Handheld Librarians: A Survey of Librarian and Library Patron Use of Wireless Handheld Devices

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ABSTRACT. Wireless technologies are becoming more prevalent in American society, but are they in our libraries? This article is a result of a survey of 766 librarians (mostly academics) across the United States on their use and perceived use of their customers of personal digital assistants (PDAs), smartphones, webpads, and other handheld wireless devices. How are these devices being used? What percentage of libraries support wireless handheld device users, and how is this support delivered? Is there a demand for more services for these users and for what are they asking? Have libraries modified content to meet the needs of wireless handheld device users, and if so, what content have they changed? Last, what are librarians’ perceptions of wireless handheld devices and the cost and licensing of wireless content?

KEYWORDS. Electronic journals, Internet security, journal publishers, journal vendors, licensing, personal digital assistants (PDAs), smartphones

According to a July 27, 2007 article from the Reuters news service, more than half the world’s population will own a cellular telephone by the end of 2007—more than 3.25 billion people worldwide. In Europe, there are more cellular telephones than people (Ridley 2007). In the United States, the numbers are fast approaching this plateau, with an estimated 245-million cellular subscribers as of October 2007 (Cellular Telecommunications...
According to the eTForecasts website, a market research and consulting company for the computer and Internet industries, 4.3 million “smartphones” (full-featured mobile phones with personal computer-like functionality) were purchased in 2005. By 2010, this number is expected to reach annual sales of 26.4 million units. Overall, handheld computer sales are expected to triple in the coming years, from 10.5 million units in 2005 to 34 million units in 2010 (eTForecasts 2007). Despite this projected growth, there do not seem to be many initiatives in libraries to serve these potential users. As of October 2007, Megan Fox’s website “PDAs, Handhelds and Mobile Technologies in Libraries—How the Academic Library is Using Handheld Mobile Technologies; Libraries on the Go: Handheld and Mobile Access to Information” listed 131 libraries with services developed or being developed for wireless handheld device users (Fox 2007). The majority of these were medical libraries.

This article summarizes a survey of librarians that was performed over two months during the summer of 2007. It was designed to determine who in libraries, among librarians and their patrons, are using wireless handheld devices, which can be described as a devices that are typically more functional than cellular telephones, and how they are using them. It also sought input on library user support for wireless handheld device users. Have libraries purchased specific software for these users? Has library online content been reformatted to meet the needs of these users? Last, respondents were asked their opinions of licensing and pricing issues with regards to wireless handheld devices.

**WIRELESS HANDHELD DEVICE INITIATIVES IN LIBRARIES**

Physicians and their support staffs were among the first to adopt wireless handheld devices in their daily work lives. The need for quick information on the go was one of the big reasons that many doctors and nurses started using wireless handheld devices. Similarly, medical libraries were among the first to adapt to the needs of these users. There are numerous articles in the literature about these endeavors. One very interesting study was done by Honeybourne, Sutton, and Ward (2006). They purchased 29 Palm handheld devices for clinical staff at their hospital and collected data on how they were used and which products worked the best. They found that the vast majority of PDA users found the resources available useful and
timely. Drug information, medical calculations, guideline information, and the diary feature were sited as the most useful (Honeybourne et al. 2006).

Two articles written by librarians at the University of Alberta Libraries describe their initiatives to serve the needs of PDA users (Carney, Koufogiannakis, and Ryan 2004; Koufogiannakis, Ryan, and Dahl 2005). After purchasing PDA-specific health sciences products, they created a website that grouped these resources together. Then, to raise awareness of the services, they initiated training sessions called “Making the Most of the PDA.” These sessions also allowed an opportunity for librarians to collect feedback from PDA users. They also created a PDA-formatted newsletter/mailing list, which highlighted services and products. The article by Koufogiannakis, Ryan, and Dahl (2005) provides good information for librarians who are interested in developing these types of services for their library. They mention the five types of delivery modes that are available for handheld devices. The first two of these are “free with an existing licensed product” and “user add-on purchase,” meaning the library would pay extra for PDA access to a resource. Some resources allow for institutional site licenses. Others allow for the purchase of a set number of downloads. This is usually as an add-on to an existing online product. The last one was very interesting. Their library downloaded e-books onto expansion cards that patrons could check out like a normal book. The cards are secure so that the book’s data cannot be downloaded onto a PDA or another device. In addition, there are articles written by Burnette and Dorsch (2006), McCabe (2004), Tenopir (2004), and Williams (2003) listed in the references below. Last, Deborah G. Lovett edits a column in the Journal of Electronic Resources in Medical Libraries that is very useful.

