California Digital Library

Mobile Research Findings

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August 12, 2010
Android hits top spot in U.S. smartphone market

AT&T sold out of iPhone 4 pre-orders for launch day
By Chris Ziegler posted Jun 15th 2010 5:46PM

Underwhelming BlackBerry spells doom for RIM
Looks like the smart phone industry's 800-pound gorilla is losing weight

Jailbreaking Is No Longer Illegal
7/26/10 at 4:08 PM | 3 Comments

iPhone 4 Gets 'Thumbs Down' from Consumer Reports
FILED UNDER Mobile Handsets
Published: July 28, 2010

Getting Customers to 'Check In' With Foursquare
FILED UNDER Tablet PCs

Apple has sold three million iPads in 80 days
By Laura June posted Jun 22nd 2010 11:24AM

Emirates to Cut Data Services of BlackBerry

Google Disables Android Apps Caught Collecting Personal Data
Android hits top spot in U.S. smartphone market

by Lance Whitney

Filed Under: Cellphones, Mobile Handsets

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Underwhelming BlackBerry spells doom for RIM

Seeing the World Around You Through Your Phone

By DOG TEDESCHI

Published: July 28, 2010

It’s the summer of mobile

Getting Customers to 'Check In' With Foursquare

Filed Under: Tablet PCs

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By Laura June posted Jun 22nd 2010 11:24AM

Emirates to Cut Data Services of BlackBerry

Google Disables Android Apps Caught Collecting Personal Data
“We are just at the beginning of a new wireless era where smartphones will become the standard device consumers will use to connect to friends, the internet and the world at large”
—The Nielsen Wire, 2010
Why does mobile matter to CDL?

Planning for a Mobile Site

Making the case for a fully mobile library website: from floor maps to the catalog.

Undergraduates and the Mobile Revolution

M-Libraries: Information use on the move

Opportunities for Mobile Environments

Library Services

The use of handheld mobile devices: their impact and implications for library services
Growing proliferation of mobile devices, mobile library projects, and literature in the academic landscape.
Why does mobile matter to CDL?

- Growing proliferation of mobile devices, mobile library projects, and literature in the academic landscape

- Campuses expressed need for guidance
Why does mobile matter to CDL?

- Growing proliferation of mobile devices, mobile library projects, and literature in the academic landscape
- Campuses expressed need for guidance
- Looking for new ways to meet users’ needs
“I am glad to see CDL take this on. It is crucial for CDL to leverage its reputation to encourage vendors to make licensed library resources accessible on mobile devices.”
— Librarian
Introduction

This is a book travelling throughout the globe reaching friend after friend, testing and sometimes strengthening bonds.

It relies on the effort, but more especially on the belief of these people. The belief that the person on the other side is real, on the belief they can communicate and contribute with a little push and a little time so this can keep going, until there are no parks left blank.

Until a whole story is written in different places, by different hands. Because this is how history is written, in small or larger scales.

If found, please contact cloudhopper@gmail.com

www.perfectpebble.com/notebooks

Alexandre Romeiros-Caal Pimenta—Advogado Rua do Carmo
Overview of Presentation

- Goals of project
- Methodology
- Findings
- Recommendations
- Questions
How did we do this?

- Literature review
- Comparative analysis
- Review UC campus efforts
- Surveys
- Interviews
How did we do this?

- Literature review
- Comparative analysis
- Review UC campus efforts
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- Interviews
How did we do this?

- Literature review
- Comparative analysis
- Review UC campus efforts
- Surveys
- Interviews

Details in full report and on wiki
Methodology
Experiment with new ways to reach users

- Facebook ad
- Announcements on different CDL Facebook and Twitter accounts
- Working with Institutional Research Groups
## Survey 1: Librarians

- 27 Librarian respondents

<table>
<thead>
<tr>
<th>Institution</th>
<th>Count</th>
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<tbody>
<tr>
<td>UC Irvine</td>
<td>12</td>
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<tr>
<td>OCLC</td>
<td>3</td>
</tr>
<tr>
<td>California Digital Library</td>
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</tr>
<tr>
<td>UC Berkeley</td>
<td>1</td>
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<td>UCLA</td>
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<td>UCSD</td>
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<td>Not answered</td>
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Survey 2: Academics

