



CHAPTER 11*

Adding Apps to Our Collections

A Pilot Project

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Introduction

In 1534, William Tyndale published the first Christian Bible translated directly from the original Hebrew and Greek texts. Previously, the most popular Bible was the Wycliffe Bible, which was translated from a Latin translation into Middle English. Tyndale's Bible was written in the commonly used, easily read language. When it was published, it was condemned in England and by the Catholic Church, essentially because it was too accessible to people. An English Bible was thought to reduce the power of the Church because the Church is where people heard the scripture as mediated by priests. Letting people read the Bible on their own was considered too dangerous because people could make their own decisions and come to their own interpretations and maybe make mistakes. In some ways, this sounds similar to the reaction of libraries to the Internet about twenty years ago. The gatekeepers of knowledge reacted to the gate being opened. Libraries were afraid of what the Internet might do to the nature of their relationships with users, and it is true that our relationship has changed, but for the better. A similar change in technology is happening in the area of mobile technology that will also have a profound impact on society in general, and libraries in particular.

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The mobile world is a fact, and mobile devices are ubiquitous. Due to their size and relative cost, smartphones reduce the digital divide for low-income populations and those living in developing countries. In fact, many people are now more proficient using a mobile device than they are using a traditional computer. This is likely why Microsoft is in the process of developing one user interface across all devices (Spence, 2016). An increasing number of Americans are “smartphone-dependent,” using their smartphone as the primary method for Internet access (Smith, 2015). Furthermore, anecdotal evidence suggests that they are using apps more than books. A large number of American smartphone users report using their devices to find information about health conditions, to use educational resources, and to access new (Smith, 2015).

Though the popular stereotype portrays a library as a warehouse of books and a place with computers, we know that we are far more than that. Libraries exist to provide access to information, to facilitate the exchange of ideas, and to break down barriers that limit achievement and innovation. To fulfill this purpose, it is time that libraries seriously begin to include mobile applications as a part of our collections. Strict allegiance to older, traditional formats for information can stifle our passion. The book has been more or less a static device for several centuries. Apps help create new connections by linking to other content, to audio and video, to engaging images, and to the wider world of information.

Literature Review

A review of the literature shows that, as a profession, academic librarians have been trying to figure all of this out since the Apple iPad was released in 2009. Many of the early case studies of iPads focused on their use as an alternative to computers for reference service (Tao, McCarthy, Krieger & Webb, 2009; Lotts & Graves, 2011; McCabe & MacDonald, 2011; Maloney & Wells, 2012) or for services related to student learning through iPad circulation programs (Shurtz, Halling, & McKay, 2011; Capdarest-Arest, 2013; Massis, 2013). Librarians at Southern Illinois University–Carbondale developed a roving reference program, which had librarians borrowing iPads from a limited collection for circulation. This program led the authors to value iPads as an “ideal” tool for reference services and to recommend that each librarian should have one (Lotts & Graves, 2011). Medical libraries show focused interest in circulating iPads as educational tools (Capdarest-Arest, 2013; Duncan, et al., 2013; Gillum & Chiplock, 2014). Academic and medical librarians clearly see the value in mobile tablets; however, relatively few studies concentrate on circulation services and information literacy instruction sessions.

In the medical and health sciences fields, mobile technology is already vitally important and projected to increase in use (Barker & Knapp, 2014; Deloitte Cen-

ter for Health Solutions, 2012; Payne, Wharrad, & Watts, 2012). Practitioners and clinicians regularly use mobile devices to streamline reporting and paperwork and to update records. Moreover, many health-related apps outperform traditional material formats for accessing health information. It is important for health sciences students to have access to the necessary technology and devices they will be expected to use in the field. However, many of the best medical and health science apps are prohibitively expensive, require institutional subscriptions, or involve additional technology—all of which widens the digital divide.

Some faculty at IUPUI (Indiana University–Purdue University Indianapolis) explored the use of iPads for instruction soon after the devices were first released by Apple (Rossing, Miller, Cecil & Stamper, 2012). At that time, iPads were novel. This group, among them the first-named author of this chapter, sought to discover the possible educational advantages of the mobile devices. Over the three-year period of the study, the group used iPads in more than twenty courses. Deploying the devices in class for active learning activities, the group surveyed students on their perceptions of learning and engagement at the end of the semester. Students reported confidence in the iPad in aiding them to learn course content, applying content to solve problems, approaching ideas in new ways, and enhancing their learning (Rossing et al., 2012, p. 9).

