Introduction

Rebecca K. Miller, Heather Moorefield-Lang, and Carolyn Meier

Abstract

When Apple's Steve Jobs introduced the first-generation iPad in March 2010, library and information professionals immediately began to imagine how the iPad—and the tablet devices that would quickly follow—could be used to support and enhance library services. While nearly all areas of academic librarianship have started to investigate ways to integrate tablets into their plans and workflows, reference and instructional services have truly embraced the transformative power of this new technology. Chapter 1 of Library Technology Reports *(vol. 48, no. 8) "Rethinking Reference and Instruction with Tablets" gives a quick overview of tablets and their popularity, then considers the role that tablets are playing in the evolution of reference and instructional services in the academic library of the early twenty-first century through a summary of the contributed chapters comprising this issue of* Library Technology Reports. *The chapter concludes with a brief review of foundational literature and further reading on the topic of tablet computers in higher education and the academic library.*

About the Editors

Rebecca K. Miller is the information literacy coordinator and college librarian for science, life sciences, and engineering at Virginia Tech. She holds an MLS from the University of North Carolina at Chapel Hill, a BA from the College of William & Mary in Virginia, and currently is pursuing an MA in instructional design and technology from Virginia Tech. Previously, she served as the digital technologies librarian at Louisiana State University and has published several articles on the topic of technology and instruction. Currently, she serves on the editorial boards of three journals and holds leadership positions in both national and state level professional organizations. More information about her research, publications, and professional service can be found on her website: www.rebeccakatemiller.com.

Heather Moorefield-Lang started her work with distance learning through a summer course in Library Services for Young People at The University of North Carolina at Greensboro using televised teaching techniques and Blackboard. After joining the library faculty at Virginia Tech she began teaching a semester long, one-credit methods course based on research in the field of education using Virginia Tech's program Scholar. In 2010, she began delivering one-time library sessions in a webinar format in collaboration with Virginia Tech's distance learning department. Examples of this past year's lessons are: Advanced Database Research, Dissertations and Theses, Basics in Research, and Endnote with Rebecca Miller. To view her webinars log in at: http://centra.iddl.vt.edu/. To learn more about her work and her writing visit her website at: www.actinginthelibrary.com.

Carolyn Meier is an instructional services librarian and coordinates first-year instruction in Newman Library at Virginia Tech. She received a BA in English from Ohio Dominican University, an MLS from the University of Michigan, and has an ED.S in instructional technology from Virginia Tech. She is a past co-chair of the Library Instruction Round Table (LIRT) Transition to College Committee. While at Virginia Tech, she developed and implemented an online research course for graduate students, and with other librarians is designing online modules for first-year students. Her research interests focus on information literacy, assessment, and outreach. Her work interests

Rethinking Reference and Instruction with Tablets   **Rebecca K. Miller, Carolyn Meier, and Heather Moorefield-Lang, Editors**

5

include new methods for improving instruction and finding new technologies to reach students.

Tablets: What Are They?

As one contributor to this issue of *Library Technology Reports* points out, the "tablet" is a technology that has existed for over five thousand years; this publication, however, focuses on the newest generation of tablets, exemplified by Apple's iPad. A *tablet computer* can basically be defined as a computer that allows input on a screen by means of a finger or stylus rather than an external keyboard. The term *slate* may also sometimes be used to describe this type of computer, but *tablet* remains the most common term and has been ever since Bill Gates coined the term while debuting a Microsoft tablet computer in 2001. Although certain user groups, such as those in business, medicine, and law enforcement, adopted these earlier tablets, the devices were not widely embraced by the public until 2010, when Apple's Steve Jobs unveiled the first-generation iPad. Jason Griffey speculates that the price, operating system, and required use of a pen or stylus prevented early tablets from immediately becoming popular with general consumers.[1]

While many different tablet computers currently compete, the Apple iPad dominates this market, as well as the examples and projects highlighted within this issue. As of the second quarter of 2012, Apple held 70 percent of the tablet market, with Samsung coming in a distant second, capturing a 9.2 percent market share.[2] Amazon and Asus represented the third- and fourth-biggest Apple competitors, respectively, taking 4.8 percent and 2.8 percent of the tablet market.[3] Though library and information professionals who are considering undertaking projects that involve tablet computers should conduct research on different devices in order to determine which might be most appropriate, it is beyond the scope of this issue to delve into comparisons of hardware, operating systems, connectivity, apps, and other elements. Readers interested in a more in-depth discussion of buying choices and device management should take a look at Jason Griffey's chapter entitled, "The Rise of the Tablet" in the April 2012 issue of *Library Technology Reports*.