- Distributed to faculty, graduate students, and undergraduate students at UC Berkeley

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<thead>
<tr>
<th>Category</th>
<th>Number</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Faculty</td>
<td>92</td>
<td>32%</td>
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<tr>
<td>Graduate</td>
<td>63</td>
<td>22%</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>101</td>
<td>35%</td>
</tr>
<tr>
<td>Other</td>
<td>12</td>
<td>4%</td>
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<tr>
<td>Not stated</td>
<td>18</td>
<td>6%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>286</strong></td>
<td></td>
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**Survey 2: Academics**

- **Respondents from a mix of disciplines**

<table>
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<th>Discipline</th>
<th>Count</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>Natural sciences</td>
<td>74</td>
<td>26%</td>
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<tr>
<td>Social sciences</td>
<td>65</td>
<td>23%</td>
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<tr>
<td>Humanities</td>
<td>59</td>
<td>21%</td>
</tr>
<tr>
<td>Formal sciences</td>
<td>47</td>
<td>16%</td>
</tr>
<tr>
<td>Professional</td>
<td>19</td>
<td>7%</td>
</tr>
<tr>
<td>Not stated</td>
<td>22</td>
<td>8%</td>
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</table>
10 on-campus interviews at UCSF, UC Berkeley, and UC Davis

4 phone interviews: special collections librarian, 2 K-12 educators, and a faculty member
<table>
<thead>
<tr>
<th>University</th>
<th>Role</th>
<th>Field</th>
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<tbody>
<tr>
<td>UCSF</td>
<td>Staff, Clinical Fellow</td>
<td>Health/medicine</td>
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<tr>
<td>UCSF</td>
<td>Faculty</td>
<td>Health/medicine</td>
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<tr>
<td>UCSF</td>
<td>Student, 4th year PhD</td>
<td>Health/medicine</td>
</tr>
<tr>
<td>UCSF</td>
<td>Archivist</td>
<td>N/A</td>
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<tr>
<td>UC Berkeley</td>
<td>Student, 2nd year undergraduate</td>
<td>Psychology</td>
</tr>
<tr>
<td>UC Berkeley</td>
<td>Student, First year PhD</td>
<td>Biology</td>
</tr>
<tr>
<td>UC Berkeley</td>
<td>Student, 4th year PhD</td>
<td>Information Science</td>
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<td>UC Davis</td>
<td>Student, 3rd year undergraduate</td>
<td>Sociology and health/medicine</td>
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<tr>
<td>UC Davis</td>
<td>Student, 4th year undergraduate</td>
<td>Art and history</td>
</tr>
<tr>
<td>UC Davis</td>
<td>Student, 3rd year undergraduate</td>
<td>Biology</td>
</tr>
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<td>Teaching Librarian/Special Collections Librarian</td>
<td>N/A</td>
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<tr>
<td>K-12 School</td>
<td>8th-grade teacher</td>
<td>History &amp; English</td>
</tr>
<tr>
<td>High School District</td>
<td>Technology specialist</td>
<td>N/A</td>
</tr>
<tr>
<td>Other university</td>
<td>Faculty</td>
<td>Field ecology</td>
</tr>
</tbody>
</table>
Findings
Overview of findings

- Technology
- Activities
  - Finding information
  - Email and text messages
  - Academic activities
    - Reading
    - Research
- Reaching a mobile audience
Technology
Ownership of electronic equipment

- Laptop/Netbook computer
- Portable media device (e.g., MP3)
- Mobile phone that is NOT internet capable
- Mobile device that IS internet capable
- Desktop computer
- Tablet
- Dedicated e-book device

N=268, 260, 247, 261, 258, 247, 243
98% of survey respondents have laptops
Only 13% have tablet computers; 11% have eBook readers.

