Netbooks or Nonsense?
Technologies for Virtual Teamwork

CIT Showcase
April 2009
Linda Goodwin

10:20-11:00 Perkins 118
Educational Goals

- Begin to build an interdisciplinary faculty team
- Enhance and further develop remote/virtual online teamwork skills
- Develop curriculum, pedagogy, and technology to help students find, analyze, disseminate, and apply evidence/knowledge to health information technology (HIT) projects that impact patient safety, quality of care, and health care costs
- Compare and evaluate technology tools that support goals 1-3.
  - **Hardware:** Ultra mobile PC (UMPC), mobile internet device (Asus Eee-Galaxy), portable internet tablet (Nokia 810), Sony mylo Personal Communicator
  - **Software:** EndNote web, zotero.org, and other tools for sharing the evidence/knowledge base will be explored
- Solicit informatics expert consultation and coaching to enhance student learning and dissemination of the final project.
The CIT Proposal

- Immersion in real-world informatics issues and projects is expected to have a positive impact on student learning.
- Students must learn how to find, analyze, and apply relevant evidence to real-world problem solving in informatics.
- Students will learn to develop project plans that create/build evidence where it doesn’t exist and validate or refute existing evidence.
- Students will gain access to informatics experts who will coach and consult on important issues in HIT evaluation, and assist with dissemination of the students’ final project.
- Students will collaborate in developing and disseminating a real-world resource for informatics professionals in healthcare.
The Plan

- **Virtual Teamwork Project 1:** Compile EndNote individual reference databases of health IT evidence and research
  - EndNote Web – summer 2008

- **Virtual Teamwork Project 2:** Evaluate evidence and research from Project 1 for quality and rate or filter for web-enabled EndNote resource
  - Fall 2008

- **Virtual Teamwork Project 3:** Explore multiple delivery modes and disseminate content from Project 2 for personnel working in real-world health-related IT departments (free public resource)
  - Fall 2008 and Spring 2009
Technology Testing (summer 2008)

- Myself
- Ginger Carden, DUHS medical library
- 11 graduate students in nursing informatics
  - Geographically located in CA, IL, GA, MA, NC, OH, WI, TX
The Project Team

- $N = 11$ students + 2 guides
- Age range = 30-40s
Technology Testing (summer & fall 2008)

- **Devices**
  - Ultra Mobile PC (UMPC) - CIT loan
  - Sony Mylo
  - Nokia (model 810)
  - Asus eee

- **Software (non-device)**
  - EndNote web
  - zotero.org
  - CiteULike.org
  - Others…
Pricing (summer 2008)

- Ultramobile PC – CIT loan
- Asus Eee Galaxy - $408
- Nokia 810 Internet tablet - $392
- Sony Mylo Personal Communicator - $352
CIT technology evaluation

1. Default Section

INSTRUCTIONS: Please provide honest and constructive input to help evaluate multiple mobile device technologies for use in collaborative web project teamwork. Complete a SEPARATE survey for each unit please. This survey should take less than 5 minutes to complete. If you can't find an answer option that works (for you) for each question, let Dr. G know and we'll keep tweaking this survey over the summer.

*1. Your Name

*2. Which device are you evaluating today?
   - Asus Eee
   - Nokia E10
   - Sony Mylo
   - Ultra Mobile PC (UMPC)
   - Other

*3. General impression of device hardware

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<th>Size</th>
<th>Tenable</th>
<th>Tolerable</th>
<th>Terrific</th>
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<td>Portability</td>
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<td>Other (please specify)</td>
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Next
**1. How well did you find the following worked for you?**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Terrible</th>
<th>Tolerable</th>
<th>Terific</th>
<th>Available - Didn't Test</th>
<th>Not Available</th>
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<tr>
<td>Battery life</td>
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<td>Keyboard</td>
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<tr>
<td>Stylus</td>
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<td>Voice commands</td>
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<tr>
<td>Webcam</td>
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<tr>
<td>Microphone</td>
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<td>SD or other card slot</td>
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<td>Other</td>
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<td>Other (please specify)</td>
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</table>

**2. General impression of device software**

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<td>Operating system</td>
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<td>Internet browser</td>
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<tr>
<td>Personal productivity software</td>
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<td></td>
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<tr>
<td>Email client</td>
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<td>Other</td>
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<td>Other (please specify)</td>
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</tbody>
</table>
3. page 2.5

*1. Where did you test this device? (What wireless network did you access? - home, work, airport, Starbucks, etc. This is a free text field just to get a general impression.