Although medical libraries were the first to adapt to wireless handheld device users, many other libraries have followed suit. It is a bit dated now, but Colleen Cuddy’s book titled Using PDAs in Libraries (2005) provides an overview of products, services, and applications that are available to libraries. The book includes sections on how to select wireless content and how best to use these devices in individual library settings. For a compressed version of parts of the book, see her article in Computers in Libraries (Cuddy 2006). In it, she explains how to prepare content for the smaller screens of handheld devices and how to redesign a library website so that the content is accessible on most wireless devices (Cuddy 2006). She also co-authored an article on the licensing of medical-oriented products for these devices (Cuddy and Wynn 2007).

Although it is a few years out of date with regards to technology, John and Tucker (2003) provide a good explanation for why libraries need to
provide services for wireless handheld device users. They maintain that these devices using Internet connectivity will “be an increasingly integral part of daily life in the coming years” (John and Tucker 2003). They debunk the idea that it is hard to support the different types of handheld devices by pointing out, “if you develop services for the lowest (text-only) platform, it will work” on all devices (John and Tucker 2003). As mentioned above, Megan K. Fox, Simmons College Libraries, maintains a list of academic libraries that provide services to handheld users (Fox 2007).

**SURVEY EXPECTATIONS AND CREATION**

In looking at the library literature, this appears to be the first survey of librarians regarding wireless handheld device use. Despite this fact, it was created with several expectations in mind. The first assumption was that it would find relatively little going on with wireless handheld devices in America’s libraries. Second, it assumed that relatively few librarians and library patrons use these devices and that those who did use them primarily as organizational tools (calendars, contact lists, etc.) or as e-mail devices. In considering those who did use these devices to access library content, the expectation was that the most common response would be to access the library’s website or catalog (due to their ease of use on these devices), and that the least common use would be to access full-text Adobe Acrobat-formatted content, such as e-journal articles or e-books. This was anticipated due to the fact that until recently, many of these devices did not come with software to read with these files.

The survey was designed to address if and how libraries have adapted content, such as their web pages, for wireless handheld device users. The expectation was that relatively few have done so. When considering who the biggest users of these devices were, the expectation was that most would be students or medical professionals because much of the literature to this point has been written by medical librarians. In addition, the survey aimed to determine perceived limitations of wireless handheld devices. Screen size, memory, and speed of access were assumed to be the most common complaints. When considering the issue of pricing for databases/products with wireless handheld devices included, the expectation was that libraries do not want to pay extra to allow these users to access content. Not many libraries can afford additional content fees or increased fees on current products. Last, the survey attempted to determine the expectations that
librarians have in dealing with these devices in the coming years. The assumption was that most would feel that we need to prepare for the future.

The survey was created using SurveyMonkey.com (SurveyMonkey.com 2007). The free basic membership was inadequate for a survey of this length and for the number of respondents who participated, so a three-month professional membership was purchased. This allowed for the creation of surveys longer than ten questions and provided full functionality for automatic skipping of questions based on responses (“logic”) and other more advanced features.

The process was simple. Questions were created by filling in blanks and selecting radio buttons. Once written, questions were easy to review, test, and change, although occasionally a correction would not work and required a second or third attempt to fix it. As the survey was built, questions could be added or moved, and new questions/pages could be added. “Logic” was added to the survey to make it more dynamic. The logic function of SurveyMonkey.com allowed for more flexibility and resulted in shorter questionnaires for many respondents. For example, those who replied that they did not use wireless handheld devices were asked fewer questions than those who replied that they did. Also, those who replied that no one in their library used wireless handheld devices did not see the questions that asked how they were used in the library. In all, there were 21 questions in the survey.