N=268, 260, 247, 261, 258, 247, 243
61% have mobile phones that are NOT internet capable

N=268, 260, 247, 261, 258, 247, 243
61% have mobile phones that are NOT internet capable

53% have mobile devices that ARE internet capable

N=268, 260, 247, 261, 258, 247, 243
- Faculty are most likely to own (63%)
- Undergrads least likely (41%)
The majority of respondents own iPhone (53%) or iPod Touch (20%) devices.

* Out of people who own mobile devices with internet

N=137
Next most popular were BlackBerry (10%) and Android (9%).

* Out of people who own mobile devices with internet

N=137
But...

- Not everyone has a smartphone

“I would use mobile devices for internet, but the prices they charge for data are way too high.”
— Librarian
And not everyone who has a smartphone has a data plan.

23% of survey respondents who have an internet-capable device do not have data plans.

Primary reason: cost.
Cellular vs. WiFi

- Using cellular connections instead of campus wireless networks may have significant implications for accessing licensed resources
Cellular vs. WiFi

**Cellular Network**
- Frequently: 78%
- Sometimes: 10%
- Never: 7%
- Not sure: 5%

**WiFi Network**
- Frequently: 49%
- Sometimes: 34%
- Never: 12%
- Not sure: 5%

N=179
Cellular vs. WiFi

- Accessing the internet by cellular connection is clearly more popular

**Cellular Network**
- Frequently: 78%
- Sometimes: 10%
- Never: 7%
- Not sure: 5%

**WiFi Network**
- Frequently: 49%
- Sometimes: 34%
- Never: 12%
- Not sure: 5%

N=179
Cellular vs. WiFi

“'I wouldn't go through all the hassle to use the internet at school. I just use the internet that AT&T provides.'”
— Student
WiFi Difficulties

- Some try to access campus WiFi on mobile devices but struggle with VPN
Cellular vs. WiFi

“I do sometimes use the library for journals [on my mobile device], but I haven't gotten around the VPN issue to actually be able to pull up the articles.”

— Staff clinician
Using Devices
“[I use my phone to] check something, look at picture on the internet. If I’m going to do any extensive browsing or academic work, I’ll use my laptop.”

— Student
"I use them for very different things. If I've got my laptop with me, I would rarely use this [iPhone]. I would use this for very quick, like looking in the dictionary or something like that. Pretty much everything web-based I would use the laptop“

— Faculty at UCSF
But Mobile Devices Are Always Around

- People don’t always carry laptops, even to class
- People don’t always have internet access, even at home
- Mobile devices fill these gaps
36% of survey respondents who own mobile devices with internet will occasionally use a mobile device even though a computer is available.
Activities
Activities on Mobile Devices with Internet

- Getting directions
- Accessing email
- Text messaging
- Searches for videos
- Reading other content (e.g., news)
- Playing games
- Watching Facebook
- Getting news alerts
- Reading academic content (e.g., course)
- Using the university's campus website
- Uploading content (e.g., Flickr)
- Using the university's library website
- Coursework or lectures

N=248, 256, 255, 237, 257, 244, 251, 237, 235, 246, 246, 249, 250, 248
- Getting directions (45%)
- Accessing email (43%)
- Text messaging (41%)
- Listening to music or watching videos (36%)
- Searching for information (35%)
• Reading non-academic content (e.g. news articles, blogs) (30%)
• Reading academic content (11%)
Anything academic-related ranks lower than personal use.

- Campus website (10%), course management (4%), library website (3%), coursework or lectures (2%)
In more detail...
Finding Information

N=248, 256, 255, 237, 257, 244, 251, 254, 237, 235, 246, 246, 249, 250, 248
Mobile users seek quick hits of information, especially when there is a pressing need in the moment.