Tablet Popularity in Society and Higher Education

Tablet popularity and ownership have grown rapidly within recent years. By the end of 2010, the year that Apple's iPad 1 was announced to the public, a mere 5 percent of US adults owned a tablet computer.[4] This number doubled, to 10 percent, by the end of 2011 and nearly doubled again, to reach 19 percent, by

mid-January 2012.[5] Furthermore, the percentage of US adults that owned either an e-reader or a tablet computer grew from 18 percent in December 2011 to 29 percent in January 2012.[6] While close to a third of US adults owned either an e-reader or a tablet computer by January 2012, tablet ownership growth is expected to continue, with many companies forecasting that the number of US tablet users may exceed 80 million by 2015.[7]

Tablet popularity and ownership in higher education follow this trend, with recent reports indicating that tablets have also permeated the university environment. 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.[8] 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.[9] This rapid growth of mobile devices has influenced US institutions of higher education to consider mobile technology, specifically tablets, as being similar to the Internet "in both importance and in resources needed to develop" them in the higher education setting.[10] Indeed, it is estimated that by the year 2017, one billion people will access the Internet via a mobile device, and libraries certainly need to consider this as they plan their services, infrastructures, and opportunities for staff professional development.[11]

Tablets in Academic Library Services

As mobile personal computers, tablet devices have infiltrated most corners of the academic library. Library and information professionals working in access services, reference, instruction, collection management, information technologies, technical services, assessment, development, administration, and other departments are all finding ways to integrate tablets into their workflows. Many institutions are interested in simply exploring the new technology by applying it in different library environments, but many are consciously attempting to use tablet computers to enhance and even reimagine their services in order to better support their communities. Melvin Kranzberg, a historian of technology, famously developed "Kranzberg's laws of technology," essentially summarizing the roles that technology has played in society throughout history. Kranzberg's first law of technology states that "technology is neither good nor bad; nor is it neutral."[12] Though the statement is a bit cryptic, Kranzberg essentially suggests that technology is not inherently good or bad but that the application or integration of technology within any particular situation will always

have an impact. As projects and initiatives involving new technologies are planned within the academic library, this is an important concept to remember. Initiatives involving tablets, for example, need to be developed in such a way that the tablet is consciously incorporated in order to enhance, improve, or otherwise change library services in a positive way. For many reasons that this issue will explore in depth, the tablet computer has become an essential technology for keeping reference and instructional services fresh and relevant.

Furthermore, it is critical that we, as library and information professionals, view the tablet computer not as a shiny new toy, but rather as a component in the evolution of our services and the continuing value that we provide to our communities. The projects highlighted in this issue of *Library Technology Reports* differ in many ways, but they have at least one element in common: the professionals involved in these projects elected to incorporate tablet computers into their reference services and learning environments because the tablet provided a solution that no other technology tool could. These projects illustrate the importance of developing programmatic goals and identifying the best technology for assisting the library in meeting those goals. For each and every project discussed here, that technology was the tablet computer.

Rethinking Reference

Even before the advent of tablet computers, library and information professionals sought new ways to make reference interactions more efficient, convenient, and engaging. Reference librarians have always been quick to embrace the latest advances in communication; as Joseph Janes reflects, "Give users and libraries the tools by which to communicate, and these tools will get used for reference transactions."[13] Technologies that were once cutting edge—mail, telephones, e-mail, cell phones, texting, social media—have all been, and maybe still are, integrated into reference services at many academic libraries. Users and librarians currently are able to connect through so many different modes of communication that one wonders what sort of new solution or enhancement tablet computers could possibly provide.

Several of the projects described in this issue answer this question directly by using tablets to not only communicate with users but also to increase the level of user engagement within the reference interaction. In chapter 2, Michelle Maloney and Veronica Wells discuss the iPad project at the University of the Pacific to show how their use of the iPad during reference interactions allows students to search the library's resources concurrently along with the librarian, ultimately increasing student interactivity and enhancing the overall reference experience for the student.

