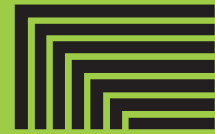


# Library Technology

R E P O R T S

Expert Guides to Library Systems and Services

April 2010  
vol. 46 / no. 3  
ISSN 0024-2586



ALA TechSource  
[www.alatechsource.org](http://www.alatechsource.org)

a publishing unit of the  
American Library Association

## Gadgets and Gizmos: Personal Electronics and the Library

*Jason Griffey*

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## **Gadgets and Gizmos: Personal Electronics and the Library**

*Jason Griffey*



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# Library Technology REPORTS

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ALA Production Services: Troy D. Linker  
and Tim Clifford

Library Technology Reports (ISSN 0024-2586) is published eight times a year (January, March, April, June, July, September, October, and December) by American Library Association, 50 E. Huron St., Chicago, IL 60611. It is managed by ALA TechSource, a unit of the publishing department of ALA. Periodical postage paid at Chicago, Illinois, and at additional mailing offices. POSTMASTER: Send address changes to Library Technology Reports, 50 E. Huron St., Chicago, IL 60611.

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Jason Griffey is the head of Library Information Technology at the University of Tennessee at Chattanooga. His latest book, *Mobile Technology and Libraries*, is due out in spring 2010 as a part of Neal Schuman's upcoming "Tech Set." Jason's previous book, *Library Blogging*, written with Karen A Coombs, is available through Amazon. He can



be stalked obsessively at [www.jasongriffey.net](http://www.jasongriffey.net) and at Pattern Recognition ([www.jasongriffey.net/wp](http://www.jasongriffey.net/wp)), his personal and professional blog, which has been active since 2003. He is the author of the American Libraries Perpetual Beta blog (<http://bit.ly/perpetualbeta>) and is also a columnist for the ALA TechSource blog ([www.ts.ala.org/blogs/jason-griffey](http://www.ts.ala.org/blogs/jason-griffey)). Jason was named one of Library Journal's Movers & Shakers in 2009 and is regularly invited to speak on libraries, the social economy, mobile technology, and other technology-related issues.

## Abstract

Few would argue, given the rise and exponential expansion of the Internet and personal computing, with the statement that we are in the midst of an ongoing information revolution. Personal electronics, or as we'll refer to them in the pages of this report, gadgets, are a key component of this revolution and one that has tremendous potential to transform library services. This issue of *Library Technology Reports*, "Gadgets and Gizmos: Personal Electronics and the Library," provides analysis of a variety of relatively low-cost gadgets, looking at features, costs, and possible applications for libraries. The report will focus heavily, but not exclusively on e-readers, a device whose popularity is increasing rapidly and has tremendous potential implications for the library world. The report will also cover a variety of multimedia capture devices, scanners, note-taking devices, and several unusual gadgets that are difficult to categorize. All gadgets will be analyzed with an eye toward the future, cost-effectiveness, performance, and functionality.

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# Introduction to Gadgets in the Library

## Abstract

*We are in the midst of an information revolution that has profound implications for libraries. This chapter of “Gadgets and Gizmos: Personal Electronics and the Library” lays the foundation for this report, summarizing why gadgets are so important for libraries and which types of devices will be covered in this report.*

It’s a fairly safe assumption that when people think of libraries, they generally think of books. To many people, it’s not obvious that libraries predate books as a mechanism for sharing knowledge. If we think back, we can imagine a time before the book and how, once books became inexpensive and widespread, how revolutionary and democratizing the book was as a tool for sharing information. It must have been incredible to think that you could have so much text in such a compact form, and so many of them!

The technological revolution that we are going through now will make that look like a blip in history.

That sentiment may not be looked upon favorably by every librarian, but the last ten years have seen more information created, shared, and collected than in the rest of human history combined. (I can’t cite a source for that, but I think it’s a tough statement to argue with.) The digital revolution has been the enabler, beginning with the personal computer and continuing through to the creation of the Internet and now the rise of the mobile device. We’ve seen a huge shift in the last twenty years, as Moore’s Law has pushed microchips smaller and smaller, and cheaper and cheaper, to the point where even the least expensive digital toy you can buy has more computing power than the machines that were used to crack the German Enigma codes during World War II.

It’s this level of power and portability that I’m interested in exploring in this issue of *Library Technology Reports*. Personal electronics, or as I’m going to refer to them, gadgets, are something that our patrons are using, but more important, they are a part of the future of information retrieval and sharing. They are becoming an increasingly important and even critical component of the

way that information is generated and disseminated, and it’s important that librarians be aware of the what gadgets are available, what they can do, what they cost, and how practical they are in different settings.

## The Scope of This Report

In this report, I’m going to be concentrating on a few general categories of gadget: e-book readers, multimedia capture devices and players, scanners, and note-taking devices. I’m also going to devote a section to odd or unusual devices, since there are always plenty of gadgets that don’t fit neatly into a particular category. I’m going to conclude my discussion of each gadget with a wrap-up of what I saw at the Consumer Electronics Show 2010 and what we can expect to see over the next twelve to eighteen months.

There are several general categories of gadget that this book will cover, including electronic book readers (e-book readers) like the Amazon Kindle and the Barnes and Noble Nook. We’ll also dive into personal multimedia players, media capture devices like the Flip video camera and the Zoom H2 audio recorder, as well as scanners and note-taking helpers. If you can consume or produce it, I’m going to try to find an electronic device that lets you do so more easily and cheaply than you thought possible.

We’ll also cover more unusual gadgets that may not have popped up on your or your library’s radar, like the Nabaztag (a multimedia rabbit) and the Chumby (a small wireless Internet-connected widget machine). How can an electronic rabbit help your library? We’ll see if we can’t get to that answer.

The goal here is to describe these different gadgets and then show you how they fit into the library world with a few use cases. I’ll not only show that these devices are popular with patrons, but that there are good reasons for them to be used in the library by the librarians themselves.

One important note—I won’t be talking about one of the most popular sorts of gadgets these days—the mobile phone—unless it’s in quick comparison to one of the areas

I mentioned above. In addition to constraints on the length of this report, there has already been a great deal written about that subject, including my own book *Mobile Technology and Libraries*, and Ellyssa Kroski's July 2008 issue of *Library Technology Reports*, titled "On the Move with the Mobile Web: Libraries and Mobile Technologies." For the purposes of this report, our scope is the "other" cool personal technology—devices like the Kindle, the Nook, the Archos Tablet, the iPod, and the Zune.

## Why Are Gadgets Important?

So why gadgets? Moore's Law is still driving the price down and the complexity of computing devices up to such an extent that we are now seeing portable devices that truly would have been unimaginable not that long ago. For instance, for \$150 you can buy a portable video camera that can capture higher quality video than an entire television studio could just two decades ago. There are devices that allow you to carry thousands of books with you and give you the ability to search and annotate them. You can buy pocket-size glass screens that pump out high-resolution movies and television, practically on demand, for hours on a charge. These devices are the miracles of the modern technological age, and they are enabling the creation and consumption of content in truly remarkable ways.

These silicon wonders are significant to librarians for three key reasons. First of all, our patrons are using them more and more ubiquitously. In the same way that we began to build library websites as more patrons took to the Web, we need to be fluent in the language of gadgets as they become more common among patrons. As libraries move from "temples to the book" to a service-based collection of information resources, using the things that your patrons are familiar with is more and more important. Especially as we move to digital collections, we have to stay on top of the methods of accessing those digital collections, which are almost universally personal electronics. Gadgets and libraries are going to become much more tightly integrated as we move through the digital conversion in the next decade or so.

Second, these devices can make librarians more effective and efficient at our jobs. They can give libraries new venues for the distribution of content. They can make complex tasks simpler, can help librarians share information with one another more rapidly and efficiently, and can help us provide better, more advanced service. Libraries have always been the democratizers of content. We step in to distribute the economic burden of information and allow access to those who could not afford to own the information themselves. As our content becomes increasingly digital, these gadgets give us the delivery mechanism for the content. In the traditional library, the

content and the delivery device were one and the same: the book, the magazine, the journal. In the digital world, the two are distinct, but that doesn't give libraries the liberty of continuing to be interested in only one of the two pieces of the access puzzle.

More generally, no matter what your profession, these devices are the future of media consumption. For a librarian, ignoring these gadgets is tantamount to the monks of the Middle Ages saying "Yes, the book is a nice technology, but we really think we'll just hold onto these scrolls."

Finally, these devices often change the nature of information interactions. They provide interesting opportunities for the delivery of content, something libraries should always be interested in. You have a much richer, multimodal experience with a number of these gadgets than you do with the traditional print world. When it's possible for you to read text, click a link to a video, and then leave a comment correcting something about the original text, your relationship with the consumption of media has changed. Libraries and librarians need to understand this changing landscape, and the windows through which we interact with this new world of information are gadgets.

## Gadgets in This Report

If you're like me, you're always going to feel like you left something out. Unfortunately, there were only so many devices I could cover in one report. So why were these specific devices chosen? One key concern was the price of the devices. There's really no limit to how much you *could* spend on gadgets, but most librarians are on a fairly tight budget, especially these days. I tried to keep the average price for the gadgets covered to less than \$300, and we won't look at anything that costs more than \$500. The average price is probably much closer to \$150, and we will do a cost-benefit analysis for the gadgets where there is competition for capabilities and the price difference between the two is significant.

Another important concern is the fact that any technology, no matter how new, will become obsolete some day. I want to look at devices that are current, so I'm going to look at devices that have only very recently been adapted for library use or that may not even be used in libraries at the time this report is being written. I'm hoping that this is valuable not only for what is being used, but for what might be used, and gives you ideas for new services and technologies that your users can embrace.

In order to stay relevant in the modern digital age, we need to understand both sides of the information delivery ecosystem—not just the digital content, but the physical interfaces that deliver the content to our patrons. Speaking to the latter half of that duality is what I hope this issue can do. Let's go!

# Electronic Book Readers

## Abstract

*E-readers are one of the hottest gadgets on the market today. This chapter of “Gadgets and Gizmos: Personal Electronics and the Library” explores these devices and how they can work for librarians. After an exploration of how these devices work and the different types of devices, the author provides a comparison of current popular products, followed by a look at some devices that may catch on in the future.*

The year 2010 is poised to be the year that e-book devices break into the mainstream. Electronic readers have been around for some time, but since the advent of the PDA and the cell phone, people have been using them to read on the go. It was the development of a new kind of display technology (more on that below) and the participation of one of the largest media companies in the world that really created the stand-alone e-book reader. The display technology is called E Ink, and the media company was Sony.

## How E-readers Work

The current generation of e-book readers has standardized around a type of display designed and built by the E Ink Corporation, a private firm based on technology developed at the MIT Media Lab in the early to mid-2000s. What makes E Ink different from previous display technologies, and perfect for an e-book, are its incredibly low power consumption and high contrast, combined with the fact that it’s a reflective, rather than transmissive, display, so it is easier on the eyes while using less power.

The easiest way to understand how E Ink works is to

imagine a flat sheet covered in Ping-Pong balls. Imagine that for each ball, we’ve colored half of the sphere black and half of it white. Now, to display things on the sheet, we simply have to flip the balls needed to the black side and leave the remainder white. If you take that basic idea, reduce it in size by a few million times (the “balls” in an E Ink display are roughly the circumference of a human hair), and make the whole thing respond to electrical charges.

The development of E Ink led to a breakthrough in the development of new devices for reading. The new screens consumed very little power, which meant that readers could be thin and portable, without having a large battery packed into the design. It also meant that the contrast between the text and the background necessary for reading was finally good enough for nearly everyone to be able to consume text comfortably. Finally, the display draws current from the battery only when it is actively changing the screen. When you are reading a page of text on an E Ink screen, the device is, for all intents and purposes, off. It draws no power for the display until you hit the Next Page button, at which point it redraws the screen and flips all the tiny spheres into their new configuration.

That fact, however beneficial to users, also leads to one of the disadvantages of E Ink. When it redraws the screen, it refreshes every pixel, which for the end user means that screen changes have a built-in “flash,” a “blinking” while everything flips around. Some users find the refresh lag distracting, but personally I got used to it very quickly, and newer versions of the technology speed the refresh to make it less of an issue. This does mean that the current crop of E Ink displays are very much static displays, unable to render movement or video in any way.

The second disadvantage of current E Ink technology is a disadvantage only when compared to a more stan-

standard type of electronic display, the LCD. Since E Ink is composed of tiny black and white spheres, it is capable of displaying text and pictures only in shades of gray. The best current screens do sixteen shades of gray, whereas any modern LCD display that you might find on a mobile phone is capable of millions of different colors. When you're reading text, this isn't a severe limitation, but for texts with detailed graphics, charts, graphs, or other visual content, it can be a significant downside.

This is, to my mind, largely an expectation issue rather than an issue with the technology. People expect, since e-book readers have some of the characteristics of a computer (some have Web browsers and other interactive content), that they will do more than they are designed to do. There is talk of color E Ink displays, and of speeding existing black-and-white displays to allow low-level video capabilities, but for the near future, there is one thing that e-readers are really good at: low-power, high-contrast displays of text.

## DRM and E-readers

In addition to the type of screen, all e-readers on the current market have a few things in common. The first is that they will all read and display multiple types of files, although each has its own "protected" file type that is delivered by a given company's bookstore. For example, all of them will allow you to place a plain text file (.txt) on them for reading, but if you shop on the Amazon.com store for a book for your Kindle, the file that it delivers to you is an Amazon formatted file (.amz) that isn't readable by any device not blessed by Amazon.

Which brings us to an important point to remember about these e-readers: digital rights management (DRM) is being used by each e-reader manufacturer to try to prevent the piracy of the books in question. This seems to be a reasonable goal, given the prolific piracy that the digital transition has caused in other media formats (music and video). On the other hand, it causes a set of problems for users of e-readers. The largest is pretty simple to see: the use of DRM on books being sold means that only approved devices can access said books.

DRM is like a lock and key for digital content. The media is locked, and you have to have the key to get at it. When Amazon sells you an e-book from its online bookstore and you load the book onto your Kindle, it works because the Kindle in question has the appropriate key to unlock the file. If you decide in a year to purchase a Barnes and Noble Nook instead of a Kindle, your old books won't transfer, since Amazon hasn't given (and for business reasons, almost certainly won't give) its keys to Barnes and Noble. Imagine purchasing a DVD that works in your current player; then your player breaks, you buy a new one, and your DVD will not play in it.

From a behavior standpoint, DRM prevents one of the most common habits of readers—that of lending the book. If you buy a book from the Amazon store for your Kindle, you can't give the file to a friend to read because the key to the file is linked to your Amazon account. This is one of the key issues that comes with moving media to a digital-only format. The advantage to a physical format, even one that contains digital information (like a DVD), is that in order to have the "decoding" happen, you have to distribute the keys so widely that anyone with the capability of accessing the content (anyone with a DVD player) can unlock it. Every DVD player has a "key" to the DRM on not only the disks you buy, but any DVD sold. Digital distribution that separates the content from the form allows producers to create different keys for each person who happens to buy a copy of the content, which limits the usage of the content in ways that should make libraries and librarians uncomfortable.

This situation and system has already been tried in the realm of digital music. DRM was a failure in actually preventing piracy, and the result, after almost a decade of a system where music was locked to specific players in the event that it was purchased for that player, was that all major music sellers online now sell DRM-free music. The largest of these retailers are iTunes and the Amazon MP3 store, but there are dozens of smaller retailers, all of which are now selling music digitally with absolutely no protection.

DRM is, in a manner of speaking, treating paying customers like criminals. It prevents legitimate customers from doing what they want with their content while doing absolutely nothing to the people who acquired the same content illegally. The music industry finally realized this, and it's my belief that book publishers will do the same. I'm hoping that it doesn't take another decade for it to happen this time around.