Often mobile users seek information that is particularly relevant in a mobile context, such as directions or hours.
Finding Information: SCUBA Diving vs. Snorkeling
Finding Information: SCUBA Diving vs. Snorkeling

Desktop internet is like SCUBA diving: search can be “immersive” and “invites exploration and discovery”

Source: Hinman, Spasojevic, & Isomursu, 2008
Finding Information: SCUBA Diving vs. Snorkeling

Mobile internet is like snorkeling: “shallow dipping in and dipping out of content for quick checking of key content is desired”

Source: Hinman, Spasojevic, & Isomursu, 2008
Email and Text Messages
56% of survey respondents who have mobile devices with internet report that they access email from a mobile device several times a day.
89% of survey respondents report having text messaging on their phones
Text Message Notification

- There is a lot of positive interest in library notifications by text message in the literature

- However, most interviewees prefer notifications by email instead of text message
Text Message Notification

- Why?
  - Text messages demand immediate attention, and most didn’t think library notifications were urgent
  - Email is easier to organize
  - Prefer to keep text messages as a channel for personal communication
Email vs. Text Message

- **Email**
  - Communication with friends
  - Notifications (e.g., appointment reminder, library book due, flight status change)

- **Text Message**
  - Communication with friends
  - Notifications (e.g., appointment reminder, library book due, flight status change)

N=259, 261
Some do prefer text message notification (25%), particularly those who do not use email on mobile devices.
Email for Organization

- Email is used to transfer information and files between devices
“If it’s in an email, it's in my inbox, in my device. It’s automatically everywhere.”
— Archivist at UCSF
Taking Photographs

- Some use camera phones to send or record information.
- One student takes pictures of his class schedule so that he can refer to it.
- A special collections librarian takes pictures of call numbers to send to family members.
Reading Academic Content

- Getting directions
- Accessing email
- Listening to music or watching
- Searching for information
- Reading other content (e.g.,)
- Playing games
- Social networking (e.g.,)
- Getting news alerts
- Reading academic content:
- Using the university's campus
- Uploading content (e.g., Flickr)
- Using university's course
- Using the university's library
- Coursework or lectures

N=248, 256, 255, 237, 257, 244, 251, 251, 237, 235, 246, 246, 249, 250, 248
Why is reading academic content so much lower than regular content?

- Reading academic content is different than personal reading
Academic Cycle

- Reading academic content is part of a cycle of academic work
Reading academic content is part of a cycle of academic work.
Different needs

- Note taking
- Comparing documents
- Saving citations
Most interviewees told us that they did not read academic content on their mobile devices.
Some prefer to read PDFs on their laptops and have complex organization systems for files and citations.

Others prefer to read academic material on paper.
“I tried, like when the professor sends PDFs, but I'm not great at reading it off of the screens”
— Student at UC Davis
Survey respondents reported more academic reading on their mobile devices than interviewees.

26% of those who use internet on their mobile devices said that they read “academic content (e.g. books, articles)” on their devices at least daily.
eBook Readers and Tablets

- Only 5% of survey respondents reported reading academic content on eBook readers
- 7% report reading academic content on tablets
- Low ownership = Low use
  - About 50% of those who own either eBook readers or tablets use them for academic reading
Research

- Research is also part of the academic cycle
- Most interviewees did not want to do actual academic research on mobile devices
“It's a little complicated to do [library research] on the computer so I haven’t tried on the iPod Touch”
— Student at UC Davis
However, there does seem to be an interest in having the option to access library databases, catalogs, and resources from mobile devices.
Interest in Mobile Library Resources

- Search Library Databases on Mobile Device
- Search Library Catalog on Mobile Device

N=241, 246
Interest in Mobile Library Resources

Search Library Databases on Mobile Device

Frequently: 25%
Occasionally: 30%
Never: 45%

Search Library Catalog on Mobile Device

Frequently: 30%
Occasionally: 25%
Never: 45%

N=241, 246
Interest in Mobile Library Resources

Search Library Databases on Mobile Device

- Frequently: 25%
- Occasionally: 30%
- Never: 45%

Search Library Catalog on Mobile Device

- Frequently: 25%
- Occasionally: 30%
- Never: 45%

N=241, 246
Why?

- If they aren’t researching, why do they want library resources on mobile devices?
  - Retrieve known material
  - Find quick information
“I probably wouldn’t look for something new on [my mobile device] just because it’s kind of a pain. But if there was something that I knew was already there and was just looking for it, I might do that.”

— Student at UC Berkeley
Some survey respondents report that they find academic content on their mobile devices from library resources.
Finding Academic Material on Mobile Devices

*Out of survey respondents who report reading academic content on mobile devices

N=111
Out of survey respondents who report reading academic content on mobile devices, 67% use online databases (e.g. JSTOR, Proquest).