The link for the survey was unscientifically disseminated by posting it to 12 library-specific listservs. In no specific order, these were AUTOCAT (cataloging), SERIALST (serials), COLLDV-L (Collection Development), ACQNET-L (acquisitions), CJC-L (community/junior colleges), ULS-L (university libraries), STS-L (science/technology libraries), COLLIB-L (college libraries), BUSLIB-L (business libraries), SYSLIB (systems librarianship), COMLIB-L (communications libraries), and arts-lib (arts libraries). Respondents were asked to forward the link to colleagues where they felt it was appropriate and unobtrusive. The primary focus of the survey was on academic librarians, so it was posted to listservs that tended to be made up of academic librarians.

Initially, the hope was that 500 responses would be gathered from individuals on these listservs. If fewer than this responded, e-mails would have been sent to additional library listservs. This did not prove to be necessary. In all, there were 766 respondents. It was available on SurveyMonkey.com for two months in June/July 2007. The majority of respondents (79.4%)
were from academic libraries, with smaller percentages from public libraries (9.4%) and special libraries (7.4%). 3.8% responded that they were “other.” The majority of these were from government libraries and a few were library vendor representatives.

Due to the variety of listservs included in the initial e-mails, respondents came from a variety of departments/areas within their libraries (see Table 1). A number of respondents (86) listed themselves in the category “Other.” After the results were tallied, those who listed themselves as “Other” were re-evaluated. Some were added to the categories listed below. Additionally, “Government Documents” and “Instruction” were added as new categories because so many respondents were from those departments/areas. Also in the “Other” category was one respondent who described himself/herself as belonging to more than one area.

The largest single-category response by far was “Reference,” with 27% of respondents identifying themselves as such. However, combining “Acquisitions,” “Cataloging,” and the other departments/areas that are often referred to as “Technical Services” yields 33%. Combining “Reference” and “Public Services” resulted in 35.5% of the total, so there was balance between the two broad types of library departments/areas.

TABLE 1. Respondents by Department/Area

<table>
<thead>
<tr>
<th>Library Dept/Area</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access Services</td>
<td>2.0%</td>
</tr>
<tr>
<td>Acquisitions</td>
<td>2.2%</td>
</tr>
<tr>
<td>Administration</td>
<td>15.1%</td>
</tr>
<tr>
<td>Cataloging</td>
<td>11.2%</td>
</tr>
<tr>
<td>Circulation</td>
<td>1.0%</td>
</tr>
<tr>
<td>Collection Development</td>
<td>5.4%</td>
</tr>
<tr>
<td>Document Delivery</td>
<td>0.2%</td>
</tr>
<tr>
<td>Electronic Services/Systems</td>
<td>6.7%</td>
</tr>
<tr>
<td>Government Documents</td>
<td>2.2%</td>
</tr>
<tr>
<td>Instruction</td>
<td>2.5%</td>
</tr>
<tr>
<td>Interlibrary Loan</td>
<td>0.7%</td>
</tr>
<tr>
<td>Public Services</td>
<td>8.2%</td>
</tr>
<tr>
<td>Reference</td>
<td>27.0%</td>
</tr>
<tr>
<td>Serials</td>
<td>4.2%</td>
</tr>
<tr>
<td>Special Collections/Archives</td>
<td>1.0%</td>
</tr>
<tr>
<td>Technical Services</td>
<td>8.7%</td>
</tr>
<tr>
<td>Other</td>
<td>1.6%</td>
</tr>
</tbody>
</table>
A relatively large percentage of librarians, compared with society at large, indicated that they use wireless handheld devices and they use them in a variety of ways. Overall, 19.4% (or 140) of respondents indicated that they use these devices. Of these, 69.2% indicated that they use them for their jobs, meaning that 12.8% of all 766 respondents use these types of devices for their jobs. When asked what tasks they performed on these devices, the overwhelming answer was e-mail (58.7%), followed by calendar/scheduling (35.9%), and Web browsing (27.2%). Other tasks that received quite a few votes were contact/address book, note taking, and “to do” list creation. Many respondents indicated that they use their wireless handheld devices only when they do not have access to a computer. One said, “I use it for Web only when I don’t have access to a ‘real computer...’” Other respondents mentioned accessing the library catalog, reading documents, interactive reference, chat, text messaging, collection inventory, reading RSS feeds/blogs, library database access, games, dictionaries, downloading podcasts, and to access drug information via device-specific reference tools. None were mentioned more than nine times. One respondent stated, “If there are a number of titles in one search that I want to consult, I start up the catalog search on my PDA before I leave my office. While in the stacks I can go from the results list to the full record and back easily. It is easier than having to write down all pertinent information...” Another indicated that his/her library was exploring the idea of using wireless handheld devices to develop a roaming reference service. This idea was also mentioned in other responses in the survey.