Similarly, in chapter 3, Linda Salem, Brittany Cronin, and Laurel Bliss focus on enhancing the student experience during reference interactions at San Diego State University by working to increase librarian expertise and competencies with tablet computers, including both iPad and Android devices. Their development of a library tablet user group succeeded in increasing librarians' confidence with using tablet computers and thus increasing their effectiveness when assisting students with accessing information via their mobile devices.

Additionally, two chapters address the idea of mobile, or roving, reference. Right now, many libraries are seriously rethinking the place and purpose of the physical reference desk within the walls of the academic library; tablets offer a way to adapt reference services to the digital, mobile world that our users work within. In chapter 4, Cleo Pappas recounts her experiences as a medical librarian at the University of Illinois at Chicago, taking her iPad on rounds at the University of Illinois Hospital & Health Sciences System in order to participate in clinical librarianship and assist physicians and residents in their goal of providing evidence-based care. Along the same lines, Alison Sharman and Andrew Walsh of the University of Huddersfield in the United Kingdom share, in chapter 5, their "roving librarian" project, where librarians are equipped with either iPads or Android devices in order to offer personalized assistance to faculty, staff, and students in their spaces, rather than the library. While the idea of roving reference is not necessarily new—librarians have been roving with walkie-talkies and phones for some time—Pappas, Sharman, and Walsh all underscore the value of using a tablet computer when working with users in their own spaces.

Overall, these four chapters explore how tablet computers have the potential to transform the reference experience for both librarians and library users. They address using tablets at the reference desk or inside the library as well as taking the tablets outside the physical walls of the library in order to deliver point-of-need support. The variety of perspectives represented by these chapters indicates that, while there may be many different reasons for choosing to use tablets as the mechanism for enhancing and evolving reference services, it is still essential to consider why and how the tablet is the best solution for transforming reference services at your library. In each situation, the authors considered the community surrounding the library and how tablets would address and resolve their specific needs.

Rethinking Instruction

Librarians and other educators of the twenty-first century are hardly the first to imagine the ways that technology has the potential to change or enhance

Rethinking Reference and Instruction with Tablets   **Rebecca K. Miller, Carolyn Meier, and Heather Moorefield-Lang, Editors**

7

teaching and learning. In fact, educational researchers and scholars were considering these possibilities as far back as the 1970s; before Steve Jobs dreamed up the Apple iPad, Alan Kay and Adele Goldberg prototyped the Dynabook, a predecessor to the tablet computers of today that never made it past the development phase.[14] More significantly, Kay and Goldberg understood that the idea of personal computing held major prospects for enhancing not only the field of business or engineering but also the field of education. Kay and Goldberg imagined a world of education "limited only by . . . imagination and ingenuity."[15] Kay and Goldberg discussed how teaching and learning about history, mathematics, laboratory experiments, music, poetry, and literature could be impacted by a personal computer like the Dynabook; they envisioned history books that had evolved past static linearity, mathematics as a living language, and expensive lab experiments inexpensively simulated through this device. In just over thirty years, Kay and Goldberg's vision would become a reality as the iPad and other tablet computers began permeating learning environments at all levels. The teaching- and learning-related initiatives highlighted in this issue of *Library Technology Reports* fulfill Kay and Goldberg's vision in many ways, from offering new levels of engagement for students to helping students become empowered in a digital, connected world.

In chapter 6, Robin Canuel, Chad Crichton, and Maria Savova examine how the library workshops developed by McGill University in Montreal can help students and faculty become savvy information users in the mobile age. The workshops touch on the many issues related to using mobile devices for accessing and using digital information and highlight the importance of both users and librarians understanding the practical, ethical, and philosophical considerations related to mobile technologies. In chapter 7, on using the iPad 2 in a first-year undergraduate learning community at the University of Illinois at Urbana-Champaign, Jim Hahn and Hilary Bussell also examine the importance of supporting students as they become confident, knowledgeable information seekers and users.

Both Patrick Tomlin of Virginia Tech and Willie Miller of Indiana University–Purdue University Indianapolis focus on ways of embedding tablets within disciplinary learning. In chapter 8, on mobilizing student learning within Virginia Tech's Art and Architecture Library, Tomlin examines the many different ways that an academic library can intersect with mobile learning and student engagement within a single discipline. Miller, on the other hand, explores in chapter 9 the embedding of iPads in the instruction strategy for a number of different disciplines: art, music, communication studies, tourism management, physical education, education, organizational leadership and supervision, and journalism.