In order to meet the growing demands for mobile resources in the health sciences fields, liaison librarians Willie Miller (Informatics and Computing), Yoo Young Lee (Health and Rehabilitation Sciences), and Caitlin Pike (Nursing), together with library staff, developed a pilot app-purchasing and mobile device-lending program at IUPUI. This pilot program made these resources accessible for students and faculty during information literacy instruction sessions. The objective was to demonstrate the value of mobile content and the viability of lending mobile devices at our institution. The pilot was devised for the following reasons:

1. The authors believe that mobile applications provide valuable information for users.
2. There is a need for this technology in the IUPUI community. The IUPUI campus did not have device checkouts from the library or other units, even though students in certain degree programs were required to use tablet devices.
3. Some apps are more engaging than some books or journals because of their multimodal content (words, images, and videos) and functionality—you can complete processes in apps digitally and through voice recognition in some instances.

Several reports indicate that most college students have mobile devices (Beldardi, 2015; Poll, 2015), and the authors believe that this will change the way in which students access information in the health sciences fields and in other disciplines. It is central to the mission of an academic library to provide resources in any format for students' academic success.

Project Background

The IUPUI University Library is a large research library on an urban campus, which consists of 30,000 undergraduate and graduate students and is located in Indianapolis, Indiana, USA. The library maintains a robust liaison librarian program in which each librarian is subject specialist, collection manager, and instruction librarian to the department or school to which he or she is assigned. This model of academic librarianship allows for a high level of professional autonomy and collaboration with faculty.

Since the library has a reputation as a leader in the application of technology to library practice; the library is given IT support from the Client Support Team (CST) as well as from campus University Information Technology Services (UITS). CST and UITS determined how to best share the iPads. CST is in charge of technical support such as maintenance and hardware upgrades at the library.

This project was funded from a Library Services and Technology Act (LSTA) grant to purchase thirty-one Apple iPad Minis (second generation) and thirty-one OtterBox Defender cases to protect the devices from physical damage. The library also purchased a Bretford Mobility Cart to securely store, charge, and sync the iPads. Additionally, the library has funded the cost of the health sciences apps and any institutional subscriptions that they require. The maintenance cost of the equipment has been folded into the annual budget for technology; however, the authors feel that this technology and similar programs should be a part of future library services and collection development budgets.

Even though the authors consider app acquisition to be collections work, the purchase process is different from that of traditional collection acquisition. At IUPUI University Library, the acquisitions team handles all of our collection development, including the processing of books, journals, and database subscriptions. However, for apps purchases, the acquisition team is not currently involved. First, the business manager/fiscal officer enrolled our organization in the Apple Volume Purchase Program (VPP) for Education. This program allows us to purchase apps in volume and distribute them through our iPads. Once librarians select apps to be added to iPads, CST purchases the apps and makes them available on the devices through MAM remote app updating.

App Selection

The selection of apps for the iPads was determined by the unique needs of each liaison librarian's department or school. The schools of Nursing, Health and Rehabilitation Sciences, and Informatics and Computing have some overlap in subject areas, but each has a specific focus that we wanted to highlight. In choosing the apps, the authors used iMedicalApps, a physician-reviewed mobile health site,

and consulted with several medical librarian colleagues who had already started to develop iPad programs at their own libraries. One of the authors also attended a roundtable discussion at the annual Medical Library Association conference in 2015 to consider how other librarians were implementing mobile technology.

Initially, twenty-five apps were selected, which fit loosely into four categories: anatomy, diagnostic, education, and medication. The differential in cost ranged from free to \$2,100 to purchase thirty instances of an app through Apple's Volume Purchase Program for Education. The most expensive app was the American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM-V)*, which we ended up not choosing.

The selected anatomy apps included organ and musculoskeletal systems, thus serving the needs of the schools both of Nursing and of Health and Rehabilitation Sciences. These apps included Anatomy 4D, Heart Pro III, iPhysio, Muscle Premium, and Sobotta Anatomy Atlas. The diagnostic app category of free and purchased products included the Electronic Preventive Services Selector (ePSS), the Johns Hopkins ABX Guide, Kidometer, Lab Values, Medscape, the Merck Manual, Nurse-Tabs, and Nursing Essentials. This category also included the evidence-based medicine tools that were already available through our purchased databases: First Consult, DynaMed, UpToDate, and VisualDx. The education apps could be used for training, tutoring, and simulation of patient information. These were ECG Rhythm Tutor, MedLab Tutor, and PALS Advisor. Several of the anatomy apps could also be used in this way. The medication app category included Micromedex Drug Reference, Nurse's Drug Handbook, and Epocrates Essentials. Micromedex requires an annual subscription and was the only one of the three that was purchased.