From the survey results it is evident that many librarians use their wireless handheld devices as organizational tools. However, not nearly as many use them to access library content such as databases, e-journals, or e-books. 28.6% of those who indicated that they use their wireless handheld devices for their job use them to access library content. That’s less than 5% of the total respondents (766). The most common response to this question was that they use them to access the local library catalog. This was followed by accessing databases/indexes. Six respondents use these devices to access device-specific medical resources such as drug reference or other point-of-care products. Five responded that they use them to access e-journals, while five other respondents use theirs to access “personal” e-books, which probably means they are not getting them from their own library. Many respondents felt that these devices were not equipped to access a lot of library content. One stated, “I occasionally will look at our subscribed resources,
but often find they are poorly suited to handheld access.” Another said, “I have tried [accessing library resources], but the library’s Web page is not formatted to make this easily workable.” Others seemed to be working hard to keep up with the technology. One indicated that his/her library was experimenting with a Nokia Internet tablet: “We are considering how we might use this type of device in providing services to our patrons in the library.”

Although the results above that indicate that very few librarians use these devices to access library content, it seems that many librarians are open to using wireless handheld devices. Technology issues, lack of knowledge on the part of librarians, and lack of interest from patrons seem to be reason for many to be cautious.

**LIBRARY PATRON USE OF WIRELESS HANDHELD DEVICES**

Respondents were asked about their perceptions of patron use of wireless handheld devices and, if they are using them, what library content are they accessing. When asked, “Do your library users employ wireless handheld devices, including Smartphones, etc. to access your library’s e-content, either webpage, databases or specialized wireless content?” the largest response to this question was “I Don’t Know,” garnering 50.4% of the votes. 18% indicated that patrons were using them in their libraries. 31.6% indicated that users were not using wireless handheld devices to access library content. Of those that indicated that library services were being accessed by patrons, most respondents indicated that a small percentage of their users were actually doing this (Figure 1).

One respondent (0.9%) indicated that more than 50% of his/her patrons were using these devices to access library content. The majority either did not know the percentage of their patrons making use of these devices or felt it was below 10%.

When asked what library services were being accessed on these devices, the responses were varied. Again, many indicated that they did not know how these devices were being used, but 91 respondents did indicate services they perceived as being used (Figure 2).

Most respondents (59.5%) indicated that wireless handheld device users were accessing their library website with these devices. Considering that this works out to be 8.6% of all the respondents to the complete survey, the overall percentage is rather small. Additionally, many responded that patrons were using these devices to access the library’s catalog. These
results may have partially been the result of respondents’ assumptions, but they are probably legitimate. Fewer respondents felt that patrons were accessing content paid for and supplied by the library such as e-journals (34.2%), e-books (25.2%), etc. Interestingly, 8.1% of respondents indicated that they connected to users using a wireless e-mail newsletter. This may have indicated a perceived need to reach out to wireless handheld device users. Last, there were 17 responses (15.3%) that indicated that they provided software to patrons to use on these devices. Often, these were medical reference or point-of-care products or legal publications provided to students/interns/practitioners, etc.
Many of the responses in the “Other” category indicated specific products to which users had access. For example, a couple of respondents mentioned that they were providing medical resources, such as PubMed OnTap, Clinical Pharmacology OnHand, and Mobile Micromedex (Thomson Clinical Xpert) to users. Another said that students at his/her institution used wireless handheld devices to access classroom content, presumably through Blackboard or a similar product. Another indicated that his/her library circulated iPods with preloaded music and “newscasts.” Last, one respondent stated that his/her library distributed free government-issued material via e-mail such as the Federal Register’s table of contents service.
The next question on the survey was designed to determine who was perceived as using wireless handheld devices in respondents’ libraries. Since the link to the survey was sent to listservs, which to appeal to academic librarians, responses tended to reflect a bias in that direction. The two groups that received the most votes were graduate students and undergraduate students, followed very closely by librarians. The “Librarian” category should have included library staff as well, because a few of these showed up in the “Other” category. After adding these responses to the “Librarian” category, it is the biggest group of users of wireless handheld devices in libraries (Figure 3).