With all of that said, DRM is something that libraries have to pay attention to at this point. If you are hoping to acquire digital copies of bestsellers and circulate them on an electronic reader, it is very likely that if you change reader platforms in the near future, you may not be able to take your books with you. This isn't to say there aren't solutions that mitigate the difficulty, some of which I'll cover below in discussions of the specific readers. But it is very important for collection development and for responsible spending that you know exactly what you are getting when you buy an electronic copy of a work.

I happen to be one of "those librarians" who think that print as a primary method of distributing text is slowly disappearing. Whether e-readers are the next logical step, or whether they are a stopgap measure towards the stable future of content isn't clear quite yet. I suspect that when history looks back on this technology, they will turn out to have been evolutionary rather than revolutionary, but that certainly doesn't stop them from being



exciting in the moment. Even if it lasts me only a few years before the “next best thing” comes along, I love reading on my Kindle (his name is Primer, if you’re curious) and find it to be a transporting experience. Just like when I’m reading a book, I completely forget that the device is even there, and the story and characters and narrative just wash over me. Isn’t that, in the end, what we’re after with reading?

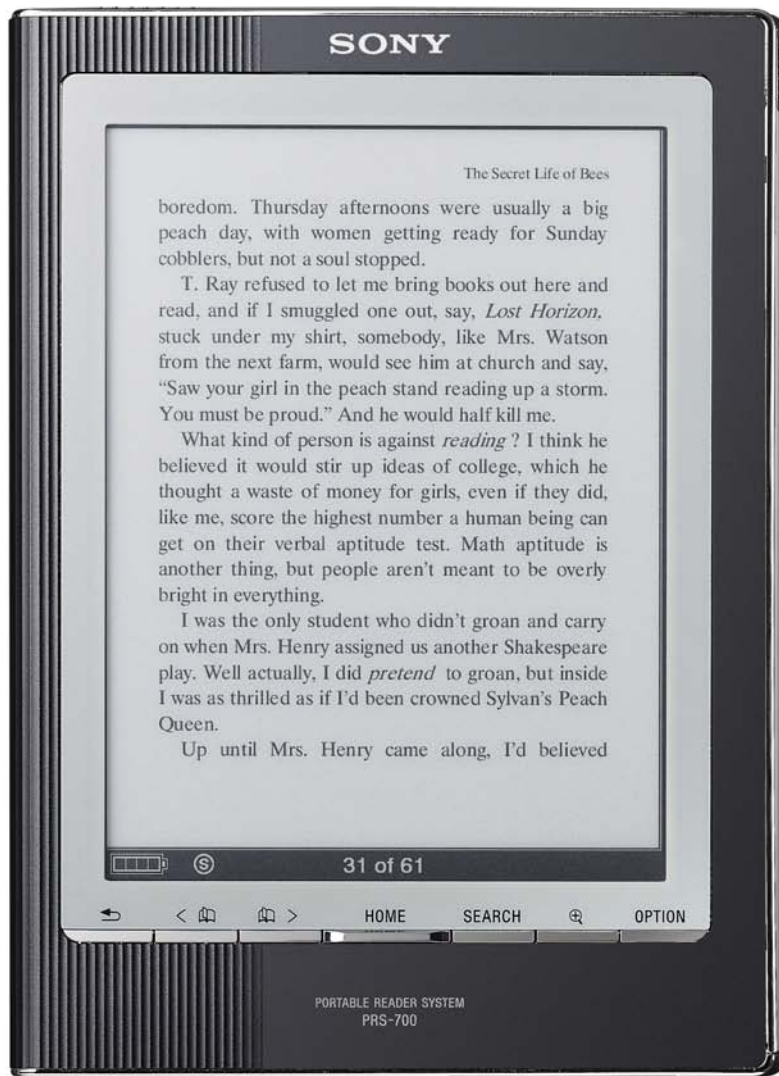
## Sony

Sony was first to market in 2005 with its e-book reader. Named, straightforwardly enough, the Sony Librié, it was the first e-reader to use the E Ink technology for its screen.<sup>1</sup> Sony has continued the Reader line (see figure 1), still selling several versions of it today. The versions that are available at the time of writing are the Touch, the Daily, and the Pocket editions of the Sony Reader. Each has slightly different functionality and a price point to match.

Sony is the only e-reader company thus far that has made a content delivery deal with a library e-book vendor. In this case, OverDrive and Sony have a partnership to allow all Sony Readers to load content from libraries via the OverDrive system.<sup>2</sup> This process is similar to the mechanisms that have been in place for some time with OverDrive and e-books: the content is locked to your device with a time-stamped DRM. After a certain number of days, the content disappears from your device. As the only real option for the lending of e-books in a library context, Sony is way ahead of the game with its relationship with OverDrive. It’s too bad that overall, the hardware Sony produces isn’t on par with other e-readers available in the market.

The Pocket Reader is the least expensive of the Sony products, retailing for \$199. It has a slightly smaller display than other e-readers, at only 5 inches diagonally (the average screen size is around 6 inches). Its screen is capable of eight levels of gray scale, again a bit less than most other e-readers. But its price point is the lowest for one of these gadgets, and the wide variety of formats that it is capable of handling (Sony books, PDF, EPUB, and Microsoft Word) make it a flexible e-reader for libraries.

The Sony Touch e-reader is the next step up in the current lineup for Sony. True to its name, this is the entry



**Figure 1**  
The Sony Reader, originally released in 2006.

level for Sony’s touch screen interface for an e-reader and has a more standard 6-inch screen. It also does only eight levels of gray scale and retails for \$299. The Touch hasn’t fared well in reviews, with most of the complaints revolving around the mechanism that Sony chose to use to enable touch. The device has a thin overlay on top of the reading surface that provides the contact sensing for the touch interface, but most reviewers have commented that the overlay subtly affects the visibility of the underlying text. This isn’t something that should happen on a device solely dedicated to reading, and as such this particular model isn’t one I’d recommend.

The current top-of-the-line model in Sony’s lineup of e-readers is the Sony Daily edition. It rings up at \$399, and the extra \$100 over the Touch gets you a larger 7-inch screen and built-in 3G cellular wireless coverage provided by AT&T for purchasing books wirelessly from

the Sony bookstore. The downsides of this device include the fact that it has the same screen overlay issue as the Touch, as it relies on a touch-based interface, and the fact that the 3G connectivity can be used only to purchase books from the Sony store, since the Daily doesn't ship with any sort of Web browsing software.

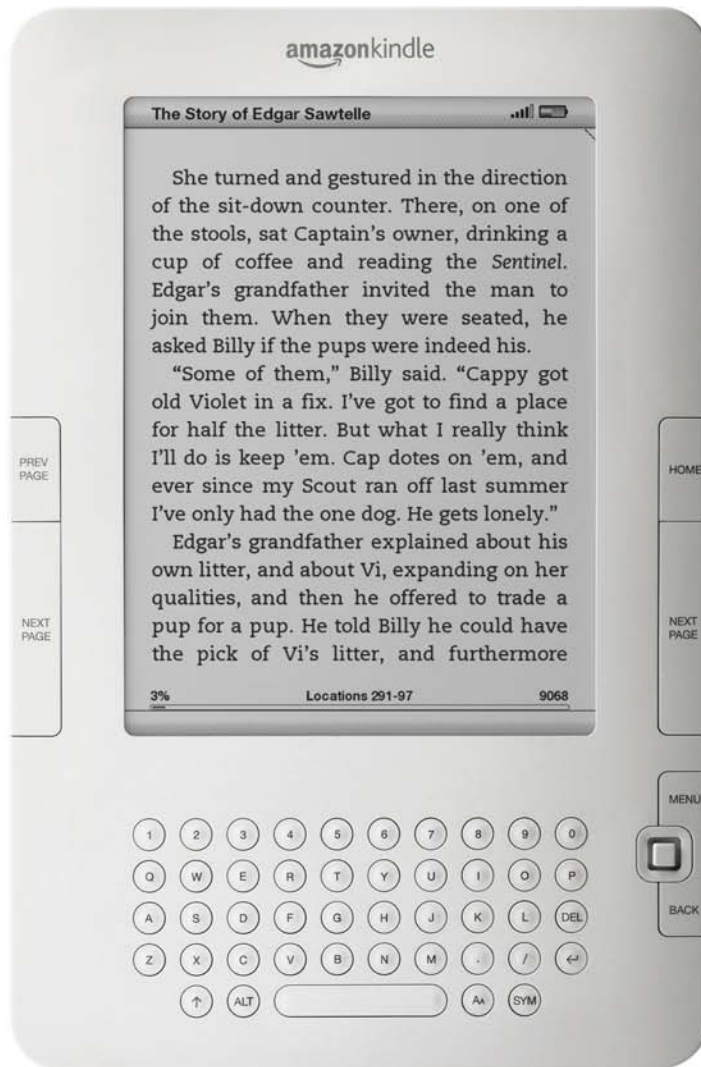
Of Sony's offerings, the Pocket is probably the best bet for libraries. It avoids the issues with the touch interface and screen clarity, while still allowing for use with OverDrive e-books. But if you're willing to push beyond the traditional library models, there are better options yet to come.

## Kindle

By a large margin, the most popular e-book reader in the United States is the Amazon Kindle. Comparatively early to the party, Amazon launched the Kindle in November 2007 to a fanfare of media attention and immediately sold out its existing stock.<sup>3</sup> Amid early speculation that Amazon might focus on a so-called razor-blade model for selling the Kindle (taking a loss on the initial hardware so that you have a captive audience for your individually lower priced but larger volume consumables—e-books), Amazon CEO Jeff Bezos denied that Amazon would take that route to boost its market share.<sup>4</sup> It hasn't, and it looks like it may not need to, as the Kindle accounts for 45 percent of the e-readers sold in the United States.<sup>5</sup>

Amazon has thus far produced three models of Kindle. The original model, now called the Kindle 1, is no longer available, but was sold from November 2007 until February 2009.<sup>6</sup> It had only a four-level gray scale screen, but came with Sprint EVDO wireless access for the lifetime of the device, a service that Amazon calls Whispernet. It had a 6-inch E Ink screen, and while the industrial design of the device was criticized, it sold very well. With access that enabled users to purchase Amazon e-books anywhere they could find a cellular signal, and with no need to ever connect it to a computer, it was an ideal solution for the less technically savvy person who might be interested in an electronic reader. In February 2009, Amazon launched the Kindle 2 (see figure 2), an updated and redesigned version of the e-reader.

The Kindle 2 has the same size screen (6 inches), but with sixteen levels of gray scale, the quality is considerably higher. It was also completely redesigned into a thinner, lighter, sleeker package. The refresh on the E Ink



**Figure 2**  
The Amazon Kindle

screen was made faster, and overall the Kindle 2 is simply a more “finished” product than the Kindle 1 seemed to be. Both versions of the Kindle would allow for a limited set of files to be read: just the native Amazon purchases (.amz), along with plain text files (.txt), Mobipocket files (.mobi and .prc), and Topaz (.tpz) files. From the launch until December 2009, there was no native PDF support for the Kindle 2, and the reader will not natively allow for reading of Microsoft Word (.doc or .docx) files. A firmware update in December 2009 provided native PDF support for the Kindle 2, but the original Kindle is still unable to read PDFs natively.

In May 2009, Amazon released the third in the Kindle family, the Kindle DX (see figure 3). A monster in terms of its size, the DX has a 9.7-inch E Ink screen and was the first of the Kindle family to provide native PDF support. This was possible due to the size of the screen more than

anything else. Since PDFs are designed to be displayed on paper, the larger screen of the DX, which is capable of displaying the equivalent of a letter-size sheet with one-inch margins, is perfect for this purpose. It is also the only Kindle that has a built-in accelerometer, which flips the screen from portrait to landscape mode when you rotate the e-reader, in the manner of the iPhone screen rotation. This makes reading nearly any PDF comfortable.

The solution that Amazon provides for those file types that are not natively supported is an e-mail-based conversion system. When you purchase a Kindle, it is linked to your Amazon account by default. One of the things this gives you is an @kindle.com e-mail address that is linked directly to your specific Kindle. Amazon gives you two options for converting other types of files to a format that the Kindle understands, one free and one with a small cost. If you e-mail one of the supported file types to your @kindle.com e-mail address (list of supported file types below), Amazon will convert it and automatically send it to your Kindle via Whispernet. The document just shows up on your device as soon as Amazon finishes converting it. There is a cost associated with this (as Amazon is covering the cost of the wireless distribution) of \$.15 per megabyte of files converted. If you don't want to pay for the convenience of automatic delivery, you can e-mail your documents instead to @free.kindle.com, and the documents will be converted and e-mailed back to you. You can then connect the Kindle via USB to your computer and transfer the files manually.

Amazon lists the file types that it will convert for you for your Kindle as follows:

- Microsoft Word (.DOC)
- Structured HTML (.HTML, .HTM)
- RTF (.RTF)
- JPEG (.JPEG, .JPG)
- GIF (.GIF)
- PNG (.PNG)
- BMP (.BMP)
- PDF (.PDF)
- Microsoft Word (.DOCX) is supported in our experimental category.<sup>7</sup>

For libraries and librarians, so many of our resources provide electronic access to PDFs that I feel like I should provide one important warning. PDFs that have been created by scanning a document and not from an original typeset file do not convert well to the Kindle. If there is no textual information in the file (that is, if the pages are whole image files) then the Kindle will treat them as images and not as

text, which greatly limits the legibility and flexibility of the display. As just one example, you can't change the font size of an image-based PDF, since there is no font to be changed. This surprises some people when they start e-mailing themselves JSTOR files, for example, nearly all of which are image-based PDFs.

Another problem you'll encounter in attempting to use the Kindle with image-based PDFs is that they can't take advantage of one of the Kindle's most interesting features: text to speech. The Kindle has a built-in text-to-speech program, which will "read" you the text from documents on the device. Amazon has chosen to allow publishers to determine whether or not books they choose to sell through the Amazon store will work with the text-to-speech feature. Certain publishers believe that computerized text to speech might undercut their ability to sell audiobooks, and as such have flipped a switch in their books so that users of the Kindle can't use that functionality. All other text-based files will work with this speech function. The



**Figure 3**  
The Amazon Kindle DX

audio produced by this is understandably stilted and electronic. It's just not possible, yet, for a computer to be able to pronounce all words in English properly (and yes, this does work only in English). But again, this is a very interesting bit of functionality for libraries, as it potentially increases the accessibility to visually handicapped patrons.

The Kindle has one more feature that is unique to it: an experimental Web browser. Since it has an always-on connection to the Internet, it's an ideal candidate for browsing, with the exception of the limitations of the E Ink display that have already been discussed (no video, black and white only, slow refresh, etc.). While very, very limited in its abilities, the browser suffices for simple text pages and works reasonably well for tools like basic e-mail. It's a great feature to have on the device when you need it, and you can't beat "free" access to the Internet for the life of the device.

Speaking of Internet access on the Kindle, there are two different versions of the Kindle 2 out there. Version 1 was the original CDMA version that used the Sprint cellular network for its access to data. In late fall of 2009, Amazon announced the international version of the Kindle 2, which switched from the Sprint to the AT&T network for its access to data.<sup>8</sup> This switch allowed Amazon to change the radio type from the aforementioned CDMA to the AT&T standard GSM radio, which is the standard cellular protocol for most of the rest of the world. This meant that the Kindle 2 would work in a much broader set of countries and allowed Amazon to launch it successfully internationally. Just after this launch, Amazon made the international version the standard Kindle 2, dropping the CDMA completely. This is an important note for rural areas in the United States, which sometimes have only one choice for cellular coverage. You should know that if you buy a Kindle now, you need to have AT&T coverage for the data network to work, while older versions of the hardware will work on the Sprint network.

