Chapter 5

The E-textbook Revolution

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Abstract

This chapter of The No Shelf Required Guide to E-book Purchasing *traces the evolution of the e-textbook and identifies several emerging best practices in the technical and business aspects of this new class of products.*

Introduction

Everyone knows what a *textbook* is.

Mention the word, and a clear picture pops into your mind: some version of a twelve-inch, seven-to-ten-pound, hard-covered, glossy-paged, pulp doorstop. Third-grade math or graduate medicine, it is likely composed of many short units and peppered with colorful illustrations, tables, and exercises. It supports the study of a finite subject area, and it will very effectively fill the average backpack, if not the average brain.

But what comes to mind when someone says "*digital* textbook," or "*e*-textbook"? Is it simply screen-rendered replicas of those same print pages, the identical book, only without weight and, hopefully, without quite the cost? Or is it something more: interactive and filled with 3-D animations, self-tests, videos, and active equations? Is it a device—a tablet or dedicated reader—or is it software running on a laptop and a smartphone? Is it Web-based or downloaded? Is it all of these things seamlessly working together?

And just as importantly, who made and who owns this new e-thing? Must it be a product of the legacy publishing industry: the multifaceted, multilayered apparatus that today sponsors research, develops art, guards copyright, and scrupulously oversees licensing, peer-review, manufacture, marketing, and distribution? Or is it something new: a self-generating, self-sustaining, crowdsourced, open access wiki book, changing constantly, developed by everyone and owned by no one?

The education industry has been grappling with these issues for more than a decade, and answers have been surprisingly slow to emerge. The good news is that in the last eighteen months answers have been taking shape. Adoptions are increasing, both at the institutional level as well as out in the "free range" student market. It has taken a veritable alignment of planets—instruction, technology, content, and business—but there are now clear signs that e-textbooks have arrived. One industry observer, Simba Information, summarized its findings in 2010 with the following: "Many industry observers believe that digital will become the dominant format in college materials, [soon] relegating print to a supporting role. Certainly, digital textbooks and multimedia materials in general are setting the pace for growth in higher education."[1]

This chapter traces the evolution of the e-textbook and attempts to identify a few key emerging best practices in the technical and business aspects of this new class of products.

A Brief History of the Digital Textbook

The emergence of the e-textbook has depended on three distinct but parallel innovation paths:

- technical capabilities (including infrastructure and student computing)
- delivery software (that balances protection of intellectual property with user-friendliness)
- sustainable business models

Planets had to align. A basic threshold of computing power and connectivity had to be in place to provide fast, meaningful access to digital products. At the same time, though, traditional publishers would commit their valuable intellectual property to this process only if the delivery software proved able to protect their content from the rampant piracy that occurred in other markets, like the music industry. This protection, of course, had to be delivered through software that nonetheless provided end users with cool features and useful learning tools. Finally, business models had to be developed that provided for the survival of content development without making the products unsustainably expensive for learners.

Early Trials

In the mid-1990s, the education world first saw digital content in classrooms in the form of CDs in the backs of books. Publishers threw in these digital "additives" to make their print products more competitively attractive as personal computers began to show up in classrooms. While the extra content was in a few cases genuinely dynamic and instructional (like videos or games), more often they were simply paper ancillaries printed to the screen instead of paper: PostScript or WordPerfect files that were to be printed out by the instructor as needed. Worksheets that had for years been printed, then shipped, were now shipped, then printed.

On the surface, digital textbooks held out an intriguing two-fold promise: better content for educators *and* cheaper delivery for publishers. Educators saw visions of interactivity, collaboration, and dynamic media. "More exciting content" promised greater interest and engagement for students. For publishers, though, direct digital delivery meant something further as well; it meant the potential for no printing, warehousing, and shipping of books. A digital story might get faculty adopters to look at a product they would not otherwise consider, and that was attractive, but of at least equal interest was the potential for publishers to get out of the ever-more-expensive pulp, print, warehousing, and diesel fuel businesses they had always considered more necessary evils than core strengths.

By the late 90s and early 00s, educators and publishers understood that the personal computer was on an inexorable march toward the classroom, and that more sophisticated digital products were going to be needed. Schools were getting "wired," computers were getting better and cheaper, and faculty began to acquiesce to computer training.