Instruction with iPads

Since the apps were available only on the iPads for students enrolled in one of the health sciences programs, students were introduced to these products through library instruction during the spring 2016 semester. This brief pilot period limited the number of instructional opportunities and collaborations with faculty. Consequently, the liaison librarian for the School of Health and Rehabilitation Sciences (SHRS) had an opportunity to use the iPads with a group of high school students. The liaison librarian for Informatics and Computing deployed the iPads in a library orientation training session. The liaison librarian for the School of Nursing introduced the iPads and health-related apps to graduate nursing students in one of her library instructional sessions.

High School Students

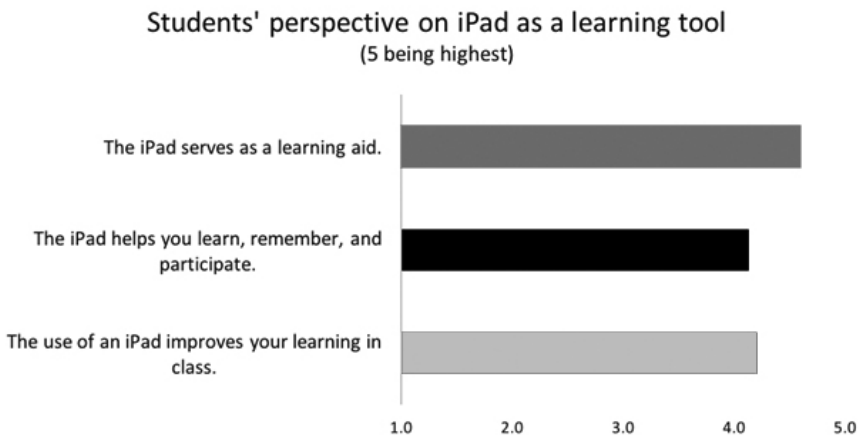
The liaison for the School of Health and Rehabilitation Sciences (SHRS) partici-

pated in the Indiana University Health Careers Opportunity Program (IU-HCOP) Saturday Senior Academy in order to provide research skills instruction and library services for senior high school students and instructors. The students had five library instructional sessions during the program and were introduced to the iPads in their first library instruction session. The University Library allowed the IU-HCOP coordinator to borrow iPads so that all instructors could utilize iPads in their sessions.

SHRS initiated the IU-HCOP to help disadvantaged students in acquiring academic and social skills so that they can successfully complete their health professions programs. SHRS believes that these efforts can lead to increased diversity in the health professions (SHRS, n.d.). As part of IU-HCOP, the Saturday Senior Academy was first launched in January 2016 with fifteen senior high school students (at the end of the program there were nineteen students) from Indianapolis public schools or Marion County schools. These students came to the IUPUI campus every Saturday until June 2016. The program consisted of math, science, and writing classes, college prep workshops, health career workshops, and field trips. In addition, there were group projects on health-care research using IUPUI University Library resources.

As part of this high school session, a survey was conducted on the first day to identify students' current level of familiarity with an iPad. Almost half of the students responded that they had already used an iPad in their high school classroom, although only 30 percent of students indicated that they had their own iPad at home. The majority of students strongly believed that the use of an iPad would improve their learning in class. The students reported that they felt an iPad would not only help them learn, remember, and participate, but also that it would serve as a general learning aid. In addition, fourteen students stated that they would like to have an iPad to use as a tool in their classes every day (figure 11.1).

FIGURE 11.1
Students' perspective on iPad as a learning tool.



Of the five library instructional sessions, the high school students had one session dedicated to learning how to use an iPad and exploring health-care- or health-sciences-related apps available on the iPads. Since the high school students were not affiliated with IUPUI, they did not have IUPUI usernames and pass-phrases, so the liaison librarian created generic accounts for individual students before instruction.

