Bringing More to the Table(t): Ideas and Insights for Using Tablets in Instruction

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Introduction

Ever since Steve Jobs introduced the iPad in March 2010, educators have been discussing ways to use tablet computers to enhance student learning. However, twenty-first century educators are hardly the first to seek new learning possibilities through personal, mobile technologies. In 1968, computer scientist Alan Kay dreamed up the Dynabook, a conceptual model that essentially paved the way for today's laptops, tablet computers, and even e-readers. Although the Dynabook never became a reality, Kay envisioned that, "for educators, the Dynabook could be a new world limited only by imagination and ingenuity" (2003, p. 403). Kay believed that personal, mobile devices could explain complex ideas and relationships in ways that "static linear books" could not, make mathematics become a living language for children, and provide a way for students to simulate expensive or difficult lab experiments (2003, p. 403). The current generation of mobile devices, including tablet computers, has achieved Kay's vision in many ways; e-books, educational apps, and new, mobile models for instruction are disrupting traditional methods of teaching and learning.

Within just a few short years, tablets, smartphones, and e-readers have secured a spot in institutional and consumer budgets, strategies, and priorities. The Pew Research Center's Internet & American Life Project found that tablet and e-reader ownership in the U.S. nearly doubled from December 2011 to January 2012 (Rainie, 2012). Similarly, in March 2012, a blog associated with *The Chronicle of Higher Education* reported the findings of a Pearson Foundation study indicating that tablet ownership among college students has tripled since 2011 (DeSantis, 2012). As of early 2012, one quarter of the college students surveyed by the Pearson Foundation owned a tablet and more than one third of the students surveyed responded that they intended to purchase a tablet within the next six months (DeSantis, 2012). This rapid proliferation of mobile devices has influenced U.S. institutions of higher education to consider mobile technology similar to the internet, "in both importance and in resources needed to develop" it (ECAR, 2011a, 19).

Part of the meteoric increase in ownership of tablets and other mobile devices can be attributed to the development of key factors that enable the usage of these devices. A May 2012 ECAR report, *The Future of Mobile Learning*, highlighted a number of these factors supporting the growth of mobile device usage: increased access to mobile networks, faster wireless communication networks, and improvements in the computing power of the mobile devices themselves (Oller, 2012, p. 2-3). In this mobile-enabled society, where 42% of all smartphone users ages 18-29 use their phone as their primary internet device, academic libraries cannot ignore the dramatic ways in which the mobile landscape alters students' access to and experience with information (ECAR, 2011a, 15). It is the responsibility of educators to help students gain the skills that a mobile world demands.

Mobile Information Literacy

Mobile information literacy refers to not only the new information and technology skills that students need but also the new awareness that library educators need to bring to their classrooms. Without a doubt, mobile devices are changing

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the context and spaces in which students live, communicate, and learn. It is imperative that library educators consider this change as they plan what and how to teach in information literacy sessions. Perhaps the most urgent consideration relates to the way that many students now gather, access, evaluate, and use information found on the web.

A 2010 study conducted at the University of Scranton indicated that nearly all students who owned a smartphone used it to search for information (Yarmey). Because the students were using their mobile device on the go, and usually needed information quickly, most students turned directly to search engines, such as Google, that would return numerous results quickly. The study results also suggested students had high expectations of these search engines and trusted them to find credible information. Although the students reported they evaluated the websites they found, the study's principal investigator noted their evaluation process was not thorough or complex. As University of Texas at Dallas Assistant Professor David Parry stated, in a mobile world, students need to gain the skill of being able to quickly access and evaluate information (2011). Parry argues that the skill of understanding information access in a mobile environment is a skill students will be able to use throughout the rest of their lives. This is mobile information literacy.

Academic librarians need to bring an awareness of this new information landscape into the library classroom and other learning situations, and effectively integrating mobile devices into the learning environment remains one of the best and most successful ways to enact this sort of awareness. In his article, Parry asks educators to consider how mobile technologies can enhance pedagogy and change the ways that we teach (2011, para. 3). He includes examples of incorporating Twitter and Layar, an augmented reality app, in his classrooms. Similarly, David Gagnon, an instructional designer at the University of Wisconsin Colleges, envisions using games on mobile devices to enrich situated learning in the classroom and to facilitate learning situations outside of the classroom (2010). Like these forward-thinking teachers, library educators can also effectively incorporate mobile technologies into learning situations. Tablet computers, such as the iPad, are ideal devices for integrating mobile information literacy into the library classroom.

In his May 2012 ECAR report on mobile learning, Rick Oller wrote mobile technologies will be "disruptive, explosive, and game changing" in the world of higher education, and "teachers need to innovate, experiment, and be prepared to fail" (p. 5). At LOEX 2012, participants in the "Bringing More to the Table(t)" workshop demonstrated the exciting ideas and new teaching methods that can result when academic librarians innovate and experiment with apps and mobile sites. These ideas can easily be incorporated into the library classroom via iPads and other tablet computers.

