Access to Online Courses: Perspectives of Students with Vision Impairment

Accessing Higher Ground

Wednesday, November 16, 2016

Westminster Ballroom: 9:15 – 10:15

BREAKTHRU

www.georgiabreakthru.org

This work is funded by the Georgia Institute of Technology and a grant from the National Science Foundation (NSF), Research in Disabilities Education (RDE), Grant Nos. 1027635 and 1027655.

BREAKTHRU www.georgiabreakthru.org

Online Courses

According to the NCES in Fall of 2013

- 5.5 million students took at least one online course
- 27 % of the post-secondary student population
- 13% participated exclusively in online courses

Goals

Describe how individuals with vision impairment access online course material

- Devices & Platforms
- Barriers & Facilitators of the LMS
- Course Content

Methods

- Semi-Structured Interview by Telephone
- Recruitment through NFB's Student Listserv
- Prescreening questionnaire to identify a broad experience level.

Screening Results

Screening responses were grouped by number of online courses taken and course content.

	Course Subject			
Number of Classes	Text-Based	Visual	Both Types of Courses	Total
2-4	2		3	5
5-8	2	2	2	6
>9			1	1
Total	**4**	**2**	**6**	**12**

Methods

- Semi-structured interviews conducted by telephone and recorded
- Recordings were transcribed
- NVivo was used to assist with the qualitative analysis of the interviews.

Subjects' Visual Function

- 6 were blind with no light perception
- 3 were blind with enough light perception to assist with orientation and mobility
- 2 had low vision with significant visual field loss
- 1 with vision in one eye only.

Learning Management System

- Most subjects had experience with more than one LMS environments
- Blackboard was the most commonly used

Other environments used were: Aplia, Canvass, Desire 2 Learn (D2L), E-Learn, Epsilon, Moodle, and Pearson Lab Products

IT to Access Courses

Device	# Using Device
Desktop Computer	3
Laptop Computer	10
Smartphone	3
Tablet	2

- Smart Devices (all Apple Products) were used for specific activities
- All desktops were Windows-based systems
- Most laptops were Windows-based systems

- On average subjects used 2.3 browsers to access online materials.

AT to Access Courses

Technology	# of Users
Audio Recorders	2
Braille Displays / Embossers	5
Contrast Settings	2
Larger Monitor	1
Optical Character Recognition	5
Screen Magnification	2
Screen Reading Software	11

AT to Support Learning Modalities

"I'm primarily a Braille reader when it comes to doing math. I don't want to adopt auditory learning if I don't have to. Especially when it comes to doing programming or math because it requires a lot of concentration in hearing the information presented to you."

Why take courses online?

- Only two subjects took courses online because of inability to schedule reliable transportation
- A few reported wanting to limit interaction with classmate.

"Classroom discussions can become very heated and very palpable … I do want to hear what they are talking about, I just don't want to hear THEM talk about it. So discussion trees are wonderful, because I get the content without all of the emotion. "

Easy Online Courses

Largely Textual

"Any kind of English course … anything like that is simple because it's all words. A screen reader is going to read words pretty easily"

Harder Online Courses

Heavy in math and science

"They exclusively describe(ed) a visual concept that I just couldn't conceptualize."

"It actually helps to have someone explaining it – someone you can bounce questions off of. You don't really get to do that because the online environment is really kind of impersonal."

Harder Online Courses

Foreign Language Courses

"With a foreign language especially, you have to be able to read it and write it and speak it. So doing a foreign language course completely just listening, it's really hard, and not really possible because of the need to read and write it."

LMS Environment

Perception of Usability varied based on visual function

> "You don't want to sift through 50 links that you see on every single page. You want to be able to jump right to the main information. So the appropriate use of headings is the number one thing."

All felt that the environment was accessible and that they could access the course material.

Technology Compatibility

Frequent browser crashes & inability to access platform features

"Like I was saying with VoiceOver and JAWS reading different things. Sometimes with a different browser you can read different things as well. So I kind of use all three (browsers) and just find what works best for each site. I pretty much have a giant database of websites in my head."

Access to Course Materials

- Two-thirds download course materials to their computers to reformat them
- Ten had difficulty accessing assignments
- Eleven had difficulty accessing reading materials
- Four skip graphics and images
- Five have difficulty in gaining access to electronic textbooks

Access to Course Materials

"By the time it's over, everything that is on blackboard is actually on my computer in a different format. I go on blackboard, get everything off of it that is necessary for the class … and then I get it all converted, accessible, and organize it on my computer. And then the only other times that I access blackboard again is to take exams, quizzes, and to upload assignments on due dates."

Alternate Format Generation

Converting to alternate formats is time-consuming for the students

- 7 prepared in advance on their own time
- 3 state they are consistently behind in their courses because of the conversion

"I ended up dropping (that course) because I just got too far behind and there was no way I was going to catch up even if we did come up with a solution (to my access problems)."

Videos and Video Lectures

- Three fourths have difficulty controlling videos.
  - Controls were inaccessible or unlabeled
  - Interface issues with Screen Reader / Browser
- Alternate video content access
  - Recording video with audio recorder to help with pause and playback
  - Requesting transcripts when not available.

Discussion Forums

- All of them had experience with these, half were required to participate.
- Most felt that the discussion boards were not inaccessible, but were not user-friendly.

  "There are so many extras. They're made to look attractive. And many of the features that make them look attractive get in the way of me trying to find threads."

Discussion Forums

- Subjects were dissatisfied with the level of communication available to them through discussion boards.
- Need a better way to navigate from thread to thread.
- Two subjects reported not being able to complete discussion board assignments because of access issues.

LMS Environment

Perception of Usability varied based on visual function

> "You don't want to sift through 50 links that you see on every single page. You want to be able to jump right to the main information. So the appropriate use of headings is the number one thing."

All felt that the environment was accessible and that they could access the course material.

Accessibility Features

- 3 were aware that bookmarking or indexing was available
- 2 were aware of available video caption features
- 1 was aware of image description features
- 1 subject used embedded transcripts (2 others requested them)

Other Beneficial Features

"Content trees" or electronic syllabi detailing learning objectives and assignment due dates

"One of the things that I really like is that they have graphic organizers at the beginning of each unit that kind of details what is due and what readings you have, and things like that. And the reason that I mention that is because they are set up in a very nice table, that is very easy to read using JAWS."

Other Beneficial Features

Features that described a step-by-step process to solving problems were very beneficial.

- Helped fill in for lack of access to instructor
- Available in Moodle and Pearson products

Recommendations

- Standardization of all course navigation and organization
- Development of an accessible orientation program for the LMS
- Autosave bookmark linked to Students Login
- Individual LMS pages / features should be tested for accessibility using all combinations of browsers, operating systems, and screen readers

Discussion

- Foreign Language should also be considered as difficult for online learning for those with vision impairments.
- Smart devices are not being used to access course materials, in general, but only for specific activities.

Questions?

Maureen Linden, MSBME

Maureen.linden@design.gatech.edu

This work is funded by the Georgia Institute of Technology and a grant from the National Science Foundation (NSF), Research in Disabilities Education (RDE), Grant Nos. 1027635 and 1027655.

BREAKTHRU www.georgiabreakthru.org