Through the different perspectives depicted in these four chapters on the evolution of teaching and learning in response to mobile devices, it is clear that there are many considerations at the beginning of any project attempting to integrate tablet computers into learning spaces and situations. The authors do an excellent job contemplating how using a tablet in instruction will enhance, and not detract from, the learning experience. While technology can be a welcome addition to any classroom, it can also be distracting for students if it is not applied in an appropriate and well-planned manner. The examples within these four chapters provide positive models for any library educator considering why or how to use a tablet computer as a tool within the teaching toolbox.

Foundational Resources and Further Reading

Many of the pioneering projects explored in this issue are grounded in emerging research and scholarship. If you read closely, you'll notice that many of these projects build upon the same data sets, reports, and seminal journal articles on the topic of technology in libraries and higher education. More than one chapter points to data gathered and analyzed by the Pew Research Center's Internet & American Life Project, which focuses on trends and issues shaping the United States and the rest of the world. The project's data, statistics, and reports are freely available on the Web.

Pew Internet & American Life Project
http://pewinternet.org

Similarly, several of the chapters in this issue mention reports and articles published through the EDUCAUSE Center for Applied Research (ECAR), the research arm of EDUCAUSE, a nonprofit association that investigates and promotes the use of technology in higher education. ECAR research publications are available on the Web to subscribing institutions. ECAR research publications and reports that may have particular value to library professionals involved in tablet projects include the annual report *Mobile IT in Higher Education* and the annual *ECAR National Study of Undergraduate Students and Information Technology*.[16] More broadly, the *EDUCAUSE Quarterly* and the *ECAR Research Bulletin* are periodicals that often contain research related to teaching, learning, and the mobile environment.

ECAR Research Publications
www.educause.edu/ecar/research-publications

Library Technology Reports   alatechsource.org   November/December 2012

8

Rethinking Reference and Instruction with Tablets   Rebecca K. Miller, Carolyn Meier, and Heather Moorefield-Lang, Editors

Another EDUCAUSE-related publication mentioned by multiple chapters within this issue is the *NMC Horizon Report*, an annual publication that reports the findings of a collaborative project between the New Media Consortium and the EDUCAUSE Learning Initiative (ELI). The *NMC Horizon Report* identifies and describes "emerging technologies likely to have an impact on learning, teaching, and creative inquiry in higher education."[17] The 2012 edition of this report represents the ninth iteration; in its short life, the *NMC Horizon Report* has become a critical reference text for anyone interested in technology in higher education.

Within the library world, several publications regularly report on technology and the mobile environment. The publication that you are reading right now, *Library Technology Reports*, is one of them; *College & Research Libraries News* is another. In fact, several articles recently appearing in *College & Research Libraries News* are cited in several chapters within this issue; the April 2011 issue of the journal includes three of these articles, and the January 2012 issue also features an often-cited article on mobile information literacy.[18] *College & Research Libraries News* is an open access publication, so the full text of each issue is available on the publication's website. This list of suggested resources for further reading is by no means comprehensive; rather, it is intended merely as a starting point for readers wishing for more exposure to and more in-depth discussion of some of the foundational ideas and information reported in this issue.

College & Research Libraries News
http://crln.acrl.org

Conclusion

We are barely two years into the tablet revolution and the post-PC era, as Steve Jobs dubbed this new age of personal computing devices. The evolution of tablet computers and the subsequent evolution of academic library services are happening extremely quickly, and innovations in both the technology and library services are occurring on a regular basis. The projects and initiatives that were contributed to this publication mark only the beginning of an age of innovation in the academic library. Mobile devices are changing the way that consumers access information and the skills that they need to succeed in an increasingly connected and digital world. Through the ongoing evolution of reference and instructional services, libraries are helping their users cope with and thrive in the mobile world; as Dave Parry wrote in an *EDUCAUSE Review* article, "The mobile internet changes not only how we teach, but what it means to be knowledgeable and educated in our culture."[19] Academic libraries, it seems, have long sensed this and are rising to this set of challenges by investing in new technologies, integrating them into library services and classrooms, and supporting faculty and students as they work through what it means to be information literate in a mobile society. While there may be no single solution to this set of challenges, the forward-thinking contributors to this issue of *Library Technology Reports* give us somewhere to start and pave the way for the greater changes that are coming.