Generally, librarians and the student populations were listed as the primary users of these devices. Looking at the responses, users in the medical fields showed up very strongly in the categories of medical students, doctors, and “Internists.” This was not a surprise because a lot of the libraries listed on Megan Fox’s website were medical (Fox 2007). In general, medical libraries seem to be leading the way with using these technologies. Two responses showed up in the “Other” category from non-library staff. Looking back, the survey may have been more effective if responses had been tracked by type of library/librarian responding. It would have made it easier to track trends in different types of libraries. As it is, the results above were not surprising.

Three questions on the survey dealt with how libraries support or assist wireless handheld device users. The first was: “Does your library purchase any handheld specific databases or products for your users?” Only those who stated that they did have library patrons who used wireless handheld devices were asked to respond to this question. The majority of the respondents (68%) said no, their library does not purchase these types of products for users. Only 18% stated that they do purchase wireless handheld device-specific content. The other 14% stated that they did not know if their library purchased content for wireless handheld device users. Many of the respondents who stated that they do purchase content specifically for wireless handheld device users work in medical libraries or serve medical clientele. The same products mentioned above were listed: PubMed OnTap, Clinical Pharmacology OnHand, and Mobile Micromedex (Thomson Clinical Xpert). In addition, DynaMed was also mentioned. Another respondent stated that they purchase commercial products that are delivered by e-mail and then forwarded to interested library users. The publishers/producers mentioned by this respondent were Commerce Clearing House, Bureau of National Affairs, and Dun and Bradstreet. Respondents who worked in a
FIGURE 3. Perceived Users of Wireless Handheld Devices in Libraries

<table>
<thead>
<tr>
<th>Group</th>
<th>Perceived Users</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grad. Stu.</td>
<td>42.7%</td>
</tr>
<tr>
<td>UG Stu.</td>
<td>42.7%</td>
</tr>
<tr>
<td>Librarians</td>
<td>41.8%</td>
</tr>
<tr>
<td>Med. Stu.</td>
<td>23.6%</td>
</tr>
<tr>
<td>Faculty</td>
<td>22.7%</td>
</tr>
<tr>
<td>Doctors</td>
<td>18.2%</td>
</tr>
<tr>
<td>PhD Stu.</td>
<td>16.4%</td>
</tr>
<tr>
<td>Gen. Pub.</td>
<td>12.7%</td>
</tr>
<tr>
<td>Researchers</td>
<td>11.8%</td>
</tr>
<tr>
<td>Internists</td>
<td>9.1%</td>
</tr>
<tr>
<td>Law Stu.</td>
<td>3.6%</td>
</tr>
<tr>
<td>Lawyers</td>
<td>3.6%</td>
</tr>
<tr>
<td>Other</td>
<td>15.5%</td>
</tr>
<tr>
<td>Don't Know</td>
<td>25.5%</td>
</tr>
</tbody>
</table>

legal environment mentioned that users accessed LexisNexis, Westlaw, Loislaw, and specific newspapers purchased for use by patrons. Law.com (2007) and WSJ.com (Wall Street Journal Online 2007) were also mentioned.

When asked if library content had been reformatted for handheld wireless device users, similar results were seen. 59% of 100 respondents stated that no content had been reformatted. 15% stated that content had been reformatted for wireless handheld device users, while 26% stated that they did not know. Of those who said that they had reformatted content, seven stated that their website had been reformatted or that an alternate version of the website had been created. Three mentioned that the library catalog had been modified to make it easier for these users. Last, one responded that he/she delivers a library newsletter via e-mail formatted for the smaller screens of PDAs and other wireless devices.
Last, respondents were asked how they assisted or supported wireless handheld device users when they had problems accessing library content. The most responses (30%) were split between a “designated systems librarian or staff person within the library” or their Systems/IT Department on campus. Again, “I Don’t Know” was a very common response, tying the two above at 30% of respondents (Figure 4).