## Nook

In October 2009, Barnes and Noble entered the e-book race with its e-reader, called the Nook (see figure 4). Using the same 6-inch screen as the Kindle, the Nook has one huge hardware difference: a secondary full-color touch screen LCD embedded below the E Ink screen. This screen fills the space where, on the Kindle, Amazon chose to put a keyboard. The advantage of the touch interface with a color screen is that it can change into any user interface that Barnes and Noble can think of, and it can be contextual. When you need a keyboard, the screen becomes one, but if you just want to see what books you have on the device, it can show you the covers in full color, in a display reminiscent of the Apple "Cover Flow" model.

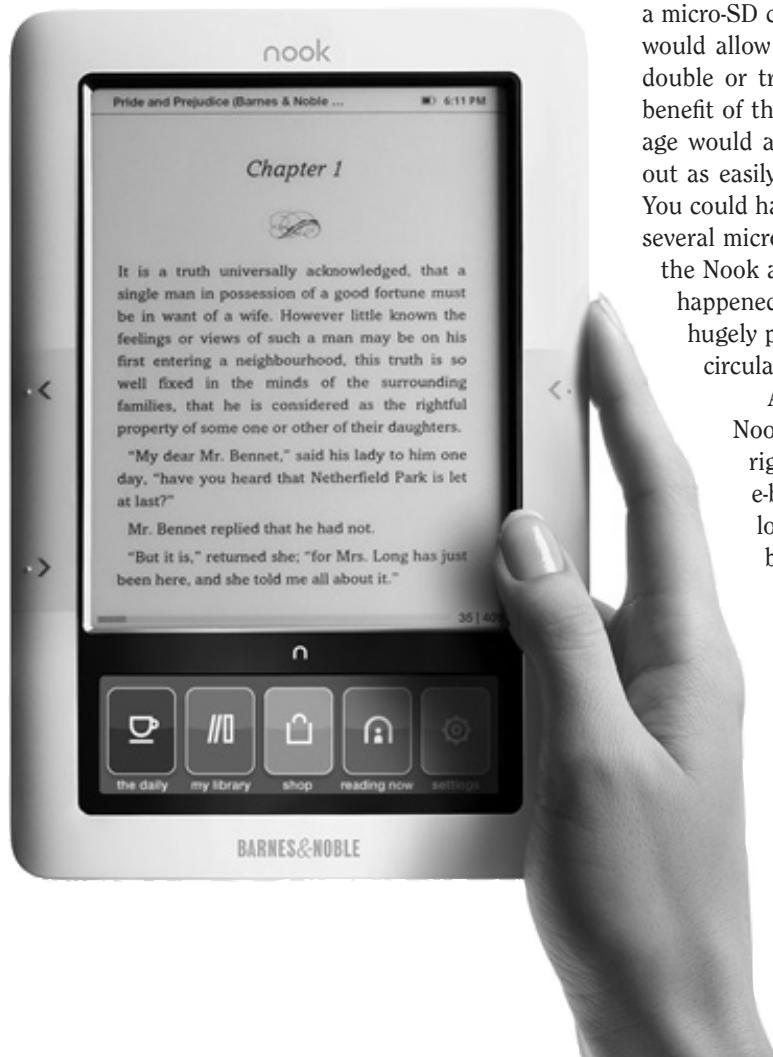
Unsurprisingly, Barnes and Noble is launching the

Nook in support of its own e-book store, which you can access via the built-in cellular connection, supplied by AT&T for the lifetime of the device. One-upping the Kindle, the Nook also has standard 802.11 WiFi built in, which will work in Barnes and Noble retail stores to give you the ability to browse and read e-books on your Nook while you are in the store. You can also connect the Nook to your home WiFi or any WiFi that doesn't require browser-based interaction, including those at some hotels and airports. The Nook ships without a built-in browser, which limits both the WiFi you can connect with and the purposes for which you can use the WiFi.

One other positive for the Nook in comparison to the Kindle (in the United States at least, they are one another's main competition) is that Barnes and Noble made a deal with Google Books to allow the Nook access to Google's catalog of out-of-copyright works, which allows the Nook to claim that it has, at launch, an e-book catalog of over a million titles. In addition, Barnes and Noble has agreements with other e-book stores like Fictionwise and eReader.com that specify that their products will be compatible with the Nook. Barnes and Noble has also standardized around the emerging e-book standard called EPUB, an XHTML/XML-based electronic book format that seems to be the future of electronic publishing for books. The Nook will read PDFs natively, as well as Palm DataBase (PDB) ebook files. It won't at the present time read Microsoft Word files, nor does Barnes and Noble currently have a solution for converting Word to a format viewable on the Nook.

One piece of the reading experience that is often missing with e-books is the ability to lend a book to a friend. Barnes and Noble is attempting to tackle that downside with a service that it calls LendMe. The service allows you to lend a book that you bought to a friend, who can read it on his Nook or on any one of a myriad of devices using the Barnes and Noble Nook software. Devices that will be able to do this include Windows-based computers, Mac OS X computers, BlackBerry smartphones, the iPhone, and potentially many more. In theory, you could lend an e-book you bought through the Barnes and Noble e-book store to a friend, who could then read it on his iPhone. In reality, this process is less than seamless, and the actual implementation is badly damaged. If you lend a book to a friend, you can't access it during the loan period. This makes some sense intuitively, except that it overlays physical limitations on digital files, something that has never worked well with media. In addition, the LendMe function works once per book. If you loan your copy of *The Road* to your friend, that's it for that book, you can't lend it to anyone else, even after the first friend's time is up.

The last big difference between the Nook and the Kindle is that the Nook has two things that the Kindle doesn't: a user-replaceable battery and a memory expansion slot. The Kindle battery is built in and is not a user-



**Figure 4**  
The Nook

serviceable part, although Amazon will replace it when that becomes necessary, for a price. The Nook's battery is accessible to the end user and is no more difficult to change than purchasing a replacement and popping it in. There are two good arguments for this being a feature that you may need. The first is the situation that all rechargeable batteries find themselves in eventually: the inability to hold a charge. After a certain number of recharge cycles, all rechargeable batteries start to lose their pep, and in a library situation, where the device is being used, recharged, used, recharged and used again at a rate higher than the typical single user, it may become a financial benefit to be able to just replace the batteries locally.

The last difference is the memory expansion slot. Both the Kindle 2 and the Nook have 2 gigabytes of internal storage, enough for many, many hundreds of e-books. Both claim to hold over a thousand titles on internal memory alone, but the Nook one-ups the Kindle by including

a micro-SD card slot for expandable storage options. This would allow a user to insert a memory card that would double or triple the Nook's built-in memory easily. The benefit of this for libraries is that having removable storage would allow you to swap the contents of the Nook out as easily as removing and inserting a memory card. You could have entirely different "libraries" of content on several micro-SD cards and choose the one to insert into the Nook at the time of checkout. Or, conversely, if you happened to have a patron base where the Nook was a hugely popular device, I suppose you could even just circulate the micro-SD cards with content directly.

At the time that this is being written, the Nook has just started shipping. It is unknown right now how it's going to affect the overall e-book market and how it will compete in the long term with the Kindle. But right now, based on its initial reception, it's the only serious competition that the Kindle seems to have in the e-reader market.

## Upcoming Devices

All this talk about the Kindle and the Nook isn't meant to imply that it isn't possible that another competitor in the e-reader space will emerge and give both the Nook and Kindle a serious run for their money in the next year or so. There are a huge number of companies that are developing e-readers, although we'll probably be half-way through 2010 before we have any idea if any of them will actually see the light of day. Here's a short list of a few companies and products to keep an eye out for, just in case they are a break-out success when they launch.

### The Que

Plastic Logic has announced its Que e-reader (see figure 5), which was launched officially at CES 2010 (the 2010 Consumer Electronics Show). The same size as an 8½-by-11-inch sheet of paper, it will be using the traditional E Ink display, but with the advantage of being able to display a piece of letter-size paper with no resizing necessary. This is a huge advantage for people who deal with lots of PDFs. The Que is also a touch screen, but early reviews indicate that it doesn't have the ghosting and smudging effects that the Sony technology seems to be saddled with. It comes bundled with AT&T 3G access as well as standard 802.11 WiFi and allows for annotation of documents directly on the screen through using the touch interface (see the video listed in the gray box for an example).<sup>9</sup>

While Plastic Logic seems to be focusing on the busi-

ness world with its advertising and public relations campaigns, the Que has the potential to be useful in the library realm. Plastic Logic has a retail deal of some type with Barnes and Noble and announced in October 2009 that the Que would be sold in Barnes and Noble retail outlets.<sup>10</sup> Coming just a week after the announcement of the Nook, the Que is a different sort of e-reader, aimed squarely at the business executive who wants to carry something lighter than a laptop with him. The Que's home screen is a good indicator of the sorts of uses that Plastic Logic sees for the device; it has, for example, Microsoft Outlook integration that provides a heads-up display of your e-mail and daily calendar at the same time that it shows you the magazines and books that you are reading.

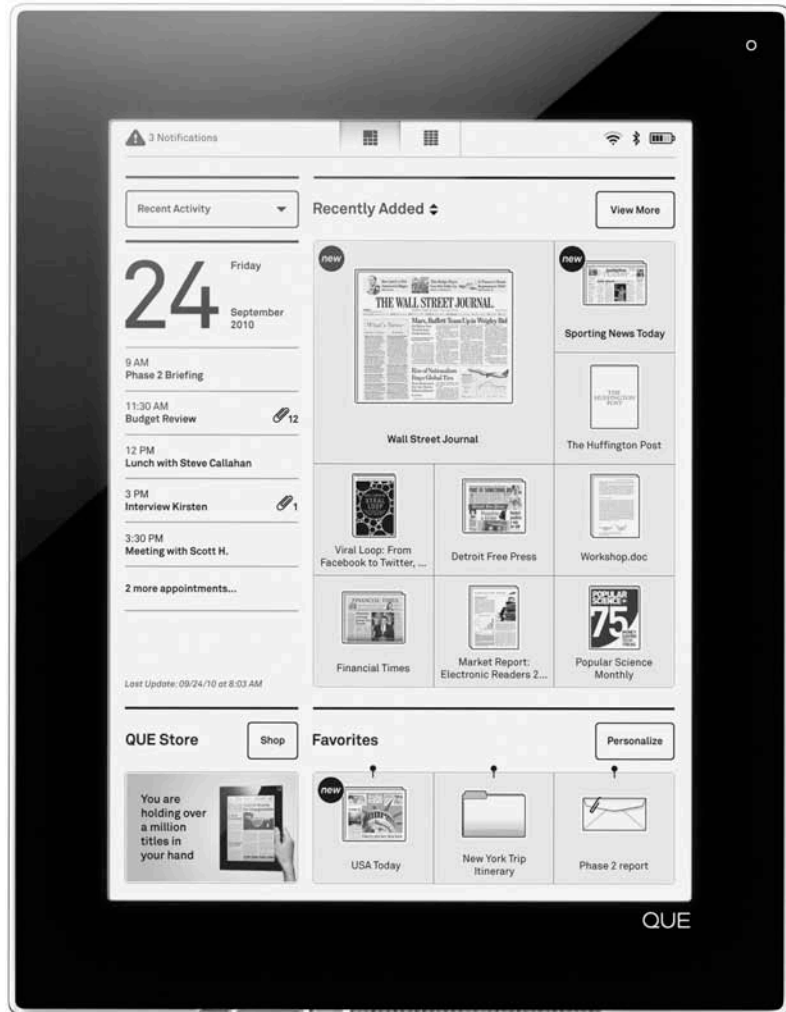
Video of Que e-reader  
<http://vimeo.com/4875333>

Barnes and Noble Que Catalog  
<http://que.barnesandnoble.com/catalog>

The Que is perhaps the sleekest of the e-readers that I demoed, with an industrial design and general look and feel that puts it in the same league as an Apple device. While plastic, the device felt solid and yet light, easy to handle, and the touch response of the screen was the best I've seen on an E Ink device, with none of the blur in evidence that the Sony Touch e-reader is burdened with.

### The Alex

My favorite of the upcoming e-readers may be the Alex, from Spring Design. It's similar in appearance to the Nook, with a dual-screen design that puts a 6-inch E Ink screen above a 3-inch touch screen LCD. Also like the Nook, it's Android-based, but that's where things diverge. The user experience and flexibility of the Alex are very different from the Nook. Where the Nook feels like a very prescribed interface, bending only so far to the whims of the user, the Alex provides a flexibility that is refreshing. One example of this flexibility, and the feature that was my favorite in the Alex, was the ability to "push" content from one screen to the other. Why is this useful? The color LCD has the ability to run a full Web browser, and when



**Figure 5**  
 The Que e-reader by Plastic Logic

you find something you want to read, one click syncs that page up to the E Ink, where you can read the article using the much more comfortable display. Conversely, if you're reading something on the E Ink, you can highlight a term and push the lookup down to the LCD screen, which can pull up Wikipedia or any other Web-based resource to help you understand the word or idea, all the while keeping the context of the actual page intact.

Spring Design  
[www.springdesign.com](http://www.springdesign.com)

The color screen also gives you the opportunity to "enhance" the E Ink text with multimedia content. For example, you could link a section of *Hamlet* to a video of a performance, reading the text while viewing the play on the LCD screen. You could do the same for color photos,

charts and graphs, or music, playing specific songs during specified parts of a text.

The Alex has some growing pains to overcome, however. The demo unit that I had a chance to see at CES 2010 had issues with linking the two screens properly and with recalling embedded media as well. It didn't appear that this was a hardware issue, but instead a software one, which gives hope that the firmware that ships with the device will provide a smoother experience.

## IREX

One of the longer-term players in the e-reader space is the company Irex. Best known for its iLiad e-readers, it has branched out and now has three different models of e-reader listed for sale on its website. Two fall under its iLiad line (the Irex iLiad 2nd Edition and the Irex iLiad Book Edition), and the third is its high-end device, the Irex Digital Reader. The various devices range from 8.1 inches diagonally for the iLiad readers all the way up to 10.2 inches for the Digital Reader, which again gets you to full letter-size paper rendering. The main distinguishing characteristics of the various versions are in the connectivity and size. The two iLiads differ significantly only in the presence or absence of 802.11 WiFi. The 2nd

Edition has it, the Book Edition doesn't. The Digital Reader does all the things that the iLiad models do, but with the larger screen. All of Irex's devices cover the same basic ground as far as file types that are compatible; PDF, HTML, TXT, and Mobipocket are all supported, and they all use a touch-based interface as well.

The biggest things holding these back from any sort of mass-market appeal are their lack of connectivity to a retail store and their price. For whatever reason, these start at \$499, and work their way up to \$859 for the Irex Digital Reader 1000, an enormous sum in today's computing market. The Amazon Kindle DX sells for half of that amount and is equivalent in other regards (with the exception of the touch interface). Very few libraries would, I think, choose the more expensive option for seemingly little advantage in functionality.

