The twenty-first century black bag: Mobile delivery of health care information and implications for health science library collection development

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The Twenty-First Century Black Bag:

Mobile Delivery of Health Care Information and Implications for Health Sciences Library Collection Development

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Michigan Academy of
Science, Arts and Letters
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Hope College, Holland, MI
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“Nowhere has technology changed as rapidly and consumer behavior as broadly.”*

“Mobile is very much a moving target.”*

Google “...has 96% of the world’s mobile search market...”*

“...as people change their search habits on mobile devices-bypassing Google to go straight to apps...that dominance could wane...and knock Google off its perch.” *

This is a market in which new competitors come in a week’s time.”*

Higher Education
Student Technology Trends

- Nearly all students own a laptop - 86%**
- Student tablet ownership – 7% in 2011 and 25% in 2012***
- E-reader ownership – 12%**
- Portable devices are the academic favorites, and they are diverse in terms of brands and platforms**
- U.S adult population tablet/e-reader ownership – 18% in 2011 but 29% in 2012*

* Pew Research Center's Internet & American Life Project
** ECAR 2012
*** Pearson Foundation Survey of Students and Tablets 2012
Mobile Technology Popularity

- Mobility & flexibility of modern devices
- Ubiquitous high-speed internet
- Moderate price-range of devices
Mobile Technology Behavior Changes

• “People moving toward consumption-based internet experience from a production-based experience”
  
  Sue Gardner, Ex. Dir. of the Wikipedia Foundation

• Tablets are used for watching videos and surfing the internet more so than typing text

• Expectation of academic library users that resources will be available electronically
Mobile Technology in Medicine and the Health Sciences

• Medicine has been an early adopter in the use of telehealthcare, e.g., EKG via telephone modem

• Medicine has been an early adopter in the use of mobile devices

• Medical residents and health care professionals show a preference for using internet-powered mobile devices to access information at the bedside

• Medical libraries provide more mobile services, resources, and support than libraries in other disciplines
# Mobile Technology Ownership by Physicians and Nurses - 2012

<table>
<thead>
<tr>
<th></th>
<th>Nurses</th>
<th>Physicians</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smartphone Ownership</td>
<td>71%</td>
<td>81%</td>
</tr>
<tr>
<td>Tablet Computer Ownership</td>
<td>44% - iPad dominant</td>
<td>62% - iPad dominant</td>
</tr>
</tbody>
</table>
Mobile Technology
Health Care Applications

- Bedside access to:
  - Drug handbooks
  - Clinical textbooks
  - Medical & allied health dictionaries
  - Point of care resources, e.g., Up-to-Date, DynaMed
  - Patient education materials
- Electronic medical records (EMR)
- Real-time alerts
- Useful at bedside of patients in critical care areas where health care professional cannot leave
Mobile Technology

Health Care Applications, cont.

• Mutual management by patient and health care professionals of chronic diseases
  o Cardiac management
  o Smoking cessation support
  o Asthma monitoring
  o Blood pressure monitoring
  o Diabetes management
  o Weight management
  o Drug & alcohol recovery support
  o Grief support
  o Psychological support

• Early detection of problems
• Periodic prompts and text messages to patients from health care professionals
Mobile Technology Applications in Health Sciences & Medicine – Early Uses

• **Personal Digital Assistants (PDA)**
  - Care planning
  - Pain tracking and documentation
  - Medication & drug reference & administration
  - Diagnostics
  - Medical terminology
  - Advanced practice nursing
  - Medical and nursing students, and preceptors
    - Pharmacological knowledge
    - Contextual knowledge
    - Clinical knowledge
Mobile technology Applications in Health Sciences/Medicine

Current Trends

• Tablet computers in rural health & medicine study – 2003
• Clinical portfolios for nursing students study - 2005
• Physician use of ‘handheld technology’ studies – 2000-2007
  o Rapid response
  o Error prevention
  o Information accessibility
  o Data management
• Kindle e-reader study -2009
  o loaded with medical textbooks on primary care & family medicine
Mobile Technology

Health Applications - Advantages

• Overall error reduction due to currency of all information
• Ease of access to current, best information for each patient
• Home-based patient monitoring
• Ease of access to patient education information
• More time spent in patients’ rooms rather than at a central computer station
• Patient-centered approach to care
• Time savings
• Overall ease of use
• Patients approve of the use for patient education
Mobile Technology

Health Applications-Disadvantages

- Lack of a standard platform
- Cost - hardware & software
- Security of the devices
- Security of patient information
- Screen clarity and size re: readability
- Short battery life
- Awkward virtual keyboard
- Perception that the health care professional is browsing the web rather than working
- Feelings of unprofessional behavior on the part of the health care professional
Collection Development Considerations

- Know the direction of the teaching faculty or health care professionals on your campus re: e-resources & mobile use
- Understand the effect of Digital Rights Management (DRM) (copyright protection technology) on the use of the item
- Create methods for training library staff and users on accessing and making full use of the mobile collections
- Use patron driven acquisition models
- Know the parameters of the vendor licensing agreements
  - Ownership vs. access
  - Single user vs. multi-user
- Be aware of e-resource maintenance fees by vendors
Collection Development Considerations, cont.