APPS & MOBILE SITES

The goal of the workshop activity was to expose participants to a variety of apps and mobile sites for enhancing instruction sessions. In a pre-workshop evaluation, many participants indicated that they elected to attend the workshop because they were hoping to gain ideas and activities to use in library instruction sessions. Having time to experiment with these resources was bound to lead to innovative lesson plans, and the ideas generated during the workshop unquestionably provided many of the participants with ideas to use in their own instruction.

Session facilitators provided participants with a list of mobile sites and apps. These sites were chosen because they were free search engines or databases. Mobile sites chosen were JSTOR, Google Scholar, WorldCat mobile, Nature, and PubMed mobile, all of which cover a variety of subject areas. Mobile sites such as these are also easily bookmarked on the iPad or tablet home page.

The selected apps are available on the iOS and the Android platforms, and are all free or low cost:

Evernote	Organization and note-taking tool. Available across platforms and devices. It can clip web pages and articles, add audio, graphics and photos. Folders and stacks can be shared among user.
Twitter	Social networking tool for sharing information. Tweets are limited by 140 characters and can be organized and searched by hashtags.
Inspiration Maps (iOS) or iThought (Android)	Mind mapping tools
Screenchomp (iOS) or Whiteboard (Android)	Interactive whiteboard and screen-casting tools
YouTube	Videos
Dropbox	Cloud-based file storage that allows folder sharing
Pinterest Gallery	Graphic organizing tool and social networking platform
Safari (iOS) or Firefox (Android)	Web browsers
Mendeley	Citation management system that allows for shared citations and folders
PaperPort Notes (iOS) or Notes (Android)	note-taking tools that allow for audio and image incorporation and also will transcribe speech
FaceTime (iOS) or Skype (Android)	Free video calling apps
Polltogo	Mobile polling site

Workshop participants used these apps and mobile sites to develop an instruction scenario that included the following elements:

- One of the objectives specifically related to mobile information literacy:

  - Searching for information effectively

  - Critically evaluating information

  - Organizing and converting information found into knowledge

- A specific disciplinary context

  - First year experience

  - Distance education

  - Science or Humanities

- A method of assessment, formal or informal

- 1-2 apps, either from the provided list or of participants' own choosing

- 1-2 mobile sites, either from the provided list or of participants' own choosing

INSTRUCTION RECIPES SUPPORTING MOBILE IL

The lesson plans developed by the groups in the workshop were innovative and surprisingly thorough. These representative scenarios all share the common feature of leveraging the power of tablet computers to incorporate learning activities that engage students in new ways that the mobile environment has made possible. Many thanks to the workshop participants who generated such fabulous ideas for tablet-based instruction scenarios, and who agreed to let us summarize these ideas for LOEX's *Conference Proceedings*.

Instruction Scenario 1

Objective	Searching for information effectively
Context	First year science students
Method of Assessment	Gathering student responses about different article types via Poll Everywhere
App	Mendeley
App	Evernote
Site	Poll Everywhere
Site	PubMed Mobile

This instruction scenario requires students work in groups, and each group has access to two iPads or other tablet computers. In each group, one student will take notes using Evernote while the group uses the other tablet to search

PubMed Mobile for articles about Harry Potter; the search topic was selected because of its wide appeal, and because of the interesting and varied result list PubMed returns for this topic. After finding relevant articles, each group will access and contribute a shared Mendeley library in order to build a class bibliography. Toward the end of the session, the instructor will informally assess the student learning by opening a Poll Everywhere poll asking students to vote on the type of article (e.g., review, news, scholarly, etc.) , and then lead a discussion on the different types of articles found in scholarly databases.

Instruction Scenario 2

Objective	Critically evaluating information
Context	First year students
Method of Assessment	Comparing library list of web evaluation criteria with student-generated list and discuss
App	Evernote
Site	Poll Everywhere
Site	YouTube

In this scenario, a library instructor works with a group of first year students who are conducting research on controversial issues; each student or group of students has access to a tablet computer to use throughout the session. At the beginning of the session, the library instructor will use Poll Everywhere to gather student suggestions for criteria that they might use to evaluate information found on the web. Using a pre-selected group of YouTube videos and the evaluation criteria generated within the class, students will work in groups to watch and evaluate videos on their selected topic(s). Student groups will record evaluations of the video(s) watched in Evernote in order to share with the rest of the class. As an informal method of assessment, the library instructor will use a prescribed list of evaluation criteria to guide the student discussion at the end of the session; the discussion will focus on how students evaluated the videos and what sorts of issues they encountered.