*2. Wireless performance

<table>
<thead>
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<th>Terrible</th>
<th>Tolerable</th>
<th>Terrific</th>
<th>Not available or didn’t test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Availability of wireless Internet access</td>
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<td></td>
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<tr>
<td>Reliability of wireless Internet access</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Other (please specify)</td>
<td></td>
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</tbody>
</table>

*3. For our testing phase, our goal was to choose WHICH unit to use. Please provide your opinion of the following.

<table>
<thead>
<tr>
<th></th>
<th>Didn't Use</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
<tbody>
<tr>
<td>Training was adequate for learning to use the device.</td>
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<tr>
<td>Tech support was adequate for device problems</td>
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<td></td>
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</tr>
<tr>
<td>Faculty support was adequate for using the device.</td>
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<tr>
<td>Other (please specify)</td>
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</tbody>
</table>
4. next page

1. In general, what is your impression of the device you are evaluating?
   - No way - please don't make me use it
   - I might get used to it, will give it a try
   - Love it - gotta have it
   - Other
   Other (please specify):

2. Please describe any additional information that you believe might be helpful in selecting WHICH unit we will use for our teamwork projects next semester.

   Please provide detailed information here.
## Asus eee Evaluation Results

<table>
<thead>
<tr>
<th></th>
<th>Terrible</th>
<th>Tolerable</th>
<th>Terrific</th>
</tr>
</thead>
<tbody>
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<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Weight</td>
<td>1</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>Portability</td>
<td>2</td>
<td>8</td>
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</tr>
<tr>
<td>Reliability</td>
<td>1</td>
<td>6</td>
<td>3</td>
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<tr>
<td>Usability</td>
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<td>3</td>
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<tr>
<td>Durability</td>
<td>4</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Other</td>
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</tbody>
</table>
# Asus eee Evaluation Results

<table>
<thead>
<tr>
<th></th>
<th>Awful</th>
<th>Tolerable</th>
<th>Terrific</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall ease of use</td>
<td>1</td>
<td>6</td>
<td>3</td>
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<tr>
<td>Wireless availability</td>
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<td>4</td>
</tr>
<tr>
<td>Wireless reliability</td>
<td>2</td>
<td>2</td>
<td>6</td>
</tr>
</tbody>
</table>

- Traveled in US and Europe and it was great! Fit in my purse!
- Never would connect to Duke wireless so I never used it.
Asus eee Evaluation Results

- Webcam helpful/useful (ordering error)
  - 6 not available
  - 1 didn’t use
  - 3 agree

- Microphone/audio helpful/useful
  - 4 not available (but it was)
  - 2 didn’t use
  - 1 agree
  - 2 strongly agree

- SD card slot helpful/useful
  - 3 not available (but it was)
  - 2 didn’t use
  - 1 disagree
  - 2 agree
  - 3 strongly agree
Asus eee Evaluation Results

- Linux operating system user friendly
  - 1 didn’t use
  - 1 strongly disagree
  - 2 disagree
  - 2 agree
  - 1 strongly agree

- Firefox browser
  - 2 didn’t use
  - 5 agree
  - 2 strongly agree

- Open Office
  - 2 didn’t use
  - 2 agree
  - 2 strongly agree
Asus eee Evaluation Results

- Training was adequate
  - 1 disagree
  - 8 agree
  - 1 strongly agree

- Tech support was adequate for device problems
  - 4 didn’t use
  - 5 agree
  - 1 strongly agree