Looking at the results, in many libraries it is the librarians themselves who provide support. Since these responses were separated from a dedicated systems librarian, the assumption is that public service librarians are the ones providing support. Last, eight respondents stated that they had no support system in place for wireless handheld device users. In the “Other” category, media services was mentioned by two respondents.
Another important aspect of the survey was to determine if there is a demand for more or different services for wireless handheld device users (Figure 5).

Again, a common response to this question was “I don’t know.” That may indicate a lack of demand for these types of services in libraries or it may be a reflection of the characteristics of the librarians who responded to the survey. Those with limited public interaction may not be aware of the demand for these services. Only 19 of 678 respondents (2.8%) stated that services for wireless handheld device users were being requested a lot or that their institution had made a commitment to providing services for these users. The majority did not know if there was a demand or suggested that there was minimal demand for additional services. When respondents were asked if they thought demand for services for wireless handheld devices would increase in the coming years, 88.6% felt that it would. 1.1% felt it would decrease. The rest did not know.

The responses to the survey question, “For which services or products are your users asking?” were wide and varied. The responses were similar to the question above, which asked which services were currently being used, but different enough to show expected trends toward accessing databases and e-journal/e-book content (Figure 6).

The most significant response to this question was “I Don’t Know.” Almost 56% of respondents who stated that there was demand for services for wireless handheld device users stated that they did not know what users were requesting. This may be due in part to a lack of interaction with users by catalogers, technical service librarians, and so on, who responded to the survey. These librarians may not have a good feel for what is being asked for, even though they felt that people were asking for services. Otherwise, the perception is that users want to be able to access library databases/indexes, the library catalog, and the library’s website more than anything else. A number of respondents mentioned audiobooks. Two interesting ideas mentioned in comments were text message reference services and the ability to perform circulation functions on their devices. A follow-up question to this asked respondents to choose the services they felt users would list as their highest priorities. It supported the results above, with access to the library’s catalog (51.4%), databases (64.6%), and library websites (42.1%) garnering a lot of responses. Accessing electronic journal (64.6%) and book content (44.3%) were also listed as perceived future priorities.
Wireless handheld devices that can be used to access the Internet are still relatively new to the market. From the results of this survey, it is apparent that many libraries are making attempts to serve these users. Realistically, the question of whether it is important to attempt to serve these users is a moot point. As these devices become more popular, users will access library-based content on them with or without library support. The question is not about the medium (the Internet), which is in wide use already, but about the means of access. As demonstrated above, the expectation is that demand will increase, but what are the problems with the devices that librarians perceive are limiting access to library content?
One-hundred people responded to this question on the survey. Multiple answers could be selected. The results are in Figure 7.

As you can see from Figure 7, the size of screen was described as the biggest limitation of these devices, with 74% of respondents choosing that answer. Lack of memory (34%) and keyboard/input methods (32%) were also mentioned as limitations of the devices. Additionally, 20% mentioned lack of access to Adobe Acrobat software as a limitation. This has changed with a newer generation of devices. Most PDF content can be read on current wireless handheld devices, but the size of the screen affects how useful this is.

Responses in the “other” category were wide and varied. One perceived limitation of these devices mentioned most often was the cost of the devices and/or their monthly service fees. The unreliability of national wireless
networks was also a common response. One mentioned that the library he/she worked in was a “dead zone” for wireless handheld devices, although most people would be outside the library using these devices to access content. Three other respondents mentioned the speed of accessing the Internet on these devices. This may be caused by the memory of the device or the speed of the network they are using. In addition, two respondents mentioned that students/faculty cannot access databases and so on due to the fact that these devices are not part of their campus network. The IPs of these devices change each time the Internet is accessed, so content on the library’s website may be inaccessible (Glass et al. 2000). Many libraries have proxy servers or software to allow for off-campus access, but it is an issue at some libraries. Another limitation mentioned was that these devices do not have the proper software to access Java-based websites.
The perceived limitations are numerous, but the expectation is that they can be resolved.