## The eDGe

Another attempt at a dual-screen solution is coming from a company called enTtourage, in the form of its eDGe (see figure 6). The enTourage eDGe is a dual-screen e-reader that marries an E Ink screen with a tablet-style netbook. Imagine a netbook where one half is E Ink and instead of a keyboard you have a touch-sensitive LCD. Then stand

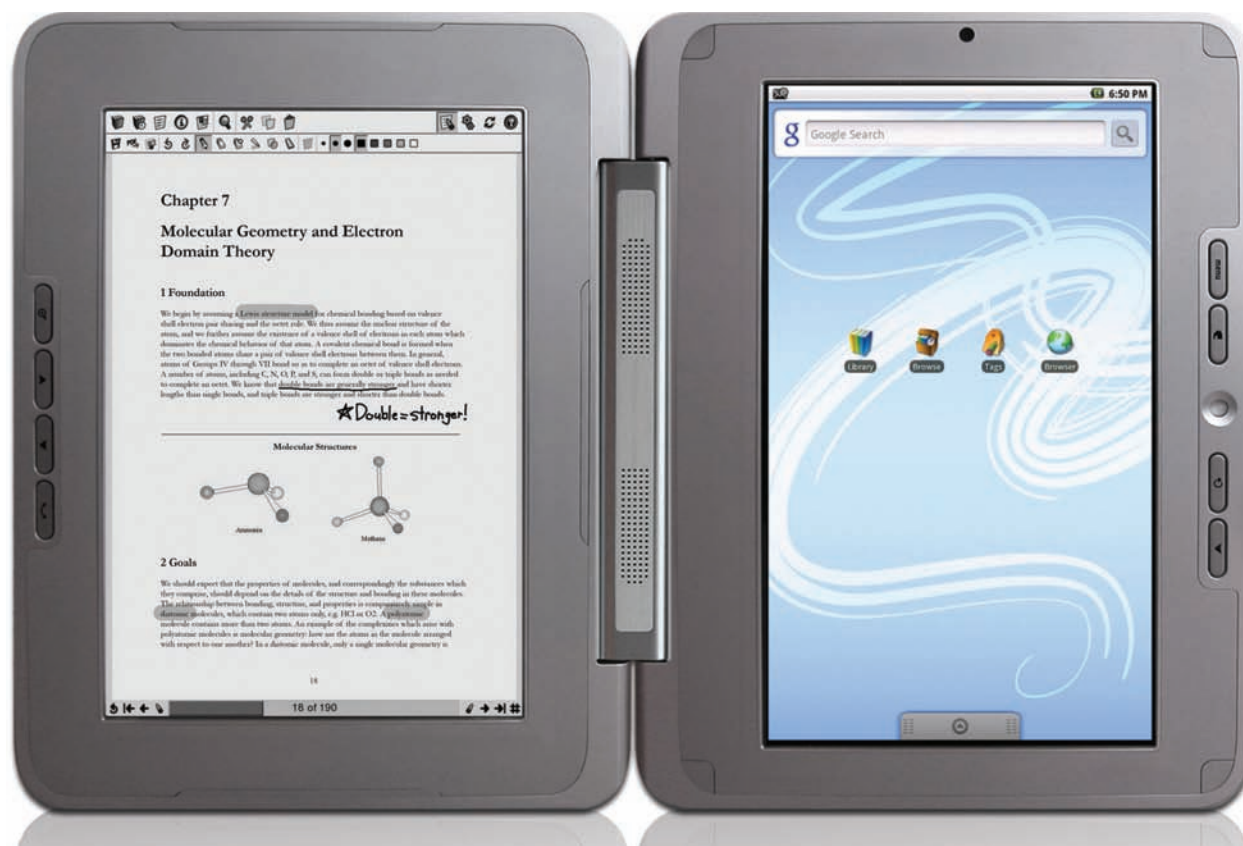


Figure 6  
The enTourage eDGe

the thing on its edge like a hardback book. The eDGe has a very useful dual-hinge design that allows it to fold completely back on itself, so that closed it can present just the e-reader screen to you, or conversely, just the tablet-style netbook.

In demoing the eDGe, I found that it works reasonably well, but the overall weight of the device is cumbersome. It's several times heavier than a dedicated e-reader like the Kindle or Nook, as the LCD screen takes a considerable amount of battery power. On the other hand, it has the potential to narrow the range of devices that you carry, as its jack-of-all-trades design seems to lead you towards not carrying a notebook. Unfortunately, as the saying goes, it's jack of all trades, master of none, as the dual-screen design outweighs the advantages of combining the functionality to the point where it isn't something that I would really recommend at this point in time.

### Qualcomm's Mirasol Displays

The truth is that there are dozens of new e-readers hitting the market in 2010, from worldwide electronics powerhouses like Samsung and Sony all the way to manufacturers that you've never heard of like Astri and enTourage. The price of E Ink screens has come down to the point where manufacturing a dedicated reader isn't the big deal it once was, and nearly every new reader is compatible with the Adobe DRM that is used in library-centered products like OverDrive. The biggest differentiator over the next twelve months is likely to be the content deals that the individual companies strike with publishers, and not necessarily the technology involved.

There is, of course, one large exception. One of the things that seems to be holding back a lot of e-book development is the limitations of E Ink. I saw a demonstration of one technology that is nearly guaranteed to be on a few librarians' wish lists for the holiday season of 2010: Mirasol.

What's Mirasol? It is a brand-new display technology developed by Qualcomm that is the equivalent of color E Ink. Using micromechanical switches, Mirasol is phase-stable, not drawing power while it's a static image, and is reflective in the same ways as E Ink. However, Mirasol can do full color at 30 frames per second, which means that not only does it have the ability to render full-color pages that look as good as a printed magazine, but it can do so at full video. That means that the user interface can be more attractive and faster and that the content no longer has to rely on sixteen shades of gray in order to be used in an e-reader. At the current time, there hasn't been any formal announcement of a specific e-reader that is going to use this technology, but Qualcomm representatives told me that they will have Mirasol in an e-reader by fourth quarter of 2010.

## Platforms

With all of that said on e-readers, I don't believe that they are the most exciting thing that will happen to text in 2010. There were two technologies shown to me at CES 2010 that excited me about the potential for books moving forward, and both are things that libraries should seriously pay attention to. They also have strange names. Get ready to hear a lot this year about Copia and Blio.

Both of these technologies are platforms, not e-readers per se, although Copia is producing a line of physical devices to go with its service. They are very different and focus on different aspects of the reading experience. Copia is attempting to make reading social, while Blio is—not to be too terribly hyperbolic—trying to reinvent the book.

### Copia

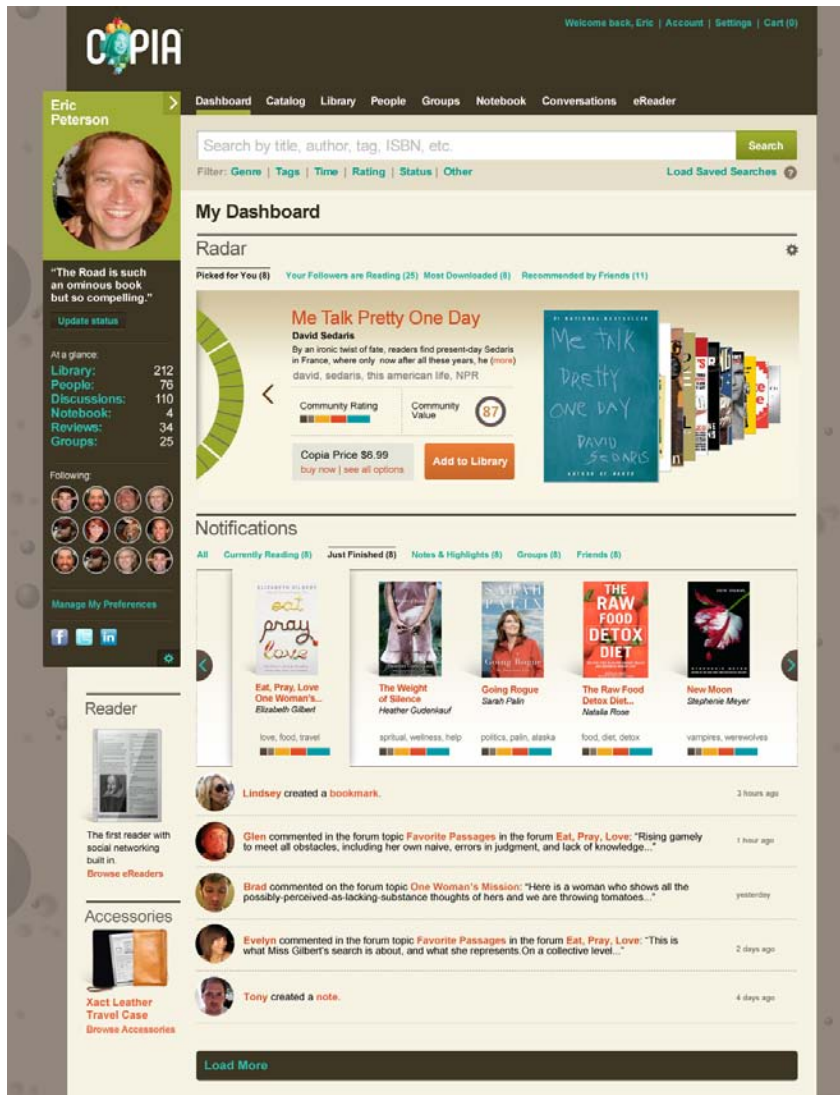
Copia (see figure 7) was one of the coolest things that I had a chance to see at CES 2010. It's a service that is accessed via the Web, via client software, through one of Copia's devices or a licensed device, on your iPhone, BlackBerry, or Android device, and anywhere else Copia can get it working. So what does it do? It makes the reading experience social, giving you the ability to share notes, highlights, annotations, questions, or just about anything else relating to a text seamlessly across all your devices and with all of your friends. It also reduces the book to small pieces and allows you to clip and share parts of the work in ways that you currently share media online.

Copia  
[www.thecopia.com](http://www.thecopia.com)

While Copia is going to license and sell e-reader devices based around the E Ink display, it really is more of a platform for making the reading process a social one. The ability to collaborate and share notes and annotations could make it the killer app for students, and Copia hinted that it would consider allowing users to monetize their notes as well. Imagine buying a copy of a Jane Austen novel, and then being able to selectively load purchased notes from a variety of Austen scholars. Or, speaking directly to the library world, think about the power of using a collaborative platform to do library instruction literally inside the book that the class is using and then being able to reuse those notes with the next class.

In addition to this sort of collaboration, Copia has also loaded up the service with things that you might come to expect with a virtual bookshelf. You can compare your shelf to others, see readers who share your interests, tag your books to aid in organization, and suggest books for other users. These sorts of services are available





**Figure 7**  
Copia.com's web page

already on websites like LibraryThing and Shelfari, but Copia adds the integral missing piece: the book is actually there, electronically, when you talk about it. There are a lot of opportunities with a service like this, and I'm sure we'll hear a lot about Copia in 2010.

## Blio

The other major demonstration was from Blio, a company founded by futurist and technologist Ray Kurzweil. Hosted by Microsoft at CES 2010, Blio was shown off behind closed doors, but promoters claimed that it would be available in February 2010. Blio is difficult to describe, but put simply, it's a comprehensive new display technology for e-books that combines the text, any media, audio-book, and more all in one package that can be displayed as you wish.

The key to the Blio platform is twofold: the first factor is the technology, the second is the content partner. The content for the platform is being provided by Baker and Taylor, a name that should be very familiar to the library world. The technology is the star, providing a multilayered approach to displaying a book to the reader. If you wish to see the book exactly as printed, you can do that, a boon for textbooks, children's books, cookbooks, and the like, where the display of the printed page is itself meaningful. Or, if you are on a device that doesn't handle the full printed page properly, you can choose to reflow the text and display it on a smaller screen like the iPhone. You can even choose how to reflow the text, changing the margins, number of columns, and more.

One of the best tricks that Blio has up its sleeve is the deep integration with audio, something you would expect from a technology developed by Kurzweil. It keys audio to the text at the individual word level, highlighting the text as the audio is read to you by either a text-to-speech voice or a voice actor. In addition, it will sync your progress up to the cloud, allowing you to do things like read for a bit on your computer, then pick up your iPhone to continue reading, decide to listen for a while on your drive home, and then pop the book open on your laptop and have it know at every step in this process where you are in the book.

For the student, Blio not only provides textbooks with the full-color images, charts, and graphs, but also allows the publisher to embed rich media objects into the text. These objects can be a part of the Blio file or can be embedded Web objects, and the reader can interact with them in real time from within the book interface. The example that I was shown was an anatomy book where the images of the bone structure of the face could actually be a quiz, and identifying them could be part of the reading process. If the objects are pulled from the Web, the publisher would then be able to change the content as needed, from swapping in randomized questions at the end of chapters to updating maps and more.

But with all this flexibility come a few limitations. Because Blio has such a complex set of modes, these books won't be delivered as one of the existing standardized file types. This isn't another variation on EPUB that we're talking about. It will be a proprietary file type that will very likely be readable only with Blio software.

The other limitation is that because of the file type and rich experience, you won't be able to consume Blio books on anything that we currently think of as an e-reader. It will work on computers and rich devices such as the iPhone and Android phone platforms, but you won't be reading this on your Kindle or Nook. It remains to be seen if people will be happy consuming their texts on computer screen instead of a dedicated reader, although with a number of rumored tablet devices just on the horizon, Blio could be the perfect solution for reading on them.

## Tips and Tricks for E-readers

The largest misunderstanding that I run across every time I talk to librarians about e-readers is the belief that an e-reader can be used only to read files purchased from the store attached to the device. When I tell people that my Kindle 2 has two hundred books on it, invariably someone in the audience says "You bought two hundred e-books from Amazon?" No, of course I haven't (although I'm certain there are people who have). The very first thing that I did when I got my Kindle was load it up with every piece of free content that I could find that I could possibly ever want to read. And when my place of work decided that it wanted to experiment with e-readers but was still a little wary of Amazon and lending out Amazon-purchased e-books, we bought Kindles and put public domain works on them.

There are a variety of ways of collecting and converting content for loading onto e-readers. There are lots of Creative Commons-licensed works and open access scholarly work that could be located and downloaded. The existing public domain works that are available in the United States are an amazing collection of literary works: Jane Austen, Shakespeare, H.G. Wells, Arthur Conan Doyle, and hundreds more classics of literature are available at no cost.

My recommendation for locating books to download are to start with just three websites. The first is Project Gutenberg, the longest running and most thorough source for electronic books on the Web. Project Gutenberg provides e-books in both HTML and plain text formats, although more file types are available under its "experimental" heading. Books that are digitized by Project Gutenberg are proofread by teams of volunteers, and the quality of the texts is very high. It's the first place I go for classic works of literature.

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The second place that I recommend for finding e-books that are friendly with e-readers is Feedbooks. Feedbooks differs from Project Gutenberg in that it has not only public domain works, but also original works by authors who choose to make their works available for free on the site. Feedbooks also collects well-known authors, such as Cory Doctorow, who publish their work under licenses such as Creative Commons that allow for free sharing. One advantage to Feedbooks over Gutenberg is the variety of file types that are supported. As one example, all of the works are available as both EPUB and MOBI files, making them compatible natively with the most popular of the e-readers.

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Finally, I recommend one of the best places for any sort of media on the Internet, the Internet Archive. The Archive is home to more than a million texts, and it just implemented a beta program to convert them to non-DRM MOBI files, perfect for dropping onto a Kindle or other e-reader. Find the books that you are interested in, or even better, give your patrons the opportunity to find the ones they want and load them onto the e-reader in question.

*Internet Archive*  
[www.archive.org](http://www.archive.org)

The last bit of discussion of e-readers that I'd like to cover revolves around software that you can use to convert documents into e-reader-friendly versions and generally manage an e-book library. My favorite piece of software for converting HTML, PDF, or DOC files to MOBI files is a free download that is unfortunately Windows-only.

Mobipocket Creator 4.2 is a free piece of software that allows you to import PDF, DOC, or HTML files and create a fully formatted e-book file. Creator is an incredibly powerful tool that allows for deep formatting, metadata editing, and even the embedding of covers and other images into the file. It's a great, great option for creating your own files for reading on the Kindle or other MOBI-friendly e-reader.