Notes

1. Jason Griffey, "The Rise of the Tablet," chapter 2 in "Gadgets and Gizmos: Libraries and the Post-PC Era," *Library Technology Reports* 48, no. 3 (April 2012), 7–13.
2. Don Reisinger, "Apple Dominates Tablet Market in Q2 with 70 Percent Share," CNET News, August 14, 2012, http://news.cnet.com/8301-13579_3-57492731-37/apple-dominates-tablet-market-in-q2-with-70-percent-share.
3. Ibid.
4. Lee Rainie, "Tablet and E-book Reader Ownership Nearly Double over the Holiday Gift-Giving Period," Pew Internet & American Life Project, January 23, 2012, http://libraries.pewinternet.org/2012/01/23/tablet-and-e-book-reader-ownership-nearly-double-over-the-holiday-gift-giving-period.
5. Ibid.
6. Ibid.
7. Statista, "Number of Tablet PC Users in the United States from 2010 to 2015 (in Millions)," 2012, www.statista.com/statistics/199761/forecast-of-tablet-pc-users-in-the-united-states-from-2010-to-2015.
8. Nick DeSantis, "Tablet Ownership Triples among College Students," *Wired Campus* (blog), *Chronicle of Higher Education,* March 14, 2012, http://chronicle.com/blogs/wiredcampus/tablet-ownership-triples-among-college-students/35764.
9. Ibid.
10. Gregory Dobbin, Pam Arroway, Eden Dahlstrom, and Mark Sheehan, *Mobile IT in Higher Education, 2011,* ECAR Research Report (Boulder, CO: EDUCAUSE Center for Applied Research, December 2011), 19, www.educause.edu/ECAR/MobileITinHigherEducation2011R/238470.
11. Rick Oller, *The Future of Mobile Learning,* ECAR Research Bulletin, (Boulder CO: EDUCAUSE Center for Applied Research, May 1, 2012), www.educause.edu/library/resources/future-mobile-learning.
12. Melvin Kranzberg, "Technology and History: 'Kranzberg's Laws,'" *Technology and Culture* 27, no. 3 (1986): 545.
13. Joseph Janes, "An Informal History (and Possible Future) of Digital Reference," *Bulletin of the American Society for Information Science and Technology* 34, no. 2 (December/January 2008): 8.
14. Alan Curtis Kay and Adele Goldberg, "Personal Dynamic Media," *Computer* 10, no. 3 (March 1977): 31–41.

Rethinking Reference and Instruction with Tablets   **Rebecca K. Miller, Carolyn Meier, and Heather Moorefield-Lang, Editors**

Library Technology Reports   alatechsource.org   November/December 2012

9

15. Ibid., 40.
16. Dobbin et al., *Mobile IT in Higher Education, 2011*; Eden Dahlstrom, Tom de Boor, Peter Grunwald, and Martha Vockley, *The ECAR National Study of Under-graduate Students and Information Technology, 2011,* ECAR Research Report (Boulder, CO: EDUCAUSE Center for Applied Research, October 2011), www .educause.edu/2011studentstudy.
17. New Media Consortium, *NMC Horizon Report > 2012 Higher Education Edition*, NMC website, accessed September 17, 2012, www.nmc.org/publications/ horizon-report-2012-higher-ed-edition.
18. Lori Barile, "Mobile Technologies for Libraries: A List of Mobile Applications and Resources for De-velopment," *College & Research Libraries News* 72, no. 4 (April 2011): 222–228, http://crln.acrl.org/ content/72/4/222.full.pdf; Stefanie Havelka and

Alevtina Verbovetskaya, "Mobile Information Litera-cy: Let's Use an App for That!" *College & Research Li-braries News* 73, no. 1 (January 2012): 22–23, http:// crln.acrl.org/content/73/1/22.full; Megan Lotts and Stephanie Graves, "Using the iPad for Reference Services: Librarians Go Mobile," *College & Research Li-braries News* 72, no. 4 (April 2011): 217–220, http:// crln.acrl.org/content/72/4/217.full.pdf + html; Sara Q. Thompson, "Setting Up a Library iPad Program: Guidelines for Success," *College & Research Libraries News*, no. 4 (April 2011): 212–236, http://crln.acrl .org/content/72/4/212.full.pdf + html.
19. David Parry, "Mobile Perspectives: On Teaching Mo-bile Literacy," *EDUCAUSE Review* 46, no. 2 (March/ April 2011): 16, www.educause.edu/ero/article/ mobile-perspectives-teaching-mobile-literacy.