It was obvious that the students did not have any difficulties operating an iPad. They already knew how to log in and how to open and close an app, but they knew very little, if anything, about educational or health-related apps. The students expressed their excitement about using these apps with the iPad, especially Anatomy 4D. The librarian demonstrated how to use Anatomy 4D first through a paper projector since a connector from the iPad to the computer was not available at the time. Students said that the app was helpful, interactive, and visually attractive and made it easy to understand the human body and heart models. However, since only three 4D images were available, the students wished that there were more 4D images to play with and learn from. The librarian also introduced other apps, such as Nursing Drug Handbook, MedLab Tutor, UpToDate, and DynaMed, to the students. Most of these apps required students to create their own username and password, to which the students were unreceptive. Although the librarian demonstrated how to create an account and how to answer medical questions using UpToDate, the students simply watched the librarian use the app and were not interested in participating, saying that they did not want to create an individual account.

Undergraduate Students

None of the librarians were able to use the iPads with a typical class of undergraduate students during the period of the pilot. In lieu of an undergraduate course, Willie Miller, liaison librarian for the School of Informatics and Computing, used the iPads during a library tour training session for thirty undergraduate orientation leaders. This training lasted thirty minutes, and the students used the iPads' native web browser, Safari, to navigate University Library's website. Miller used the website to identify key information about the library's services. The training was a combination of lecture and discussion, with iPads being used to help answer questions about the library.

As previously noted, Miller used iPads with undergraduate students during the 2010–2013 academic years. During that study, students appeared to be captivated by the devices and reported high levels of engagement; however, Miller found that a small number of students were distracted from lecture because of their fascination with the iPads. In these early classes, Miller and his colleagues would teach students to how the iPads worked, going over what the buttons did and how to access the materials needed for the activities. This process would take about twenty to sixty minutes, depending upon the instructor.

Miller noted that student behavior had changed since the iPads were initially released. None of the students were distracted from training by the iPads; further, the students did not need instruction on using the iPads as they already knew how they worked. Though this may not be the case for every undergraduate, the popularity of iOS reduces the learning curve for many students and other users.

Due to time limitations, Miller used informal assessment to learn more about the students' experience using iPads. Before the end of the training, he asked the students questions from the questionnaire Lee constructed. All of the students reported having used the device before. Most of the students agreed that an iPad helped them learn, remember, and participate. Several of the students expressed a desire to use an iPad during the classes. Some students asked if the iPads could be used to download e-books. In answering the question, Miller relayed the complexities of academic e-book publishing. The university library currently has twenty-one platforms from which e-books can be viewed or downloaded.

Graduate Students

Caitlin Pike, liaison librarian for the School of Nursing, demonstrated the iPads in an elective, graduate-level Scholarly Projects class. Pike is embedded in this class, teaching two four-hour intensive workshop sessions per semester to assist students in developing research topics, learning database searching skills, and understanding what resources are available to them once they leave the university. As a result of this, the course seemed best suited to distributing the iPads for testing in a sandbox-type environment.

The librarian handed out the iPads on her second day of class, asking several informal questions as the students tried logging in. These included "Does anyone currently use tablets at your hospital?" and "If so, what apps have you used?"

The majority of students in the class were pediatric nursing specialists, so the apps demonstrated were chosen based on their potential usefulness to pediatric nurses. It was difficult to select which apps to demonstrate, as many of them required individual accounts. The librarians are still working with IT to determine the best course of action regarding individual accounts. We are considering either creating placeholder accounts for the students to use while on our iPads or having the students create their own individual accounts, which they can then transfer to their own devices.

The students worked with ePSS, PALS Advisor, ACLS Rhythm Tutor, Kidometer, and Sobotta Anatomy Atlas. They also had the opportunity to explore some of the other apps, including the Merck Manual, Heart Pro III, and Micromedex Drug Reference. According to the postdemonstration survey, 50 percent of the students said they would be very likely to use the ePSS app, the Merck Manual, Nursing Drug Handbook, and Micromedex Drug Reference. In addition, 66 percent of the students said they preferred to use the apps on a mobile device instead

of a laptop. The students reported barriers to using the iPads in the classroom as having difficulty signing into the iPads and the subsequent need to have individual accounts for several apps. One student also expressed a need for more time during the demo to explore. Other barriers to using the iPads in the future included storage space, security, and cost.