*Mobipocket Creator 4.2*  
[www.mobipocket.com/en/downloadSoft/ProductDetailsCreator.asp](http://www.mobipocket.com/en/downloadSoft/ProductDetailsCreator.asp)

Another great piece of software is Calibre, a conversion and management tool for your e-books and e-reader. The best description of Calibre is that it tries to be an iTunes for your e-books: a place for you to manage them, view them, read them, and sync them to your e-readers. It allows you to track your e-books as well as convert from nearly any file type to one readable by just about any e-reader on the market, including things like the iPod Touch or iPhone using e-reader software like Stanza. It's the Swiss Army Knife of e-book software. Calibre also supports conversion into the EPUB format, which is quickly becoming the de facto standard for e-book file type and is supported by the largest number of different readers.

### Calibre

<http://calibre-ebook.com>

### Notes

1. "Comparison of E-book Readers," Wikipedia, [http://en.wikipedia.org/wiki/List\\_of\\_e-book\\_readers](http://en.wikipedia.org/wiki/List_of_e-book_readers) (accessed Dec. 2, 2009).
2. *Publishers Weekly*, "Sony, OverDrive in Deal," Aug. 12, 2009, [www.publishersweekly.com/article/CA6676216.html](http://www.publishersweekly.com/article/CA6676216.html) (accessed Dec. 2, 2009).
3. "Amazon Kindle," Wikipedia, [http://en.wikipedia.org/wiki/Amazon\\_Kindle](http://en.wikipedia.org/wiki/Amazon_Kindle) (accessed Dec. 3, 2009).
4. Saul Hansel, "Jeff Bezos: Kindle Books and Readers Are Separate Businesses," Bits Blog, NYTimes.com, June 15, 2009, <http://bits.blogs.nytimes.com/2009/06/15/jeff-bezos-kindle-books-and-readers-are-separate-businesses> (accessed Dec. 3, 2009).
5. Eric Jhonsa, "Amazon Has an Early Lead, but the Game's Not Over," The Motley Fool website, Aug. 31, 2009, [www.fool.com/investing/general/2009/08/31/amazons-got-an-early-lead-but-the-games-not-over.aspx](http://www.fool.com/investing/general/2009/08/31/amazons-got-an-early-lead-but-the-games-not-over.aspx) (accessed Dec. 3, 2009).
6. "Amazon Kindle," Wikipedia.
7. Amazon.com, "Files Kindle Recognizes," on the Help page for Transferring, Downloading, and Sending Files to Kindle, [www.amazon.com/gp/help/customer/display.html?nodeId=200375630&#recognize](http://www.amazon.com/gp/help/customer/display.html?nodeId=200375630&#recognize) (accessed Feb. 4, 2010).
8. "Amazon Kindle," Wikipedia.
9. This information was obtained by the author in person at the 2010 Consumer Electronics Show in Las Vegas, NV, Jan. 7-9, 2010.
10. David Carnoy, "B&N to Sell Plastic Logic Que along with Nook," CNET News, Oct. 27, 2009, [http://news.cnet.com/8301-17938\\_105-10383981-1.html](http://news.cnet.com/8301-17938_105-10383981-1.html) (accessed Feb. 8, 2010).

# Personal Multimedia Devices for Capturing and Consuming

## Abstract

*Many libraries are trying to get involved with the current explosion of self-produced media, in terms of creating media, consuming it, and helping patrons create it. This chapter of “Gadgets and Gizmos: Personal Electronics and the Library” will outline popular devices for capturing and consuming video, audio, and other media types.*

## Video

Over the last decade, no media type has been more democratized than video. The cost of producing a video has gone from thousands of dollars for poor-quality pictures to less than \$200 for a camera that will take high-definition video and can also double as a still camera. With the decline in the price of producing video has come the ability to publish your video at no cost online, through services like YouTube, Vimeo, Blip.tv, and others. These two factors have led to the largest explosion of video production the world has ever seen, with YouTube alone having 20 hours of video uploaded to it every minute of every day.<sup>1</sup>

Many libraries are trying to get involved with this video explosion in terms of creating video, consuming it, and helping patrons create it. Libraries are producing their own videos, as well as purchasing the equipment necessary for patrons to create their own videos. It is slowly becoming a common pedagogical technique to assign students to create video rather than write or present in front of a class, and patrons of all sorts are interested in borrowing these gadgets from libraries. This chapter will outline popular video cameras and help you choose among them for both internal and external use.

## Flip

While video cameras have been steadily dropping in price for years, it wasn't until 2006 when the Flip company began selling its eponymous camera (see figure 8) that the landscape changed significantly.<sup>2</sup> The Flip was the first all-in-one camera that was everything the consumer needed, and nothing else.

Cameras—video cameras in particular—had maintained complexity of their operations, assuming that someone who was shooting video wanted the manual control to make sure it was the best it could be. Flip changed that formula by offering consumers a camera that was just barely good enough—it wasn't high definition, it gave you effectively no control over the picture, it had mediocre lenses. What it did have was massive simplicity, with only two or three buttons on the entire camera: an On/Off switch, a big red Record button, and a rocker to use the digital zoom. The other huge advantage that Flip brought was that the camera itself had a switchblade-style USB plug that you could insert directly



**Figure 8**  
A Flip video camera, one of the easiest to use video cameras ever made

into your computer: no keeping up with proprietary cables, nothing to take with you if you took the Flip on vacation. It even had simple editing software right on the camera that launched when you plugged the camera into your system.

The Flip is the poster child for good-enough devices. It gives you the ability to take a video, edit it easily, and upload it to the Web, and no other complicating factors. It's the perfect camera for the librarian who wants to check it out to patrons, as well as the perfect video camera for libraries to use internally. You turn the thing on, hit the big red button, and you're recording video.

Flip started the revolution in simple, inexpensive video cameras and then went on to diversify its devices a bit. There is a range of Flip video cameras available now at a number of different price points. The interesting thing is that you don't actually get a fancier camera as you pay more money; instead, you get more memory and higher resolution. The controls and the ease of use are the same on nearly every camera that Flip makes. The current lineup of Flip cameras ranges from the Flip Ultra, which captures standard-resolution video, records for 120 minutes, and retails for \$149, all the way to the Flip MinoHD, with 120-minute recording time, high-definition capture, and a retail price of \$229.<sup>3</sup> For libraries, the 60-minute Mino at \$149 is a good deal, and you can get them printed with a custom logo, which makes them great for circulating.

## Kodak

Kodak was a latecomer to the inexpensive video camera game, but it nearly perfected the inexpensive camera with the introduction of the Kodak Zi8. The Zi8 does full high-definition video (1080p) at a cost of \$199.<sup>4</sup> For higher resolution video at a low price, the Kodak is a very, very good camera. It's one of the best options under \$200 for capturing video.

## Sony Bloggie

At CES 2010, Sony launched another amazing camera that would be a good addition to any library's tech toolbox. The unfortunately named Bloggie (see figure 9) has features that set it apart from the Kodak and the Flip families of cameras in ways that benefit the average blogger who wants to capture and post video. It has the standard high-definition video capture of 1080p, but at a lower price than either the Kodak or the Flip, retailing for \$169.<sup>5</sup> It's the other features that make it stand out, however.

My favorite feature is the 270 degree swiveling lens, which flips from forward-facing to backward-facing with the flick of a thumb, allowing the user to swap quickly from being in the picture to shooting forward without

changing the grip on the camera. This is perfect for lifeblogging and narrating a scene live and makes it very easy to prepare a narrative to be used with students. My second-favorite feature is actually an additional lens that clips onto the camera and allows for full 360 degree shooting. With the lens on, the camera captures a complete circle on a plane perpendicular to the lens, in full video. Software that comes with the camera allows you to flatten the circular video into a full-motion 360 degree panorama.



**Figure 9**  
The Sony Bloggie

## Handling Video

There are a lot of options when it comes to libraries editing video internally, but for my money there are two great choices, one for Windows-based systems and one for Macintosh OS X-based systems. There are dozens of choices, running all the way up to professional-level applications like Adobe Premiere. For most library applications, you won't need them.

For Windows machines, especially with the rise of Windows 7, the free Microsoft Movie Maker is more than adequate for most people. It's available for free from Microsoft, and it will do all the basic edits that you might need. It's a little light on "special effects," so if you're looking for complicated effects it might not be perfect for you, but if you are clipping, editing, rearranging clips, or fixing audio, it works great.

On Macintosh OS X-based machines, there's really nothing better than iMovie, which comes free with any new Apple computer. iMovie is a bit more powerful than Movie Maker, with more flexibility in the editing process, and for my money, Macs handle video in a slightly easier-to-understand way in general. But iMovie is a great tool for edits and integrates with the rest of the iLife suite (GarageBand, iPhoto, iDVD) in a seamless way that allows you to pull things from one of the programs to the other with absolutely no effort. If you are doing a lot of video, you could do worse than to have a dedicated Mac organizing and running the effort.

## How Is Video Useful in a Library?

For patrons who might not have the ability to take video in any other way, checking out an inexpensive camera from the library can keep them coming back again and again. Literacy with video is a growing concern among educators. The same way that textual literacy was an educational triumph of the twentieth century, I believe that video literacy will be a triumph of the twenty-first. Students will love the ability to create video, so this concern is most pronounced in academic and school libraries. A library may provide some patrons their only opportunity to experiment with video.

For librarians, video can be a powerful instructional tool. Many libraries are using video tours to introduce new patrons to the physical layout of the building and to the services that the library offers. Video can also be used in an evaluative manner through taking video and then reviewing it for patron behaviors, from how they use a space to whether or not your signage is working.

## Audio

Like video, audio has become inexpensive and easy to capture, largely because of the ease with which it can be shared. There are several things to keep in mind when capturing audio, but the most important are how you are going to use the audio and what type of audio you are trying to record. The best audio recorders will let you do either voice for distribution on the Web or a recording of a musical instrument that you need to burn to CD.

I'm going to highlight two different options for audio capture, and both are suitable for either internal library use or for checking out to patrons. Neither are the lowest end of the pricing spectrum, but for good reasons that I'll highlight. There are digital audio recorders that are perfectly serviceable for recording meetings, if all you do is play back and transcribe the audio. But try doing anything else with the audio, and you'll need the special software that came with the player. You'll have to export the audio into a standard form and out of the proprietary format that it uses, which can be a huge, time-consuming headache. The two that I'll suggest record to standard file types (either MP3 or WAV) and are incredibly flexible, not to mention the fact that they are both high-quality audio capture devices.

### The Zoom H2

My favorite audio recorders are made by the Zoom company, and the Zoom H2 (see figure 10) does everything that a library might need and more. The Zoom H2 has two different modes. It can be used a stand-alone recorder, or it can be attached to a computer and used as a USB microphone.



**Figure 10**

The Zoom H2, shown next to a coin to illustrate its compact size

As a recorder, the Zoom H2 can be either battery-powered or plugged into the wall. It will record in a variety of formats and qualities, from low-quality 64 Kbps MP3 all the way up to lossless WAV, and it takes a standard SD card for storage, so that you'll never run out of space. It has four microphone capsules inside and can be set anywhere from standard stereo recording all the way up to 360 degree capture, which allows for the files to be converted to 5.1 Surround. The microphones in the Zoom H2 sound great, capturing voices and instruments equally well. It can run for hours on a single set of batteries, and operating it is simple—you just use a directional pad on the front of the H2. Recording is even easier, once you've got your settings the way you like them, as there's a big red button on the front that starts and stops recording.

The other option for recording with the Zoom H2 utilizes the USB interface. Plug it into any computer, and it shows up as a USB sound source that can be used with any recording software. This completely bypasses the software of the device itself and allows you to use the hardware to drive a digital recording via Audacity or any other software program. This means that whether you're recording in the

field or using your desktop or laptop, the Zoom H2 just works. For \$149, it's an awesome piece of equipment.<sup>6</sup>

### Blue Mikey

One of the most respected manufacturers of microphones in the business, Blue has an innovative range of digital microphones that you really can't go wrong using. Its Snowball microphone has been my go-to USB mic for years now. But Blue has just released an interesting new product that I think may be really useful for libraries interested in podcasting or potentially even for patron checkout: the Blue Mikey.

The Mikey is an iPod-specific microphone that uses the dock connector on the iPod or iPhone to route the audio signal to be recorded. It uses really high-quality mic capsules to deliver rich sound and is perfect for recording on the go. Just plug it in, and suddenly you've got a real microphone capturing to your device instead of the pin-hole mic that the iPhone or iPod Nano has.

If you're already circulating iPods, adding the Mikey to your gadget garage gives you the ability to get your patrons into the podcast game cheaply and easily. The Mikey can be found online for around \$50.<sup>7</sup>

## Personal Scanners/Text Capture Devices

With recent advances in microprocessors and sensors, a number of really interesting devices have come onto the market over the last few years that solve one of the more difficult problems with text—how to convert hard-copy printed material into digital files in a form that can be used, searched, indexed, and reused in a variety of formats. We've been using flatbed scanners for years and have moved past them for the processing of large amounts of text. As one example, large-scale book digitization processes usually use camera-based rigs that take high-resolution photographs of the pages in question, and then use very complicated mathematics to flatten and eschew them and use a process called optical character recognition (OCR) to convert the images of the letters into digital characters. But what if you don't want to do a whole book and you need to scan just a business card? Or you like taking notes at meetings by hand, but dread typing them up later? This chapter will give you a few ideas about how to make your life a little easier.

### Livescribe

The Livescribe pen (see figure 11) is a unique device, and like a lot of unique digital devices, it's pretty hard to wrap your head around at first. At first glance, it's a pen with a thin digital display on the side, but what it does is completely not obvious—it's much, much more than a pen.

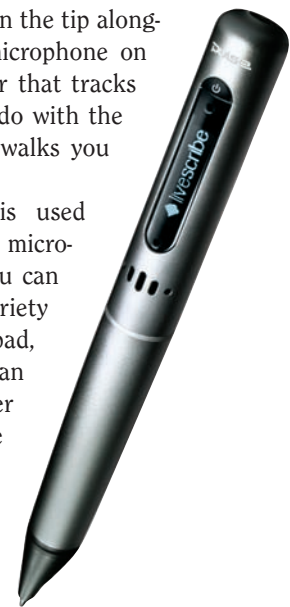
The Livescribe has a camera in the tip alongside the nib, as well as a microphone on the top. Inside is a computer that tracks pretty much everything you do with the pen, and the digital display walks you through various settings.

The Livescribe Pulse is used with special paper that has a microdot pattern printed on it. You can purchase said paper in a variety of styles (notebook, notepad, Moleskine, etc.), or you can print your own using a laser printer. The microdots are used to track the position of the pen as it writes. At the same time, the pen can be recording, capturing the audio in the room and time-stamping it to the writing.

Here's the use case for the Livescribe: a student is taking notes in class. The Pulse is recording the lecture while the student writes her notes. When reviewing for the test, she can touch her notes with the pen at any point, and the Pulse will play back the recording of the lecture at that point, letting her make sure that she understands exactly what the instructor said. It syncs the recording and the time-stamps on the text and allows you to access either by referring to the paper with the pen. This is a great tool for individuals who need multiple learning styles (auditory, visual, etc) in order to process information.

The Pulse also has a desktop application that syncs your notes from the pen to your desktop or laptop. The desktop application maintains all of the functionality of the pen itself, syncing the audio and notes together and allowing you to rewind and recall any moment that was recorded. In addition, the desktop also does character recognition on your notes and allows you to search them just as you would search a regular word-processed file. Write "IMPORTANT" beside any note you want to come back to and then just search the desktop application for "important." It indexes your handwriting and allows for full text searching. It's not perfect, as even the best OCR isn't 100 percent, but it is surprising how good it has become in the last few years.

Because it really is just a computer, albeit a computer with a somewhat unique interface, the possibilities for the Livescribe are just now starting to be fully realized. The camera is capable of recognizing what you are drawing on the paper, so if you draw an interface, it should be able to interact with it. This is exactly the way that the manufacturer is starting to expand the capabilities. For instance,



**Figure 11**  
The Livescribe Pulse

if you need a calculator, you simply draw one. Draw a regular grid of numbers on a sheet of paper, and the pen recognizes that you've drawn a calculator, and you can tap numbers and symbols to perform mathematical operations. Draw a musical scale and notes on said scale, and the pen will play the notes back for you.