The last two questions on the survey were optional and allowed for respondents to expand on the answers given on the previous questions. First, they were asked for thoughts about licensing and pricing concerns with wireless handheld device content. Several respondents asserted that vendors should not charge additional fees for wireless access to content, since most fees at academic institutions are based on campus FTE. A student equals one user whether he/she uses a computer in the library to access it or a wireless handheld device. One stated that, “publishers generally calculate pricing based on an assumption that one person uses one device at a time, that could become inaccurate if people sit at a desktop PC but have also their hand held operating simultaneously,” but the occasions of this happening would be rare. There was some cynicism expressed by respondents to trust content providers. Several worried that this would be “another excuse” to increase rates or to complicate pricing models. One said, “Publishers don’t want to license the library—they want to sell to the individual.”

When asked for additional thoughts about wireless handheld devices, 101 respondents were divided fairly evenly between three schools of thought. Many felt that libraries need to begin to address issues with these devices now, before they become the standard for Internet access. The number of respondents who were content to wait for demand to increase or the devices to improve was slightly smaller. Last, in slightly fewer numbers, there were respondents who had no interest in these devices or felt that they would not become popular in the coming years. Among those who had jumped on the wireless handheld device band wagon, most felt that the future of computer technology/networks lies in these types of devices. For example, one respondent indicated that his/her academic library had begun a “roving reference” service. “A few of our reference librarians are roaming the floors of the library with mini-laptops so that they can answer questions at point-of-need, as well as help people who might not approach the reference desk, or who may not want to walk two floors down to ask one question.” Another respondent stated that he/she would “love” to see the use of these devices increase: “I think wireless devices will make libraries more accessible, too, by allowing them to move away from stationary computer terminals.” Another statement issued by a respondent felt that these devices would become the standard wireless tools for society, “much as the cell phone is the standard of today.” “It isn’t common yet,” he/she continued, “but it will be.” Another asserted, “If we do not proactively
provide access to our services (via wireless handheld devices), then we are actively discouraging people from using them.” Many of the respondents who felt these devices would complicate people’s lives further still felt that they would have an impact on society and libraries.

Some of the hesitation expressed by respondents to this question was due to the limitations of the technology and the cost of the devices, but others are waiting for demand to increase before addressing services to these users. One respondent summarized his/her feelings as, “Wireless handheld devices probably have a great future in libraries, but the vast majority of our students aren’t there yet.” Another voiced a need to wait on demand: “We should respond to express communications from our users regarding the need for introduction of new technology. This has not happened in our library yet.” Addressing the cost of these devices, one respondent stated “the only reason I don’t use such a device is cost—mainly the ongoing monthly cost of service. When this comes down, I think the use of these devices will increase dramatically.” Some wondered if newer or forthcoming devices such as Apple’s iPhone may increase demand and/or make accessing library resources easier.

There were a significant number of people who responded that they had little or no interest in wireless handheld devices. Some felt that the devices were “trendy” or inadequate for current or future library services. “I do not see a particular reason why a handheld wireless device would be useful,” stated one respondent. Another stated in regards to his/her staff that they “are not interested in exploring the use of wireless handheld devices in the library. They feel threatened by the students’ use of technology for entertainment and its potential for academic use.” Another said, “The proliferation of noisy conversations carried on non-stop is appropriate for some settings, not particularly so for all locations within the library. Maybe PDAs would replace the cell phone noise, but it’s doubtful.”

**SURVEY FEEDBACK**

In general, the survey was well received by the 766 respondents that participated, with a few exceptions. One common complaint was that the survey should have been worded to include all types of libraries equally. It was written with academic librarians in mind, but no limitation was set on who could participate. Many respondents felt that they did not have much to offer because they did not know much about wireless handheld devices. In fact, part of the expected results of the survey was to show how few librarians/libraries are using and providing services for these devices.
From the point of view of the survey creator, a few things were learned. The survey should have been limited to academic librarians only or re-worded for all types of libraries. The feedback from the public and special librarians was valuable, so future surveys may be written with all library-types in mind. Additionally, it would have been useful to be able to track responses by library type and/or librarian position. For example, this could have shown whether public service librarians, technical services librarians, or administrators were more likely to use these types of devices.