Barriers or Issues

Technical Issues

After a student logs in using his or her IUPUI username and passphrase, he or she is able to download additional free apps like Dropbox or Google Drive via an app catalog maintained and approved by UITS. The app catalog, like the App Store, is a list of all of the apps available in our collection, which students can install on the shared iPads with their IUPUI username. The EMM suites and the Single App lock feature enabled us to facilitate this process as easily as possible. However, it took us almost six months to determine the best process before deploying the project in the classroom. This delay effectively shortened the pilot period to the spring 2016 semester.

There were also several problems with UITS AirWatch Mobile Device Management system, which caused the iPads to lock up after login. In addition, during one of the library instruction sessions, students could not log in to the iPads with their IUPUI username and passphrases, so the librarian had to use her username and passphrase to log in. As mentioned above, most of the apps require the user to create individual accounts in spite of institutional subscription. The authors are in the process of ascertaining if students would prefer the creation of generic accounts or if the creation of their own accounts would better enhance the app experience.

Effective Teaching Methods

There are many sources of information available on the best apps for health sciences students. However, very few mention how to teach with them effectively or how to assess mobile literacy. Many students do not need to learn how to use apps since the apps are designed to be easy to use. However, they still need to learn how to apply information literacy concepts such as critical-thinking skills and effectively evaluate health information when they use health-related apps like UpToDate or DynaMed. Because it was the first time using iPads during a library instruction session, the two librarians had difficulty finding an effective teaching format and deciding what to teach (i.e., demonstrating how to use apps for research or just introducing useful apps). In addition, all three librarians tried to locate existing assessment tools related to teaching iPads and apps in library instruction work-

shops. However, they could not find one. Consequently, they had to develop their own survey assessment for this pilot project.

Availability of Hardware

Currently, the purchased apps are available only on the shared iPads. Many academic libraries, such as the Indiana University Ruth Lilly Medical Library, McGill University Library, and the University of Toronto Libraries, have a web presence to list useful free apps or library subscription-based apps. The three librarians are also in the process of creating a guide or webpage to list available apps, but we would also like to add apps to the library catalog so that users may access them like e-books or articles through their mobile devices. However, there are many barriers to making this happen. First, students have to install the apps. Second, they may need to create an individual account before using an app. After such complicated steps, many students might give up on library subscription-based apps.

Apps Purchasing Workflow

Determining responsibility for purchasing mobile apps was a challenge. Traditionally, the acquisitions team handles all of the collection acquisition processes. However, since apps are unique and different products, it was not clear how to proceed. At our institution, CST is responsible for not only maintaining mobile equipment, but also purchasing apps. Moreover, traditional collection development funds were not used for purchasing apps; instead, the authors have used the annual budget for technology. The authors believe that libraries have to think about best practices for app purchasing workflows as apps become increasingly popular.

How to Maintain Apps as Collections

Due to the limitation of 16 GB storage, we had to decide which apps to add to the iPads and which apps to remove. Even though EMM suites provide apps usage analytics, it is a hard decision to make as we do not have enough data for this semester to form a complete picture.

Conclusion

Mobile devices and apps create new possibilities by linking to alternative content, like audio, video, and images. They also help break down digital barriers since they are less expensive than computers. Hennig (2014) states, “Compared to the cost of desktop and laptop computers, mobile devices are generally less expensive” (p.

3). Furthermore, apps have become popular and ubiquitous. The editors of *MIT Technology Review* chose Mobile Collaboration as one of the Top Ten 2014 Breakthrough Technologies, which included the collaboration apps Box, CloudOn, Dropbox, Google Drive, Microsoft's OneDrive, and Quip (Greenwald, 2014). TED was the Webby Award's (2015) Mobile Sites and Apps winner in the category of Education and Reference. As Ally and Prieto-Blázquez state, "In the future, mobile devices will look completely different from today's; hence, higher education must plan to deliver education to meet the demands of new generations of students" (p. 144).

Along with new technologies, librarians have traditionally sought for better ways to connect their users with library resources and services. Since mobile devices and apps have become important tools for finding information, many libraries have adapted and integrated them into either their services or library instruction programs. Based on the pilot program, the authors discovered that it is important to not only teach students how to effectively use the apps in an educational setting, but also to make the apps easily accessible through both shared and personal iPads. The authors believe that apps should be considered a part of libraries' collections, and users should be introduced to them through a library's website or guides. This would allow libraries to connect users with apps across platforms and devices.

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