Another feature of the Livescribe Pulse is in its 3D sound capability. The Pulse has a set of headphones with it that include built-in microphones. If you use these instead of the single microphone in the pen itself, the Pulse can capture full stereo sound in a simulated 3D manner, so that when you play back the sound later it will actually be "located" where it was recorded originally. This aids in the isolation of speech, as well as making it easier to pick out the specific parts of a soundscape that you are actually interested in.

Livescribe recently opened its development up so that outside programmers can write apps, which should launch a number of interesting new applications for the device. While it's a young development platform, there are already interesting things being written for it. My favorite is a conversion utility that will do length, volume, and other measurement conversions for you if you write them down. For instance, write "6 ft → cm" and the Pulse with the application loaded will give you the appropriate answer.

In a library, it's easy to imagine both internal uses and patron-focused uses for these devices. Checking these out for student use seems obvious, especially around midterms and finals. Internally, I can't tell you the number of times that I wished I could go back and listen to a library meeting while looking back over my notes. It's just a neat gadget, with a ton of uses. You can get a 2 gigabyte Pulse for about \$140 on Amazon, while one with 4 gigabytes of memory will run you about \$180.<sup>8</sup> It's not cheap, but it gives you an absolutely unique group of features.

### NeatReceipts

A number of companies claim to make "portable scanners," some with incredible form factors (one looks much like a long pen that you swipe over the page by hand). The current market leader for personal portable scanners is Neat and its NeatReceipts product (see figure 12). Not planned for workhorse applications like interlibrary loan, the Neat mobile scanner and NeatReceipts software are designed to allow you to digitize receipts, business cards, and other small sheets of paper, while maintaining the ability to scan individual sheets of letter-size paper. The scanner itself, a marvel of industrial design, gets its power from the single USB plug. The whole scanner is just barely wider than a sheet of paper and just over 1.5 inches square.<sup>9</sup>

The software that drives the scanner is designed to scan, OCR, and organize the information on the result-



**Figure 12**

This device makes digitizing receipts and records easy.

ing image. Scanning receipts will allow you to categorize them, extract the amounts into a spreadsheet, and archive the images just in case the IRS comes knocking. Scanning full pages of text will result in a searchable PDF of the page, and while no OCR program is perfect, the Neat software is very good at what it does.

This system is nowhere near a replacement for a traditional flatbed scanner. But it is also one tenth the size and far easier to use and might just fill a set of needs for the patrons in your library. One thing that is important to remember with gadgets is that it's not necessarily important that they fulfill 100 percent of a need. Maybe they only really get at 80 percent of a need, but do so in an easier and faster way. That's a tradeoff I'd make every time, as those patrons will be much happier than being shoehorned into that 100 percent solution that makes their lives more difficult.

## Personal Multimedia Players

There are hundreds of different gadgets on the market that will play audio and video for individuals these days. These are normally lumped into a category called personal media players, or PMPs. Some form of PMP is a valuable thing in the modern library arsenal of gadgets, especially if your library can afford to utilize them to offload some parts of your patron interaction. The classic use case for checking out PMPs in a library setting is that they are preloaded with library content, usually video tutorials or tours of the building. Some libraries use them for library instruction, loading them up with database tutorials and how-to pieces that walk students through particularly tricky interfaces. Others have used them to make multiple language tours available, thus making the library building less obtuse to those who may not speak the same language as the library staff.

One of my great hopes is that we can soon begin to use these devices, and whatever the future may bring in the same vein, to begin circulating library content directly.



My library has thirty first-generation iPod Touch devices that we circulate to students for library tours, but I would love to use them as a form of electronic reserve. For example, a music professor needs a specific set of tracks that his students will need to listen to over the course of the semester, so he turns them in to our Reserves department, they digitize those tracks, and we create a playlist for the class that is synced to all of the iPods. When a student needs to listen to something, she just checks one out, and all the music will be there ready for her, along with lyrics or notes that the professor wanted included. The same thing could be done for film or other video that we had in the library that was necessary for classes.

So why can't we do this? Because of the vagaries and technicalities of copyright law in the United States. As an individual, I have the right to digitize a purchased

CD and sync it to my PMP. For a library, that right is far less evident, and it becomes very fuzzy indeed when you realize that we would, in effect, be making thirty copies of the song or movie in question as we synced them to the iPods. Great for patrons, and clearly the modern way to deal with the content, but until copyright law catches up to the modern realities of content fluidity, we're stuck.

These are still very much worth playing with, and perhaps your library can find some amazing ways to use them with content that you do own the copyright for, such as your archives or special collections.

### The iPod Touch

The market leader for PMPs is the same as the market leader for MP3 players: Apple, and its ubiquitous iPod Touch (see figure 13). The iPod Touch is currently available in 8 gigabyte, 32 gigabyte, and 64 gigabyte models, for \$199, \$299, and \$399 respectively.<sup>10</sup>

While other PMPs have better support for different file types, and some even have higher quality screens for higher quality video output, the Touch defines the category for the time being, and it does so on the back of the App Store, a cornucopia of possibility that has arisen as the best reason to invest in a Touch. The iPod Touch runs the same operating system as the Apple iPhone and thus can share applications with it. Currently over 135,000 different apps are available in the App Store,<sup>11</sup> which make the Touch capable of acting as anything from a GPS device to a satellite radio receiver.

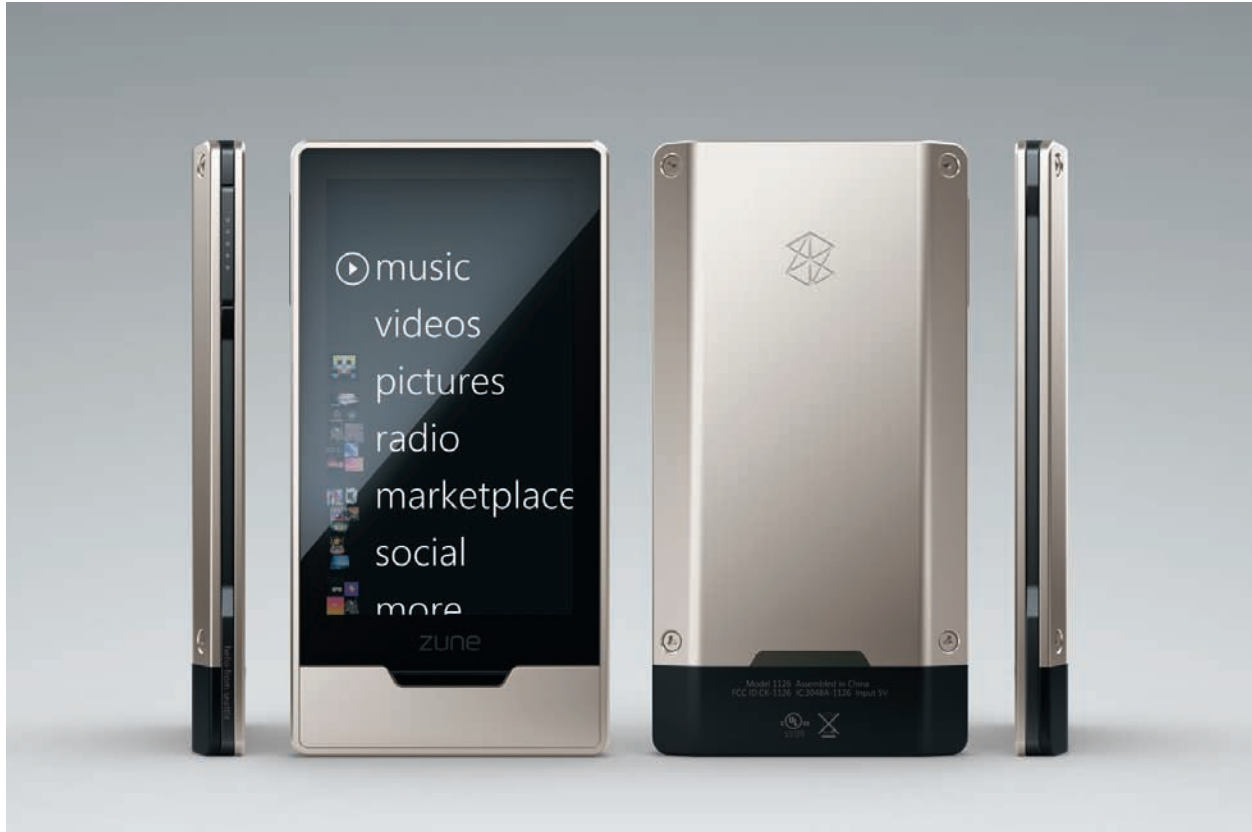
Not every app that works on the iPhone will have value on a Touch, as they do have different hardware specifications. The Touch doesn't have a built-in microphone (although it can use a microphone/headphone combination), and it doesn't have a camera built in, as the iPhone does. So apps that use either of those pieces of hardware may be sub par on the Touch. There are thousands and thousands of apps that will work, however, and just the availability of such a variety makes the iPod Touch more like a computer in your pocket than just a PMP.

The Touch excels as a PMP. It does rely on the Apple iTunes software to manage the loading of audio, video, and apps onto the device, but iTunes gives you a centralized place to manage your content, convert your content, and work on metadata if needed. The Touch has a very good screen and allows for high-quality video to be viewed, and the audio quality produced by the device is very high as well (within the ranges of the compression of the audio files, at least).

One thing that I appreciate about the Touch as a circulating device is that you can load Web shortcuts or bookmarks to the home screen, ensuring that your users are always just a touch away from your website or other Web-based content. In addition, the Touch works as a fully fledged personal digital assistant, with calendar and con-



**Figure 13**  
The iPod Touch



**Figure 14**  
The Zune HD

tact syncing. If you're going to check them out, preload them with a calendar of library activities and with the library staff contact information, adding yet more value to having them in the hands of your patrons.

### The Zune

On the other side of the consumer computer divide is Microsoft, with its flagship PMP, the Zune HD (see figure 14). Like the Touch, it's a multifunction device that does audio and video, but it has a set of unique features that differentiate it from Apple's products. For one, the Zune HD uses an Organic LED (OLED) screen instead of the more traditional LCD that Apple uses in its Touch. OLED is brighter, with a crisper display that looks amazing when compared to the Touch. Another feature of the Zune is HD radio, the ability to tune in to digital radio signals in addition to traditional FM, neither of which the Touch has.

The Zune HD connects to the Internet via standard 802.11 wireless connectivity, just like the Touch, although the general consensus seems to be that the Web browser on the Zune HD isn't quite as good as Mobile Safari on the Touch.<sup>12</sup> Nonetheless, it does have a browser and the

ability to surf the Web as long as you're in range of a WiFi signal.

The Zune is also missing things that the Touch does well, primarily the vitality of the App Store. There are a few apps available for the Zune, but we're talking about dozens, and not the tens of thousands available for the Apple product. For its syncing and media management, Zune HD uses the Zune desktop software, which isn't available for anything besides Microsoft operating systems, which means that you can't use a Zune easily if you prefer Macintosh computers (at least, without booting your Apple into Windows or using an emulator of some type). The Touch works well on either OS X or Windows-based machines.

The Zune HD is available in a 16 gigabyte version for \$219 and a 32 gigabyte version for \$289.<sup>13</sup> The Zune HD works well as solely a method for distributing audio or video to patrons, but is overall far less flexible and brings less added value to the proposition, than the iPod Touch. If you want to have a different option for patrons or just want to present the best screen you possibly can to your patrons, the Zune HD might be for you. Otherwise, I'd stick with the Touch.

## Archos Tablet

A recent addition to the PMP world, Archos has a very interesting product in its Archos 5 Internet Tablet. It's a fully capable media consumption device and has a larger-than-average screen for the category, measuring 5 inches diagonally (both the Touch and the Zune HD come in around the 3.5-inch mark).<sup>14</sup> What sets the Archos 5 apart more than its ability to play videos on a larger screen is that it is running the open source Android operating system by Google.

What this means to the end user is that the Archos provides a much wider variety of file type support than either the Touch or the Zune, which gives more flexibility in what you can load and watch on the device. The stand-out file types supported seem to be the MKV format, often found in video online, and on the audio front, the open source Ogg Vorbis audio CODEC. Because it runs a variety of the Android operating system, it has a world-class mobile browser built in, and it does support standard 802.11 WiFi access. In addition, the Archos can access the Android Marketplace, the Google version of the App Store, and has the ability to run the standard Android/Google apps like the native Gmail and Google Maps applications.

This integration with Google gives the Archos an interesting set of capabilities, and the Android Marketplace is second to the Apple App Store as a repository for adding

functionality to your PMP. I think the Archos has a lot of potential and is indicative of the sorts of devices that will become popular over the next few years.

## Apple iPad

On January 27th, 2010, Apple held a press event at the Yerba Buena Center for the Arts in San Francisco announcing their take on what is commonly called a tablet computer, the iPad (see figure 15).<sup>15</sup> The hallmark of this particular type of computer is that it is all screen: no keyboard, no hinge. At the time that this is being written, the iPad hasn't yet been released, as the first retail versions of the product are expected to be available in late March of 2010. But it's almost guaranteed to be the tech gadget of 2010, and as such, I want to discuss what's known about it so far, and how I think it might impact libraries.

First up, the specs: the iPad is roughly a 9.5 x 7.5 inch slab of glass and aluminum, .5 inch thick, and weighs in at 1.5 pounds. The 9.7 inch LCD screen is LED backlit, and has a 1024-by-768-pixel resolution at 132 pixels per inch. This should make for excellent crispness and a display that is easily read. Apple is producing 6 unique versions of the iPad, 3 different storage capacities with 2 different wireless connectivity options. Here's a table summarizing the different options:<sup>16</sup>

The iPad runs a version of the iPhone operating system, and does indeed look a great deal like an oversized iPod Touch. It will run all of the existing Apps that are available for the iPhone/iPod touch, at either the original resolution (windowed on the iPad screen) or something that Steve Jobs referred to as "pixel doubled" at full screen. Apple claims that the iPad will have 10 hours of bat-



**Figure 15**  
The Apple iPad

	<b>16GB</b>	<b>32GB</b>	<b>64GB</b>
<b>Wi-Fi</b>	\$499	\$599	\$699
<b>Wi-Fi + 3G</b>	\$629	\$729	\$829

**Table 1**  
Apple iPad pricing options

tery life on Wi-Fi. Reports from those that have used the device are that it's incredibly fast, and that the feel of it is unlike anything we've seen before on the technology front.

3G connectivity for the iPad is being delivered, in the US at least, by AT&T, the same company that provides coverage for the iPhone. The difference between the two is that 3G connectivity for the iPad isn't going to require a contract, and will instead be available for purchase month-to-month at a charge of \$14.99 for 250MB of data, or \$29.99 for unlimited data.<sup>17</sup> This could be a really good deal for the occasional traveler, since theoretically you could activate/deactivate the 3G coverage only when you needed it. Details on how this will work are still unclear, however, and in the case of dealing with telecom providers, the devil truly is in the details.

The iPad also represents Apple's initial foray into books, with a new iBook store and corresponding application on the iPad, putting the device squarely in the eReader category. Apple verified that it will use the EPUB format, but unfortunately Abode also verified that it won't be using Adobe DRM.<sup>18</sup> This almost certainly means that the iBook application won't play nicely with existing library ebook providers like Overdrive, which use the Adobe DRM standard and are compatible with any reader that does the same. Apple will most likely be using their own DRM, which will further limit the use of purchased iBook titles to just the iPad (plus, perhaps, other Apple devices, although there has been no details at all on this front). Publishers have come out of the woodwork in announcing support for the iPad, and you can expect everything from Comic Books to medical textbooks to be available for purchase and consumption on it.