**CONCLUSIONS**

The results of this survey provided interesting data on the current state of libraries with regards to wireless handheld device use and services. The conclusions that can be drawn are as follows.

- Librarians use wireless handheld devices in a higher percentage than the public in general.
- Many librarians use them for their jobs, usually for e-mail or as organizational tools.
- In many cases, librarians do not know if and how these devices are being used in their libraries.
- A small percentage of library patrons (18%) are perceived as using these devices.
- As anticipated while creating the survey, the most common use of these devices for library services is perceived to be to access the library catalog and/or website.
- Three groups were perceived as the biggest users of these devices in libraries. They were undergraduate students, graduate students, and librarians. As expected, medical librarians were also represented prominently.
- Relatively few libraries (18%) purchase content specifically for wireless handheld device use.
- Very few libraries (15%) have reformatted content for these users.
- Among libraries who provide technical support to wireless users, most have a systems librarian or dedicated staff person who performs this.
- There is very little demand for services for these devices as of August 2007.
Where there is demand, users are asking for access to the library’s databases, website, and catalog most often.

There are many perceived limitations to these devices in accessing library content. As anticipated, librarians believe that screen size and lack of memory are the biggest limitations.

Librarians are worried about changing pricing models when these devices become popular. The consensus is that the FTE model in academic libraries is adequate for now and would work with wireless handheld devices as well.

Surprisingly, librarians are split between those who think libraries need to prepare for these users now and those who are content to wait until popularity increases and/or the devices improve.

Librarians expect demand for services for these devices to increase dramatically in the coming years.

The way librarians and library users access websites and database content may be shifting again. In the past, many libraries have taken a conservative approach adapting to new technologies. With some technologies this has proven the correct approach. For example, years ago many libraries began purchasing LaserDiscs. Now, many libraries regret the purchase of these items. Additionally, many libraries are now replacing their videotapes with DVDs. Looking at the expectations for wireless handheld devices, 88.6% of respondents felt that demand for services for these device users will increase dramatically in coming years. This was despite the fact that only 2.8% of respondents were seeing a lot of demand. Additionally, respondents were split between those who felt we need to prepare for these users now and those who want to wait until their popularity increases.

Looking at the anticipated growth of these items in the coming years described in the first paragraph of this article and despite the limitations of the devices, a more aggressive approach may be needed.

As the popularity of SmartPhones and other such devices increases, price of these devices will presumably decrease, driving long-term sales higher. The technology will increase as well, making online documents easier to access and read. Libraries need to be ready. Fortunately, there are simple and inexpensive steps librarians can take to prepare for future wireless handheld device users. According to Cuddy (2006), there are a few steps librarians can perform to make their websites more accessible to wireless handheld device users. One is to create a text-based version of the website. Often, libraries create a separate website with the same content specifically for wireless handheld device users. She also recommends
librarians re-configure their website so that there is a minimum of horizontal scrolling. It is easier for mobile device users if all content fits on one screen. Additionally, images, image maps, frames, banners, and tables need to be kept to a minimum. Also, wireless handheld devices do not handle pop-ups, so eliminate those or move content to a traditional text-based webpage. Last, she recommends that all pages that require plug-ins be re-configured using simpler forms of Web content (Cuddy 2006). The basic idea is to simplify the library website. It is also important to test the website on these devices before presenting it to the public. This will eliminate problems by users and cut down on support questions.

Libraries also need to consider who is going to assist wireless handheld device users with problems. Forward-thinking administrators may want to delegate one librarian, library staff person, or IT staff person to get to know these devices and how they work in anticipation of questions. Regarding content that is outside the control of librarians, such as databases, electronic journal content, and electronic book content, librarians can encourage content providers to consider wireless handheld device users when creating websites/products. Hopefully, vendors/publishers will see the need to allow access to these users without complicated license agreements and pricing models.

To conclude, despite librarians’ conservative nature, the lack of demand for services at the time this survey was developed, and the limitations of the devices as they currently exist, libraries need to be ready to serve these users from a technological standpoint (simplified websites) and from a public services standpoint to assist them in accessing library content.

REFERENCES