brief (1-2 pages) reflection on this activity, due by Wed, November 28, 1 pm.

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This lab activity has three parts:
• **Kinds of AAC**, in which you will survey the design space for augmentative & alternative communication devices
• **Observing AAC Use**, in which you will watch videos of people with speech disabilities using AAC devices.
• **Trying AAC**, in which you will conduct a conversation using AAC devices.

For Trying AAC, you will need a Mac laptop, plus an iPad with AAC software installed. We'll pass the iPad around the class.

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# Kinds of AAC

Alternative and augmentative communication devices are assistive technology for people with speech impairments. Speech impairments can have many causes:
• motor impairments like cerebral palsy and ALS. Stephen Hawking is a well-known user of AAC; he is almost completely paralyzed by ALS.
• cognitive impairments like autism.
• apraxia of speech, a specific neuromotor impairment of the speech system.
• developmental disabilities, which may be motor or cognitive or both. A child who is slow to develop speech may need AAC.

As this list shows, speech disabilities may frequently be accompanied by other kinds of motor or cognitive disabilities that can affect a person's ability to use or learn the assistive tech. Many AAC users are children. Keep these in facts in mind when you consider the following.

The spectrum of AAC devices is wide and diverse. For this part of the lab, you will consider several AAC devices and identify some of the dimensions of the design space for AAC. To illustrate what we mean by a dimension in a design space, here are some examples of dimensions for a different domain: smartphones. (a) *operating system*: Android, iOS, Windows, Blackberry. Determines which

applications can be run on the device. *(b) keyboard*: hard buttons (e.g. Blackberry) or touchscreen (Android, iOS, Windows). Affects the speed of typing, the presence of tactile feedback, the ability to use the device without looking. *(c) cell network standard*: CDMA, GSM, LTE. Affects the speed and coverage of the network and which network providers can offer service for the phone.

Notice that our example smartphone design space focuses entirely on the technical aspects of the hardware. Your design space should not come from that direction. You should focus instead on the aspects of the AAC design space that are most relevant to the user's abilities. That may involve mentioning some features of hardware, but keep the user foremost in your mind.

Search the web for the six example devices listed below, and use them (and other devices you find, if you wish) to **identify at least three dimensions of the design space** for AAC.

- Springboard Lite Unity 32
- Cheap Talk 8
- Jabbla Allora
- Dynavox Tango!
- E Z Keys
- Picture Exchange Communication System (PECS)

After you've done this exercise, you may find the Periodic Table of AAC inspiring to look at (Google for it).

## Observing AAC Use

To see what it's like for real people with disabilities to use AAC devices, watch the videos below.

YouTube: Autism/Dynavox III (2:17)
> This girl is transitioning from picture boards (PECS) to a dynamic device. What is she still struggling with? What does the AAC make available in one press?

YouTube: Autism/Dynavox IV (1:17)
> How is she doing now?

Brandon T. discusses CSUN and his AAC device (7:10, but you can stop at 1:30)
> This boy constructs longer, more complex sentences. How is his device different from Abby's? Roughly how many presses does he use for each word?

Schuyler's Monster: At the Purple Cow (5:58, but you can stop at 3:10)
> This girl uses her AAC to order at a restaurant. What issues does she face? What's the advantage of being able to create and store an utterance? (Schuyler has polymicrogyria, a neural abnormality that often leads to speech impairments. Her dad writes a wonderful blog about her life, Fighting Monsters with Rubber Swords.)

Giving Stephen Hawking a Voice - BBC World (2:40)
> Time point 1:33 shows a screenshot of the software he's using. When do you think it was written? Why is he still using it?

## Trying AAC

For this exercise, you'll be using Proloquo for the Mac, and Proloquo2Go for the iPad. If you don't have a Mac laptop, work with somebody else in the class who does, or borrow one from an instructor. For Proloquo2Go on the iPad, we have only one copy, which will be shared around the class.

1. Find a partner to talk to.

2. Install the software. Proloquo2Go is already running on the class iPad. Proloquo for the Mac has a free trial download that you can install and run:
http://www.assistiveware.com/product/proloquo/downloads
Notes about the install process:
   a) When you install the app, you don't need to install Infovox iVox voices as well. That just provides additional voices to choose from, and the bundled voices are good enough for our purposes.
   b) When you first start the app, choose "Use as a communication device."

3. Hold some brief conversations (suggested wording below) and measure the time it takes to do each one. Start with a control dialog, where you are just speaking aloud to each other as you normally would, so that you can time it. Then use the AAC for the next dialog, with one person using the laptop, and the other person using the iPad. Switch roles for the final dialog.

You don't need to precisely duplicate these utterances. Just get the message across, but also reflect on the compromises you made.

Control (speaking normally to each other)
- where do you go for Thanksgiving?
- I go home.
- do you like turkey?
- I like stuffing!

AAC 1 (one person on Proloquo, the other on Proloquo2Go)
- do you want dinner?
- yes, I'm hungry.
- how about burritos?
- ok! I need my coat.

AAC 2 (switch roles: one person on Proloquo2Go, the other on Proloquo)
- do you want the tablet?
- yes, thank you
- I need the laptop, please
- I don't have one.

## Reflection

After completing the three exercises, write a brief reflection about what you learned.  It should be roughly 1-2 pages long.  To get you started, you might think about these questions:

- **Design space**.  What were your design dimensions from the first part, and how did each device fit into the design space?
- **Learnability**.  What kind of effort is required to learn how to use these technologies effectively?  Reflect in particular on the video observations you made.
- **Efficiency**.  Once learned, how does the speed of communication compare with normal communication?
- **Perception**.  How do aspects of the system like voice, vocabulary, and grammar affect how other people perceive the user?

Optionally, also discuss how this lab exercise might be improved.

Your report is due by the start of the next lecture, but we suggest that you write it now during the lab period, while the experience is fresh in your mind.

Your written report should be submitted electronically in PDF form on Stellar.