During this period, big computer companies in particular began to throw their marketing weight behind large-scale student computing programs. These programs ranged from laptop "carts" in classrooms—where students checked out laptops from time to time—to full "one-to-one" computing initiatives, where each student received her or his own laptop for use around the clock. In 2001, for example, Henrico County, Virginia, and Apple Computer introduced a massive one-to-one program for all middle school students across the county. Every student in every middle school was provided a personal laptop. Eventually, high schoolers were added. During the same period, IBM (later Lenovo) launched similar initiatives in higher education, providing large-scale programs at Wake Forest in 1996 and at UNC–Chapel Hill in 2001. Coupled with steadily advancing network infrastructure, student computing initiatives appeared to be the requisite technical groundwork for e-textbooks.[2]

In practice, though, the content was not forthcoming, and what the market learned was the first rule of digital content initiatives: *implementation ruins everything.*

For schools, different products needed different computing platforms and different add-ons. Some software ran only on Windows platforms, for example, and a given classroom might have only an Apple computer; some programs might need a CD-ROM drive or an Adobe plug-in that the school computers did not have. In most places, it was still too expensive to provide a majority of students with access to a computer for any extended period. Computers labs—the typical approach at this time—were a good place to teach basic keyboarding skills, but they were not a viable distribution point for mission-critical course materials like textbooks. In reality, most students during this period got no more than a few minutes per week at an actual computer.

At the same time, content providers found they faced myriad problems taking advantage of the digital channel. First, most publishers had never before signed author contracts that allowed for digital distribution, so they were unable to provide the content even if they wanted to. Renegotiating these contracts was a difficult and expensive prospect. At the same time, there was no revenue model that provided return on investment (ROI) for the digitization and licensing efforts. If a publisher developed an elaborate digital version of a text, the cost was substantial, and there was no new incremental revenue to pay for it. On the contrary, in most cases the market expectation was that unit price would decrease as products migrated to digital. Publishers were therefore going to make less per unit, were in theory only replacing print sales with digital sales, and were being asked to nonetheless invest more per title for content development.

Worst of all for e-textbooks, it was during this same period that Napster came along and demonstrated just how disruptive digital change could be for intellectual property owners. Publishers became highly selective about releasing content into digital

form, and when they did release it, they often insisted in access restrictions (like no copying or printing) that rendered the products all but useless to active, collaborative learners.

While a few interesting digital content products emerged during this period, the complexities of digital content development, the establishment of a meaningful marriage between the digital tools and instructional aims, and the complete lack of uniformity in the technical environments of schools made implementation much more difficult than many had hoped. Implementation ruined everything.

Niche Successes Prove a Few Points

Nonetheless, computer access and technical infrastructure continued to improve in most schools, and by the early-to-mid-00s, a few independent platform providers had emerged to help publishers scale their digitization efforts and deal with ROI and digital rights management (DRM) issues.

VitalSource Technologies, for example, introduced a full curriculum product to several US dental schools in 2000.[3] Every student in these programs received a laptop preloaded with every title they would need for their four years of study—along with key volumes of professor-created documents—and all titles were regularly updated through graduation. Platforms like VitalSource applied search and annotation tools across all titles, but also provided sophisticated DRM, thereby protecting content and helping publishers scale their digitization efforts. The program has expanded in recent years into medical education, and by 2006 one in three dental students in North America obtained their entire textbook course of study through this program.[4]

In another example, Elsevier Health Science announced an innovative "paper-plus-electronic" product in 2005 called Evolve Select, now called Pageburst.[5] This product, originally for nursing students, but later expanded to other health science professions, provided students with both print and digital copies of texts. Students were able to read print if they liked, but could also use software search and sharing tools as needed. O'Reilly and Pearson teamed up in 2001 to provide the SafariX platform, which delivered online textbooks for technology disciplines, and that program also continued to expand during this time.[6]

Most of these niche successes, though, turned out to be segment-specific and small in relation to the overall market. This led the industry to face the second rule of digital content initiatives: *people can't buy what they can't find*. Research carried out by Blackwells UK Ltd. in 2010 suggested that in mid-decade the primary hurdle to digital adoption in the market was simply the lack of available core reading list titles in electronic form.[7] This did not change until late in the decade when the five largest publishers in higher education banded together to create a common distribution platform: CourseSmart.