- Faculty support was adequate for using the device
  - 1 didn’t use
  - 5 agree
  - 3 strongly agree

- Support was adequate for using device to complete team project
  - 2 didn’t use
  - 1 strongly disagree
  - 1 disagree
  - 3 agree
  - 2 strongly agree
## Asus eee Evaluation Results

<table>
<thead>
<tr>
<th></th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of Asus enhanced teamwork</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Use of Asus improved deliverables</td>
<td>1</td>
<td>4</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Use of Asus was a benefit for my busy and mobile lifestyle</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
Asus eee Evaluation Results

- Internet access was an ongoing problem and processing was generally just too slow
- Battery only lasted about an hour
- Scrolling (small screen) was a problem
- Keyboard size not acceptable for typing long documents (could have plugged in full sized keyboard)
- Have not used the Asus device – too small

- I liked the device but my personal PC/laptop is preferred
- Would prefer Windows OS over Linux
- I prefer to use a bigger/faster machine

- I ended up purchasing a 10” Asus eee and love it
- Audio is crisp and clear
- I would use it (more) for travel/trips. I found the portability a great plus.
Software Evaluation: EndNote Web

- [http://www.endnoteweb.com](http://www.endnoteweb.com)
- Login and license required
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Title</th>
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<tr>
<td></td>
<td>1997</td>
<td>When it comes to information systems, too often the blind lead the blind Healthcare Benchmarks</td>
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<td></td>
<td>2000</td>
<td>WISECARE: Workflow information systems for European nursing care Stud Health Technol Inform</td>
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<td>Achikar, N.</td>
<td>2003</td>
<td>Medical informatics in the intensive care unit: overview of technology assessment J Crit Care</td>
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<td>Afantemos, S.</td>
<td>2005</td>
<td>Summarization from medical documents: a survey Artif Intell Med</td>
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<td>Al-Qirim, N. A.</td>
<td>2005</td>
<td>Critical success factors for strategic telemedicine planning in New Zealand Telemed J E Health</td>
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<td>Alexander, G. L.</td>
<td>2007</td>
<td>Clinical information systems in nursing homes: an evaluation of initial implementation strategies Comput Inform Nurs</td>
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<td>Alterman, A. I.</td>
<td>2001</td>
<td>State-level treatment outcome studies using administrative databases Eval Rev</td>
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<td>Ammanwerth, E.</td>
<td>2006</td>
<td>Health technology assessment: Findings from the Section on Assessing Information Technologies for Health Yearbook of Medical Informatics</td>
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</table>
Software Evaluation Results

- Worked with interdisciplinary colleagues and CIT
- Done informally
- Evaluated many different options (many of which were not recorded or remembered)
  - Several assessed and abandoned without testing
  - Zotero.org rejected
  - EndNote Web is great but requires a software license
  - CiteULike.org was selected as the best option
Software Evaluation: CiteULike

http://www.citeulike.org/group/6693

- (Free) account required
- Access controlled by group settings (admin)
Birdseye Results

- Students had mixed responses to using the Asus eee Netbook
  - About half liked the size and portability
  - About half had good experiences with wireless
  - About half missed the speaker/audio feature
  - Those who used the device mainly engaged in personal productivity tasks but not virtual teamwork
  - Persistent problem - “too slow”

- Students’ virtual teamwork was successful in creating a collaborative and real-world information resource for health IT evaluation
Lessons Learned (or Reminded)

1. Ready, fire, aim!
   - Match task and technology

2. Pedagogy vs technology
   - Stay focused on student learning

3. Students perpetually surprise me...
   - 500-600 good references (892 found)

4. Some projects are more successful than others...
   - Mid-project formative evaluation might have helped
   - More on-campus training might have helped
   - Evaluate and adapt
   - Faculty bottleneck for project completion
Next steps

- Continue to monitor improvements in netbook technology
- Make the informatics community aware of our CiteULike site
  - Monitor site usage?
  - Evaluate community use and ongoing updates
Questions?

- linda.goodwin@duke.edu

- A good place to start

- Slides available