The iBook application looks incredible, and the reports from those who actually used it via the demo units at the launch announcement were that it was very much like a physical book in feel, complete with color and page turn. They've got 5 or 6 major publishers already signed up to produce content, and in the screenshots of the iBookstore, you'll notice that they've done something else—moved the price point for an ebook up. Books on the iBookstore look to be in the \$12.99 range, instead of the \$9.99 range as on the Kindle.<sup>19</sup> Indeed, the launch of the iPad gave teeth to publishers willing to push Amazon on the pricing for their books, and it looks like across the various retail stores that ebook prices will be heading up because of the iPad and the iBookstore.

Apple's iPad has the opportunity to change not only the way we interact with media, but also our understanding of computing interfaces and interactions. The iPad has the potential to be the first true computer appliance, something that you can give to anyone and not worry about if their level of technical expertise. Imagine a computer that can browse the web, do email, twitter, browse photos on Flickr, type up basic documents, and play games ,but won't catch viruses and can be navigated simply by touching the screen. Give one to your grandmother, and she'll never have to worry about anti-virus updates and such again. That aspect of the iPad has the potential to really change the way that we interact with computing, and as such has the potential to be a very interesting tool for libraries.

## Notes

1. "YouTube Fact Sheet" under heading "Traffic and Stats," [www.youtube.com/t/fact\\_sheet](http://www.youtube.com/t/fact_sheet) (accessed Dec. 5, 2010).
2. "Flip Video" under heading "History," Wikipedia, [http://en.wikipedia.org/wiki/Flip\\_Video#History](http://en.wikipedia.org/wiki/Flip_Video#History) (accessed Dec. 7, 2009).
3. Flip Video Store, <http://store.theflip.com> (accessed Jan. 27, 2010).
4. "KODAK Zi8 Pocket Video Camera / Black," [http://store.kodak.com/store/ekconsus/en\\_US/pd/Zi8\\_Pocket\\_Video\\_Camera/productID.156585800](http://store.kodak.com/store/ekconsus/en_US/pd/Zi8_Pocket_Video_Camera/productID.156585800) (accessed Jan. 27, 2010).
5. "boggieCamera," [www.sonystyle.com/webapp/wcs/stores/servlet/ProductDisplay?catalogId=10551&storeId=10151&langId=-1&productId=8198552921666073219](http://www.sonystyle.com/webapp/wcs/stores/servlet/ProductDisplay?catalogId=10551&storeId=10151&langId=-1&productId=8198552921666073219) (accessed Jan. 27, 2010).
6. "Zoom H2 Handy Portable Stereo Recorder," Amazon.com, [www.amazon.com/Zoom-H2-Portable-Stereo-Recorder/dp/B000VBH2IG](http://www.amazon.com/Zoom-H2-Portable-Stereo-Recorder/dp/B000VBH2IG) (accessed Jan. 28, 2010).
7. "Blue Microphones Mikey - Professional iPod Recorder," Amazon.com, [www.amazon.com/Blue-Microphones-Mikey-Professional-Recorder/dp/B001FBL2SW](http://www.amazon.com/Blue-Microphones-Mikey-Professional-Recorder/dp/B001FBL2SW) (accessed Jan. 28, 2010).
8. "Livescribe 2 GB Pulse Smartpen," Amazon.com, [www.amazon.com/Livescribe-2-GB-Pulse-Smartpen/dp/B002DJV83Y](http://www.amazon.com/Livescribe-2-GB-Pulse-Smartpen/dp/B002DJV83Y) (accessed Jan. 20, 2010)
9. "NeatReceipts," NeatStore website, [http://store.neatco.com/index/page/product/product\\_id/26/product\\_name/NeatReceipts](http://store.neatco.com/index/page/product/product_id/26/product_name/NeatReceipts) (accessed Jan. 20, 2010).
10. "Select Your iPod Touch," Apple Store website, [http://store.apple.com/us/browse/home/shop\\_ipod/family/ipod\\_touch](http://store.apple.com/us/browse/home/shop_ipod/family/ipod_touch) (accessed Jan. 20, 2010).
11. "App Store" under heading "Number of Launched Applications," Wikipedia, [http://en.wikipedia.org/wiki/App\\_Store#Number\\_of\\_launched\\_applications](http://en.wikipedia.org/wiki/App_Store#Number_of_launched_applications) (accessed Jan. 20, 2010).

12. Joshua Topolsky, "Zune HD Review," Sept. 17, 2009, Engadget website, [www.engadget.com/2009/09/17/zune-hd-review](http://www.engadget.com/2009/09/17/zune-hd-review) (accessed Jan. 20, 2010).
13. Zune Store website, <https://zunestore.net/us/catalog/index.aspx> (accessed Jan. 20, 2010).
14. "ARCHOS 5 Internet Tablet," Archos website, [http://www.archos.com/products/imt/archos\\_5it/specs.html?country=us&lang=en](http://www.archos.com/products/imt/archos_5it/specs.html?country=us&lang=en) (accessed Jan. 20, 2010).
15. Wikipedia, "iPad". <http://en.wikipedia.org/wiki/IPad#History> (Last Accessed March 2nd, 2010)
16. Apple Website, [www.apple.com/ipad/specs/](http://www.apple.com/ipad/specs/) (Last Accessed March 2nd, 2010)
17. Apple website, video of iPad announcement. <http://events.apple.com.edgesuite.net/1001q3f8hr/event/index.html> (Last Accessed March 2nd, 2010)
18. Adobe Flash Platform Blog, [http://blogs.adobe.com/flash-platform/2010/01/apples\\_ipad\\_-\\_a\\_broken\\_link.html](http://blogs.adobe.com/flash-platform/2010/01/apples_ipad_-_a_broken_link.html) (Last Accessed March 2nd, 2010)
19. Engadget, Apple reveals iBook Store and app for the iPad [www.engadget.com/2010/01/27/apple-reveals-ibooks-store-and-app-for-the-ipad/](http://www.engadget.com/2010/01/27/apple-reveals-ibooks-store-and-app-for-the-ipad/) (Last Accessed March 2nd, 2010)

# Odd or Unusual Technology

## Abstract

*This chapter of “Gadgets and Gizmos: Personal Electronics and the Library” discusses technologies that defy easy categorization, gadgets that are interesting but don’t have obvious use cases in libraries, and provides a concluding summary of the entire report.*

While the technologies discussed in this chapter may not have the most obvious applications, I’m going to suggest a few uses. Nonetheless, technology and abilities are intriguing in their own right, and I think that they might be a nice technological addition to the right library.

## Chumby

First up is the Chumby (see figure 16), a small touch-screen-based computer that runs widgets that allow you to access content delivered wirelessly from the Web. There are two types of Chumbys, the Chumby Classic and the newer Chumby One. If you aren’t familiar with the Chumby, the original was released in February 2008 and sort of resembles a soft football with an embedded screen. The Chumby One was released in 2009 and is reminiscent of a 1970s science fiction design, white plastic with one large control knob on the side. The Chumby Classic is currently available for \$149, while the Chumby One will set you back \$119.<sup>1</sup>

So what’s so interesting about the Chumby? Several things, not the least of which is that it’s one of the first devices that is open source, not

only in terms of the software it runs (it uses a variety of the Linux operating system) but also with its hardware. The makers of the Chumby provide schematics for the device and encourage people to hack theirs in both form and function. If you wished, you could download the schematics, the CAD files, and all the rest of it, and build your own entirely from scratch.

One of the huge advantages, if these are to be used in public spaces, is that you can manage behavior, content, channels, and more directly from the Web. Changes



**Figure 16**  
The Chumby

that you make on the Chumby website are then pushed to the individual units, making managing these on an enterprise level very simple.

For the most part, though, that's not why it's interesting to users. The reason that I think it may have some application to libraries is that it is, more or less, an information delivery terminal. The Chumby allows you to generate "channels" of content from widgets, including things like RSS readers, Flickr pictures, and more. The device is operated via touch screen, and since the widget architecture is completely open, you can build your own widgets for the device. I'm thinking of these as small, embedded signage that just so happens to be wirelessly connected to the Web. Scatter them around your library with them all running your hours, or your computer availability page, and see how people react to them.

## Sony Dash

Sony just announced the Dash, a sort of smart clock radio that runs the Chumby operating system. It's got a screen double the size of the Chumby at 7 inches diagonally with a cost that is proportional (\$199).<sup>2</sup> But it enters the market with the entire Chumby widget catalog for its use and is a bit more stylish than the Chumby, with a touch of the Sony style. A few reviewers called it the most expensive clock radio ever, but it could be used interestingly in public spaces as a portal to the information that you set up. At \$199, it's actually getting into the realm of a cheap netbook as far as pricing goes, but as a managed solution for the distribution of specific information to patrons, it's still a decent option.

## Nabaztag

Possibly the oddest gadget in this issue of *Library Technology Reports*, the Nabaztag is here because the company that makes it, Violet, is doing very interesting things with RFID—something that libraries should be familiar with—even to the point of publishing books with RFID built in that interacts with the Nabaztag. So what is a Nabaztag? It's an electronic, wireless, RFID-enabled, voice-controlled, and socially networked rabbit (see figure 17).

The Nabaztag is an experiment in interactivity and personality, giving a friendly, cute form to a device that



**Figure 17**

The Nabaztag. Yes, I said it was a rabbit.

at its essence is a sort of RSS-to-speech device. The rabbit will speak messages sent to it online, read RSS feeds to you, play Internet radio stations, and interact with RFID in the form of Ztamp:s that you purchase from Violet. The tags can trigger events that you set up via the Web for your rabbit. This would be used for something like tossing your keys (marked with an RFID) into a basket near your Nabaztag and having it greet you and then read you the news.

For libraries, one of the most interesting things that Violet is doing with the Nabaztag is producing books with RFID built in that the Nabaztag recognizes. Show your rabbit *Cinderella* and it will start reading the book to you. Get interrupted somehow, and the rabbit remembers where you were and starts from where you left off.

Violet also makes a line of RFID-enabled objects that would be interesting to play with in a library setting. Their Mir:ror is an RFID reader with a USB interface that will allow tagged items to launch programs and such on a desktop computer, and they sell the aforementioned Ztamp:s as simple tags that you can attach to objects of your choice. These, combined with an oversized display in a public area of a library could be a really interesting way to have people interact with your collection. A table full

of objects (books, realia, anatomical models, whatever) that are marked with an RFID and launch their particular digital objects on the display could lead to some really interesting patron-collection interactions.

Just to keep things fun, they also have mini-Nabaztags called Nano:ztags that are themselves just RFID tags. These could also be the backbone of a very unusual control interface for a computer system or part of an art project or any number of other things that bridge the physical and digital realms.

## Maker Culture and the Arduino

With libraries increasingly paying attention to Open Source software over the last few years and many libraries using a range of Open Source software to do everything from manage their collections to reach out to their patrons, I am unaware of any libraries embracing open source hardware. Over the last 5 years or so, there has been an explosion online of hardware hackers experimenting and building their own gadgets, and an entire subculture exists to support them.

The publication of record for hardware hackers seems to be *Make Magazine*, which is dedicated to bringing a do-it-yourself mindset into technology. The rallying cry of a Maker is “If you can’t open it, you don’t own it” and the writers for *Make* have detailed instructions for making everything from a kite photography rig to how to build a hydrogen rocket from 2 liter soda bottles. If I were in charge of a Young Adult section of a Public library, *Make* and its projects would be very near the top of my collection list.

*Make*

<http://makezine.com>

In addition to their own magazine, Makers increasingly have their own spaces. Most large cities have some form of Maker or Hacker space, defined on hackerspaces as “community-operated physical places, where people can meet and work on their projects.” Libraries have traditionally been “come in a learn stuff” places, but there’s no necessary reason that they couldn’t also be, as another Maker slogan says, “get excited and make stuff” places.

*HackerspaceWiki*

<http://hackerspaces.org/wiki>

There is one other hardware bit that I wanted to highlight, and it’s probably the most successful piece of

open source hardware to date: the Arduino board. The Arduino is an fully open hardware board with inputs for sensors, outputs for controlling just about anything you can think of, and a programming language to make it all happen. People have used Arduino boards to build everything from musical instruments to sensors that Twitter you when your plants need water. It’s not a large step to see how one could use this type of device in a library setting. For instance, you could create a simple people-counter, triggered via infrared beam or laser, that would be far less expensive than a commercial unit. The possibilities for what you can build with the Arduino are just about endless.

*Arduino*

[www.arduino.cc](http://www.arduino.cc)

The end-game of this new and open creation of hardware is to be found in the transformation of information into the physical. No less a technology thought-leader than Chris Anderson, the editor-in-chief of *Wired Magazine* and the author of *The Long Tail*, is certain that the future is going to bring a revolution in the physical over the virtual. His latest writing on the matter is an article in *Wired* entitled “In the Next Industrial Revolution, Atoms are the new Bits.”

In “Atoms”, Anderson breaks down how technology is reducing the cost of the physical, and how things like affordable three dimensional printers and computer-driven milling machines are driving a local, affordable Making revolution. In his article, Anderson sums it up as follows:

Transformative change happens when industries democratize, when they’re ripped from the sole domain of companies, governments, and other institutions and handed over to regular folks. The Internet democratized publishing, broadcasting, and communications, and the consequence was a massive increase in the range of both participation and participants in everything digital—the long tail of bits.

Now the same is happening to manufacturing—the long tail of things.<sup>3</sup>

While I don’t have the room to fully flesh out Anderson’s argument here, the article is definitely worth reading, as it explores what could be the next technological revolution of our times. How do libraries fit into this? In my view, libraries have always been at the forefront of the democratization of information. We have moved from guardians of physical objects (scrolls, tomes, books) to enablers of access, and now further to guides among the increasingly complicated information ecology. It appears that we are now on the cusp of the ability to transform information and ideas into objects at a whim, creating



### **More Resources on Maker Culture Available at these Sites:**

<http://www.desktopfactory.com/>

<http://www.shapeways.com/>

<http://buildyourcnc.com/DesktopCNCMachineKitblueChick.aspx>

<http://techshop.ws/>

<http://www.sparkfun.com>

new things almost literally from thin air. Wouldn't it be ironic if, after years of increasingly abstract dealings with the physical, libraries became an integral part in enabling the public to become Makers?

## **Conclusion**

When I first conceived this issue of *Library Technology Reports*, my goal was to highlight certain types of personal electronics that I felt were either generally useful for libraries or interesting for libraries to think about. This morphed a bit when it became clear that 2010 was going to be the year that e-readers exploded, and my trip to CES 2010 in Las Vegas confirmed that. I must have tested thirty or forty different new e-readers while I was there. As this issue progressed, it became apparent that most of what I had to say was focused around the e-reader and trying to accurately report to libraries on what was out there and what to expect.

But I didn't want this to be about just e-readers. I wanted to highlight some of the best-of-breed personal electronics available. The gadget world is wide and varied, and the choices that individuals make are often driven by a huge number of variables and unknowns. By choosing carefully what to highlight, I hope to have reduced the decision fatigue for buying personal electronics for you and for your library.

In addition, I'm hoping that maybe you saw things you hadn't seen before, and my wildest desire is that at some point while reading this, you said, "I had no idea you could do that." If even one of you found something extraordinary in one of the gadgets on these pages, I will count this as a success.

There has been a mantra among the connected librarians of the world over the last few years: "Don't be afraid to fail." Thomas Edison is often quoted for his sayings about failure, and one of my personal favorites is "I am not discouraged, because every wrong attempt discarded is another step forward."<sup>4</sup> This is never more true than

when it comes to libraries and technology. Not everything you try will succeed, and some experiments with hardware will just not click at all with your patrons, staff, or processes. And that's just fine; as a matter of fact, if you aren't failing, then you aren't trying enough things.