*Out of survey respondents who report reading academic content on mobile devices*
Out of survey respondents who report reading academic content on mobile devices, 39% use the library catalog.

*Out of survey respondents who report reading academic content on mobile devices*
Out of survey respondents who report reading academic content on mobile devices, 43% use Google Scholar and 40% perform a web search. N=111

*Out of survey respondents who report reading academic content on mobile devices
Out of survey respondents who report reading academic content on mobile devices:

- 38% provided by class instructor
- 37% forwarded by colleague

*Out of survey respondents who report reading academic content on mobile devices

N=111
Barriers to Academic Content on Mobile Devices

- Transferring content
- File types
Difficult to transfer content between devices, particularly when organization system is on laptop
“I like to have my laptop with me because I have all of my stuff organized in a certain way there. And if there were a way that I could do it on my mobile device and then it would end up on my laptop eventually, I would do that. But that’s really my big issue...If it’s something that’s pertinent to my work, I’d want to be able to go and get it and then save it on my computer so that I can reference it later.”

— Staff clinician at UCSF
Interviewees often expressed hesitation with reading on their mobile devices because of the difficulty of opening various file types.

- Device’s memory too small
- Device doesn’t read PDFs well
- Have to download app to open attachments
- Not sure if device can open PDFs
“When I’m using PubMed I'm looking for a PDF of the article, and I don't think...can you open PDFs on [iPod Touch]? I don’t know actually.”

— Student at UCSF
PDFs are clearly the medium of choice for survey respondents for reading academic content on a mobile device.

Out of survey respondents who reported using a mobile device for academic reading, 74% reported reading from downloaded PDFs.
Reaching Your Mobile Audience
• Colleagues (66%)
• Fellow students (60%)
• Internet searches (58%)
• Campus or department email (34%)
• Campus website (29%)
• Library website (29%)
• Blogs (27%)
• Social networking tools (20%)
The library’s Facebook page is only 2%, so it should not be the only channel for advertising new tools.
Recommendations
Prepare

- Set up testing practices and environments for current services
- Test your current web presence on the top mobile platforms
- Consider multiple access points for content
Track

- Adopt and maintain accurate mobile device tracking and usage statistics
- Continue to survey users annually or bi-annually
Develop

- Develop specific mobile recommendations for the needs of certain audiences
  - Discovery and Delivery (separate report)
  - Digital Special Collections (separate report)
  - Cdlib.org prototype in progress
Best Practices for Mobile Design

- Simplify
  - Prioritize information that users would need in a mobile context
  - Do not build apps or mobile websites that have complicated interactions or features
  - Do not try to replicate full website functionality
Best Practices for Mobile Design

- For academic tools, look for ways to support the academic cycle
  - Make it easy to transfer between devices, particularly using email
- Focus on accessing content rather than generating or uploading it
Best Practices for Mobile Design

- Prioritize mobile websites over apps in general
- Auto-detect mobile devices, but always provide a link to the full site
- Advertise through a variety of channels, including campus or department emails, campus websites, library websites, and blogs
Sources:

Mentioned sources:

Images:
IDEO cards: http://www.flickr.com/photos/mdxinteractiondesign/2318390956/
Magnifying glass: http://www.flickr.com/photos/gregpc/2203498581/
Group looking at iPhones: http://www.flickr.com/photos/shapeshift/2384168299/
Man using phone and laptop: http://www.flickr.com/photos/clintjcl/2699754684/
Maypole: http://www.flickr.com/photos/peteashton/175700682/
Details: http://www.flickr.com/photos/boskizzi/5817433/
Scuba: http://www.flickr.com/photos/timparkinson/82115969/
Snorkeling: http://www.flickr.com/photos/mysticgringo/215942227/
Book and phone: http://www.flickr.com/photos/angeloecasare/82488258/
Woman with blue background: http://www.flickr.com/photos/dailytravelphotos/4439867210/
Tin can: http://www.flickr.com/photos/angelocesare/8248475862/