Instruction Scenario 3

Objective	Organizing and converting information found into knowledge
Context	Science students in a biology or environmental studies class
Method of Assessment	Using student responses in Evernote notebooks
App	Leafsnap
App	Evernote
Site	Google Scholar
Site	Nature Mobile

Participants developing this particular instruction scenario decided to use an app not on the provided list: Leafsnap, an electronic field guide that uses visual recognition software to

help students identify trees from photographs of their leaves. The group selected this app because it will allow students to take tablet computers outdoors, making the learning experience truly mobile. In this scenario, the instructor will first work with students in the classroom to locate articles related to local plant life; students will use tablets in groups to search Google Scholar, Nature Mobile, and other relevant databases. Students will capture their results in a shared Evernote notebook. After this indoor activity, student groups will take their tablet(s) outdoors, into campus, and use the Leafsnap app to grab and identify images of trees on campus, eventually adding these images and any other descriptive information to the collaborative Evernote notebook, drawing connections between the local plant life and the articles found earlier. The collaborative notebook will provide the instructor with information for an assessment, and a wrap-up discussion will also serve as an assessment tool.

STAYING UP TO DATE

Library educators need to keep up with the latest information on apps, mobile learning and technology, which can be a full-time job. One of the very easiest ways to do this is to scan the technology sections of news sites, such as *MSNBC*, *CNN*, *Wall Street Journal*, and *USA Today*. Professional journals, associations, and conferences are other methods.

Blogs, both technological and professional, are another way to keep up with technology. Blogs are very easy to add to an RSS feed, making it simple to access new posts. There are many higher education blogs, such as *Professor Hacker* from *The Chronicle of Higher Education* and Jane Hart's *Center for Learning and Performance Technologies*. Mobile Learning blogs include *Upside Learning*, *Cellphones in Learning*, and *The Mobile Learner*. All of these blogs include articles on trends and applications for education. *Cellphones in Learning* obviously focuses strictly on cellphones while the other two have a broader focus. All of the articles are thought-provoking and timely.

Most device platforms have blogs devoted to their products. Apple has *The Unofficial Apple Weblog*, *iPad Insight*, and *The Apple Gazette*. *Androinica*, *Android and Me*, and *Android Guys* are active Android sites. *Engadget, Wired* and *All Things Digital* are also great all-around technology site. *Engadget* is especially interesting because it has all of the news in one site but it also has hubs that allow you to read all on just a certain product, event or topic. *All Things Digital* is authored by a group of well-known technology writers, and it covers all of the latest news of all digital media. *Wired* covers a wider array of technology from cars to gaming, tech jobs and product reviews.

And then there is Twitter. Much information can be packed into those 140 characters! It is very easy to put together a list of people who consistently tweet about mobile learning. Twitter allows one to search for simple terms or by using hashtags. Searching for the hashtag "mobile learning" (#mobilelearning) will bring up a list of tweets concerning this topic.

By staying up to date on trends and changes in mobile technologies, and engaging in new and experimental teaching strategies with these technologies, library educators can seize a role of leadership in the mobile learning game. As information literacy experts, librarians are perfectly situated to lead higher education into a new era of information, communication, and learning.

REFERENCES

DeSantis, N. (2012). Tablet ownership triples among college students. Wired Campus [web log], from the *Chronicle of Higher Education*. Retrieved from http://chronicle.com/blogs/wiredcampus/tablet-ownership-triples-among-college-students/35764

EDUCAUSE Center for Applied Research (ECAR). (2011a). Mobile IT in higher education, 2011 report. Retrieved from http://www.educause.edu/ECAR/MobileITinHigherEducation2011R/238470

EDUCAUSE Center for Applied Research (ECAR). (2011b). National study of undergraduate students and information technology, 2011 report. Retrieved from http://www.educause.edu/2011StudentStudy

Gagnon, D. (2010) Mobile learning environments. *EDUCAUSE Quarterly*, *33*. Retrieved from http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/MobileLearningEnvironments/213690

Havelka, S. and Verbovetskaya, A. (2012). Mobile information literacy: let's use an app for that! *College & Research Libraries News 73*(1). Retrieved from http://crln.acrl.org/content/73/1/22.full.pdf+html?sid=e21d71b0-d3d2-4100-a696-c784533b319c

Kay, A. & Goldberg, A. (2003). "Personal dynamic media" in *The New Media Reader* (Chapter 26). Retrieved from http://www.newmediareader.com/book_samples/nmr-26-kay.pdf

Oller, R. (2012). The future of mobile learning. *ECAR Research Bulletin*. Retrieved from http://www.educause.edu/Resources/TheFutureofMobileLearning/250948

Parry, D. (2012). Mobile perspectives: on teaching. *EDUCAUSE Review*, *46*(2). Retrieved from http://www.educause.edu/EDUCAUSE+Review/EDUCAUSEReviewMagazineVolume46/iMobilePerspectivesOnteachingi/22616

Rainie, L. (2012). Tablet and e-book reader ownership nearly double over the holiday gift-giving period. Retrieved from http://cms.pewresearch.org/pewinternet/files/2012/03/Pew_Tablets-and-e-readers-double-1.23.2012.pdf

Yarmey, K. (2011). Student information literacy in the mobile environment. *EDUCAUSE Quarterly, 43*(1). Retrieved from http://www.educause.edu/EDUCAUSE+Quarterly/EDUCAUSEQuarterlyMagazineVolum/StudentInformationLiteracyinth/225860