• Know if content can be:
  o downloaded and used offline or if an active internet connection is needed
  o copied & used for educational purposes

• Understand the compatibility of e-resources with as many operating systems as possible, e.g., iOS, Android, Windows

• Be aware of the user experience with various mobile devices

• Understand that e-resource workflows will change the entire ordering and cataloging procedure
Collection Development Recommendations

“Mobile technology is transforming librarianship, the nature of our collections, and the services we provide” (Canuel, Crichton, & Savova, 2012)

- Know, understand and use the technology in order to be and stay relevant
- Have mobile specific web presence for the library
- Develop Quick Response (QR) codes to link various resources, e.g. books to subject guides
Collection Development Recommendations, cont.

• Change OPAC display to highlight mobile devices and e-resources
• Create a process & procedure for archiving e-resources
• Ensure the collection development policy includes:
  o Data gathering, analysis, and management schedule
  o Short and long term view of the collection of e-resources
• Understand the types of user authentication that are necessary
Collection Development

Recommendations, cont.

• e-Books – Know if:
  o The platform is an optimized mobile version or an app
  o There is a difference in the vendors licensing agreement for accessing their electronic resources for an optimized web site vs. an app
  o Free or fee
  o Compatibility across all tablets or specific to a certain brand
  o Include tools that are requirements for courses
  o Include tools used in-class as ‘text books’ or general resources

• Apps – Know if:
  o The app is free or fee-based, or free with a subscription to the item
  o It is compatible with all various types of platforms being used

• Create subject guides with mobile resources and services, e.g. apps for the health sciences, instructions for downloading e-books from specific vendors

• Create subject guides for specific user groups e.g. PAs, nurses, OTs
# Qualitative Comparison of Mobile Tablets

<table>
<thead>
<tr>
<th></th>
<th>Number of Health Care/Medical Apps</th>
<th>Quality of Health Care/Medical Apps</th>
<th>Screen Clarity</th>
<th>Tablet Navigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple iPad, v.2</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>E</td>
</tr>
<tr>
<td>Apple iPad Mini, v.1</td>
<td>VG</td>
<td>E</td>
<td>VG</td>
<td>E</td>
</tr>
<tr>
<td>Microsoft Surface, v.1</td>
<td>G</td>
<td>VG</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td>Android Nexus, v.7</td>
<td>E</td>
<td>G</td>
<td>VG</td>
<td>VG</td>
</tr>
<tr>
<td>Kindle Fire</td>
<td>P</td>
<td>P</td>
<td>G</td>
<td>G</td>
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</tbody>
</table>

**Key**
- E=Excellent
- VG=Very Good
- G=Good
- P=Poor
Examples of Free Health Care Apps & Optimized Web Sites for Apple, Microsoft, and Android Products

- **National Library of Medicine**
  - PubMed Mobile (o. web site)
  - TOXNET Mobile (o. web site)
  - MedlinePlus Mobile (o. web site)
  - DailyMed Mobile (o. web site)
  - AIDSInfo Mobile (o. web site)
  - LactMed app
  - Drug Information Portal Mobile (o. web site)
  - **Clinical Trials**

- **Free Apps**
  - AHRQ ePSS
  - Epocrates
  - iTriage
  - Micromedex Drug Information
  - Medscape
  - WebMD
  - CDC – general and MMWR
  - Medical Formularies
  - Medical Terminology & Abbreviations
Places to Find Health Care Apps

• iMedicalapps –
  http://www.imedicalapps.com/

• Apple – Apps Store
  Apps for Healthcare Professionals

• Microsoft App Store

• Android App Store

• Unbound Medicine -
  http://www.unboundmedicine.com/

• Skyscape -
  http://www.skyscape.com/index/home.aspx
Examples of Health Care Research Guides for Mobile Devices

• **University of Michigan, Taubman Health Sciences Library** –
  o [http://guides.lib.umich.edu/content.php?pid=116930](http://guides.lib.umich.edu/content.php?pid=116930)

• **Penn State Libraries** –
  o [http://guides.library.upenn.edu/content.php?pid=284388](http://guides.library.upenn.edu/content.php?pid=284388)

• **University of Wyoming**
  o [http://libguides.uwyo.edu/content.php?pid=414031](http://libguides.uwyo.edu/content.php?pid=414031)
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