Gadgets give you the opportunity to show off new and exciting technologies to those who may never own one for themselves, in much the same way that libraries have found that providing computers and Internet access was an important function of the late twentieth-century library. They allow you to extend your services and do more with less. If you haven't tried out an e-reader or an iPod Touch, or if you just think the idea of a talking electronic rabbit is odd enough to be interesting, try some gadgets out in your library. You might be surprised how much you, and your patrons, like them.

We're moving into the period of time when, as I said in my introduction, content and container are distinct. Librarians are very good at dealing with content . . . it's what we are trained for. I hope that this gave you an introduction to the containers of our content in the new digital world.

Now get out there and play with stuff!

## **Notes**

1. Chumby website, [www.chumby.com](http://www.chumby.com) (accessed Jan. 28, 2010).
2. "Dash Personal Internet Viewer," Sony Style USA website, [www.sonystyle.com/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10551&storeId=10151&langId=-1&categoryId=8198552921644695998](http://www.sonystyle.com/webapp/wcs/stores/servlet/CategoryDisplay?catalogId=10551&storeId=10151&langId=-1&categoryId=8198552921644695998) (accessed Jan. 28, 2010).
3. Chris Anderson, "In the Next Industrial Revolution, Atoms Are the New Bits," *Wired.com*, [http://www.wired.com/magazine/2010/01/ff\\_newrevolution/](http://www.wired.com/magazine/2010/01/ff_newrevolution/) (accessed Mar. 10, 2010).
4. "Thomas Edison," *Wikiquote*, [http://en.wikiquote.org/wiki/Thomas\\_Edison](http://en.wikiquote.org/wiki/Thomas_Edison) (accessed Jan. 28, 2010).

# Resources

<http://www.alatechsource.org/blog/2008/08/library-technology-in-a-slow-economy.html>

## E-readers and Tablets

Allen, Danny. "The Intel Reader Photographs Text and Reads It Back to You." Gizmodo website, Nov. 10, 2009, <http://gizmodo.com/5401168/the-intel-reader-photographs-text-and-reads-it-back-to-you> (accessed Feb. 6, 2010).

Amazon Kindle Team. "Announcement: Macmillan E-books." Amazon.com website, Kindle Community section, Jan. 31, 2010, [www.amazon.com/tag/kindle/forum/ref=cm\\_cd\\_tfp\\_ef\\_tft\\_tp?\\_encoding=UTF8&cdForum=Fx1D7SY3BVSESG&cdThread=Tx2MEGQWTNGIMHV&displayType=tagsDetail](http://www.amazon.com/tag/kindle/forum/ref=cm_cd_tfp_ef_tft_tp?_encoding=UTF8&cdForum=Fx1D7SY3BVSESG&cdThread=Tx2MEGQWTNGIMHV&displayType=tagsDetail) (accessed Feb. 6, 2010).

Best Tablet Review. "Kindle Claims 45% of eReader Market, Sony Claims 30%." Sept. 1, 2009. <http://besttabletreview.com/kindle-claims-45-percent-of-e-reader-market-sony-claims-30-percent> (accessed Feb. 6, 2010).

Business Wire. "Aluratek Announces the Libre eBook Reader PRO—Utilizing Reflective Light LCD Technology." Dec. 8, 2009. [www.businesswire.com/portal/site/home/permalink/?ndmViewId=news\\_view&newsId=20091208005416&newsLang=en](http://www.businesswire.com/portal/site/home/permalink/?ndmViewId=news_view&newsId=20091208005416&newsLang=en) (accessed Feb. 6, 2010).

Camangi WebStation. [www.camangi-webstation.com](http://www.camangi-webstation.com) (accessed Feb. 6, 2010).

Dulin's Books. "Dulin's Books Announces Launch of New Ereader in U.S." (press release). PRWeb website, Nov. 8, 2009, [www.prweb.com/releases/2009/11/prweb3171984.htm](http://www.prweb.com/releases/2009/11/prweb3171984.htm) (accessed Feb. 6, 2010).

Dybwad, Barb. "9 Upcoming Tablet Alternatives to the Apple iPad." Mashable: The Social Media Guide website, Jan. 28, 2010, <http://mashable.com/2010/01/27/9-upcoming-tablet-alternatives-to-the-apple-ipad> (accessed Feb. 6, 2010).

E Ink. "First-Generation Electronic Paper Display from Philips, Sony and E Ink to Be Used in New Electronic Reading Device" (press release). March 24, 2004, [www.eink.com/press/releases/pr70.html](http://www.eink.com/press/releases/pr70.html) (accessed Feb. 6, 2010).

E Ink Press Archives. <http://eink.com/press/archives.html> (accessed Feb. 6, 2010).

enTourage eDGe Store. [www.entourageedge.com](http://www.entourageedge.com) (accessed Feb. 6, 2010).

Golijan, Rosa. "Borders and Kobo Team Up to Develop a New Reader." Gizmodo website, Dec. 15, 2009, <http://gizmodo.com/5427513/borders-and-kobo-team-up-to-develop-a-new-reader> (accessed Feb. 6, 2010).

Jhonsa, Eric. "Amazon Has an Early Lead, but the Game's Not Over." The Motley Fool website, Aug. 31, 2009, [www.fool.com/investing/general/2009/08/31/amazons-got-an-early-lead-but-the-games-not-over.aspx](http://www.fool.com/investing/general/2009/08/31/amazons-got-an-early-lead-but-the-games-not-over.aspx) (accessed Feb. 6, 2010).

Lai, Eric. "Amazon's Kindle Winning Battle, but Adobe Poised to Win E-book War." *Computerworld*, Dec. 9, 2009, [www.computerworld.com/s/article/9142005/Amazon\\_s\\_Kindle\\_winning\\_battle\\_but\\_Adobe\\_poised\\_to\\_win\\_e\\_book\\_war](http://www.computerworld.com/s/article/9142005/Amazon_s_Kindle_winning_battle_but_Adobe_poised_to_win_e_book_war) (accessed Feb. 6, 2010).

Murph, Darren. "Entourage Edge E-reader Shows Off Its Softer-ware Side on Video." Engadget website, Dec. 7, 2009, [www.engadget.com/2009/12/07/entourage-edge-e-reader-shows-off-its-softer-ware-side-on-video](http://www.engadget.com/2009/12/07/entourage-edge-e-reader-shows-off-its-softer-ware-side-on-video) (accessed Feb. 6, 2010).

Pash, Adam. "Current Crop of E-readers Compared: iPad vs. the Rest," Lifehacker website, Jan. 31, 2010, [http://lifehacker.com/5460709/current-crop-of-e+readers-compared-ipad-vs-the-rest?utm\\_source=feedburner&utm\\_medium=feed&utm\\_campaign=Feed%3A+lifehacker%2Ffull+%28Lifehacker%29](http://lifehacker.com/5460709/current-crop-of-e+readers-compared-ipad-vs-the-rest?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A+lifehacker%2Ffull+%28Lifehacker%29) (accessed Feb. 6, 2010).

Publishers Weekly. "Sony, OverDrive in Deal." Aug. 12, 2009, [www.publishersweekly.com/article/CA6676216.html](http://www.publishersweekly.com/article/CA6676216.html) (accessed Feb. 6, 2010).

Ricker, Thomas. "Entourage Edge Dual-Screen Android E-reader Given Lusty Hands-On." Engadget website, Dec. 16, 2009, [www.engadget.com/2009/12/16/entourage-edge-dual-screen-android-e-reader-given-lusty-hands-on](http://www.engadget.com/2009/12/16/entourage-edge-dual-screen-android-e-reader-given-lusty-hands-on) (accessed Feb. 6, 2010).

Rothman, Wilson. "Barnes & Noble Nook Review: Pretty Damn Good." Gizmodo website, Dec. 7, 2009, <http://gizmodo.com/5420216/barnes-noble-nook-review> (accessed Feb. 6, 2010).

—. "Que: Plastic Logic's Capacitive-Touch Ebook Reader." Gizmodo website, Oct. 19, 2009, <http://gizmodo.com/5384563/que-plastic-logics-capacitive+touch-ebook-reader> (accessed Feb. 6, 2010).

Spring Design website. [www.springdesign.com](http://www.springdesign.com) (accessed Feb. 6, 2010).

"Tablet." The Chromium Projects website, <http://dev.chromium.org/chromium-os/user-experience/form-factors/tablet> (accessed Feb. 6, 2010).

Topolsky, Joshua. "ICD Ultra Android Tablet Hands-on." Engadget website, Dec. 20, 2009, [www.engadget.com/2009/12/20/icd-ultra-android-tablet-hands-on](http://www.engadget.com/2009/12/20/icd-ultra-android-tablet-hands-on) (accessed Feb. 6, 2010).

WikiReader website. <http://thewikireader.com/index.html> (accessed Feb. 6, 2010).

## Video

"Kodak Playsport Video Camera / Black." Kodak Store website, Consumer Products section, [http://store.kodak.com/store/ekconsus/en\\_US/pd/productID.169976100](http://store.kodak.com/store/ekconsus/en_US/pd/productID.169976100) (accessed Feb. 6, 2010).

## Personal Scanners/Text Capture Devices

Herrman, John. "Livescribe Pulse Smartpen Now Has Its Own App Store." Gizmodo website, Nov. 19, 2009, <http://gizmodo.com/5408089/livescribe-pulse-smartpen-now-has-its-own-app-store> (accessed Feb. 6, 2010).

Livescribe. "Introducing Pulse." [www.livescribe.com/smartpen/index.html](http://www.livescribe.com/smartpen/index.html) (accessed Feb. 6, 2010).

Loftus, Jack. "Livescribe Crams More Storage, New Color Into Pulse Smartpen Line." Gizmodo website, Oct. 19, 2009, <http://gizmodo.com/5384527/livescribe-crams-more-storage-new-color-into-pulse-smartpen-line> (accessed Feb. 6, 2010).

PlanOn website, <http://planon.com> (accessed Feb. 6, 2010).

## Odd or Unusual Technology

Patel, Nilay. "Latest SixthSense Demo Features Paper 'Laptop,' Camera Gestures." Engadget website, Nov. 18, 2009, [www.engadget.com/2009/11/18/latest-sixthsense-demo-features-paper-laptop-camera-gestures](http://www.engadget.com/2009/11/18/latest-sixthsense-demo-features-paper-laptop-camera-gestures) (accessed Feb. 6, 2010).

Violet website. [www.violet.net/index\\_en.html](http://www.violet.net/index_en.html) (accessed Feb. 6, 2010).

## Miscellaneous Resources

Jones, Gwyneth Anne Bronwynne. "Gadget-A-Go-Go: Be Cool in School!" MHMS Media Tech Steam Powered Wiki, <http://mhmsmedia.wikispaces.com/gadget> (accessed Feb. 6, 2010).

King, David Lee. "Tinkering in the Techie Toybox—My Presentation." David Lee King blog, Nov. 14, 2008, [www.davidleeking.com/2008/11/14/tinkering-in-the-techie-toybox-my-presentation](http://www.davidleeking.com/2008/11/14/tinkering-in-the-techie-toybox-my-presentation) (accessed Feb. 6, 2010).

"What Can Wear Out on a PC?" Computers & Electronics, 11, no. 3 (March 2000): 32-34, start of article available on Smart Computing website, [www.smartcomputing.com/editorial/article.asp?article=articles%2F2000%2Fs1103%2F09s03%2F09s03.asp](http://www.smartcomputing.com/editorial/article.asp?article=articles%2F2000%2Fs1103%2F09s03%2F09s03.asp) (accessed Feb. 6, 2010).

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<b>February/ March</b> 46:2	<b>"RDA Vocabularies for a 21st-Century Data Environment"</b> by Karen Coyle, Digital Library Consultant
<b>April</b> 46:3	<b>"Gadgets &amp; Gizmos: Personal Electronics at your Library"</b> by Jason Griffey, Head of Library Information Technology, University of Tennessee at Chattanooga
<b>May/June</b> 46:4	<b>"Object Re-Use and Exchange (OAI-ORE)"</b> by Mike Witt, Interdisciplinary Research Librarian & Assistant Professor of Library Science, Purdue University Libraries
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<b>August/ September</b> 46:6	<b>"Understanding Electronic Resources Usage: a Review of the State of the Art"</b> by Jill E. Grogg, E-Resources Librarian, University of Alabama Libraries, and Rachel Fleming-May, Assistant Professor, School of Information Sciences at the University of Tennessee
<b>October</b> 46:7	<b>"Open URL"</b> by Cindi Trainor, Coordinator for Library Technology & Data Services at Eastern Kentucky University, and Jason Price, E-resource Package Analyst, Statewide California Electronic Library Consortium
<b>November/ December</b> 46:8	<b>"Privacy and Freedom of Information in 21st Century Libraries"</b> by the ALA Office of Information Freedom, Chicago, IL



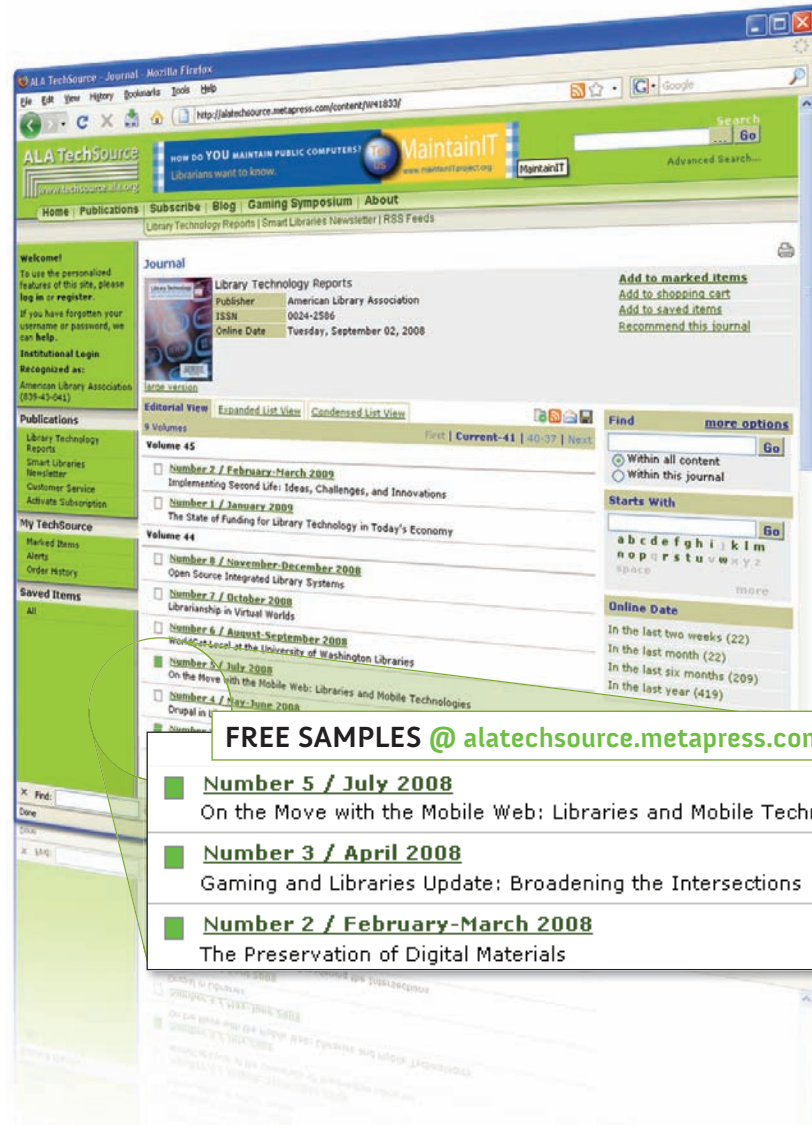
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ISBN 978-0-8389-5809-4



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