Late in the 00s: Formats, Distribution, and Business Model Wars

Initially focused on instructor sampling, CourseSmart used the aforementioned SafariX technology to deliver online e-textbooks that were exact digital copies of the print versions. Soon after launch, it added a download option based on a fully branded version of the VitalSource platform and began marketing directly to students as well. CourseSmart made available to instructors and students almost the full array of frontlist titles in almost every subject area, and so for the first time students who were interested in trying digital versions had a reasonable chance of at least locating their desired titles.

Once the titles were available in one format, however, it was much easier for publishers to make them available in many formats and digital channels, so e-textbook options began to show up in a variety of channels, like MBS Directs' textbooks.com, Follett's CafeScribe, and Ingram's VitalSource.

From a business standpoint, then, the contest shifted from title availability to format quality, usability, and business models. CourseSmart titles were available for rental only, and for either online or offline use, not both. The rental price, however, was uniformly 50 percent of print list price. Other providers offered joint online-offline access and rental-or-perpetual purchase options, and price point fluctuated with access terms. Some platforms also offered reflowable products that performed better on emerging handheld platforms, and some began to embed multimedia objects and assessment engine links into their books.

Also, the publishers themselves continued to try to establish their own individual digital offerings. Cengage purchased the SealedMedia technology to deliver its iChapters product (recently the name was changed to Cengage Brain), which allowed students to purchase only the individual chapters they needed. The Pearson MyLab suite of offerings complemented textbooks with online tools like active assessments and multimedia animations. At the same time, John Wiley and Sons developed WileyPLUS and McGraw-Hill developed its Connect system to similarly complement its textbook offerings. Elsevier's Evolve and Student Consult products complemented its print and digital textbook options in the health sciences. Each of these products is delivered differently with unique pricing options.

While publishers continued to wrestle with rights management issues, innovations like high-speed print scanner technology threatened to make digital printing and copying a moot concern. Digital copies of textbooks could be made in minutes by anyone with

a scanner and a print book, so heavy protection measures on digital files were becoming ever less relevant.

By 2010, the annual Educause ECAR study was reporting that nearly every college student in the United States owns both a computer and a phone, and that 80 percent own a laptop. Not only was the relevant inventory of product now available across the market, but the infrastructure was also in place—at least in higher education—for digital consumption to reach mass markets.[8]

At decade's end, there remained really only one question in many people's minds, but it was a big one: were students and faculty really interested in moving over to digital consumption of this content in the first place? One study widely cited in the press appears to put a fine point on the issue. The Book Industry Study Group's (BISG) *Student Attitudes toward Content in Higher Education* cited a study commissioned by the National Association of College Stores (NACS) and performed by OnCampus Research that reported 74 percent of US college students surveyed still "preferred printed textbooks." According to BISG in its press release, students listed permanence, look, feel, and ability to resell printed editions as the key influencing factors. The survey is said to have further found that prohibitive pricing of new printed textbooks were driving students to seek more affordable solutions, either purchasing cheaper versions from online resellers or looking for textbook rental options.[9] These findings appear compelling, but blogger Kent Anderson of *The Scholarly Kitchen* has pointed out that while the survey results were quoted in press releases, the results themselves have not yet actually been released. Anderson also pointed out that the conclusion quoted most often in the press—that students simply prefer print access to digital access—appears overstated. In a post from November 3, 2010, Anderson points out that economics and selection are referenced as the survey's key factors. For most students, a used print product is seen as inexpensive and readily available. Of course students prefer less expensive versions of a known commodity to an unknown product at an unsure price point, Anderson says. Confining the finding to being a strict "media choice" between print and digital does not appear warranted.[10]

Another key lesson that has emerged in recent implementations is the need for cross-publisher access platforms. While several of the largest publishers have invested heavily during this period in content delivery solutions that were particular to their own content, schools continue to see benefit from platforms that aggregate content. When unique, publisher-specific solutions are adopted on campuses, students must log into different systems with different credentials to use different applications with different attributes and different interface logic for different classes. This situation is analogous to each of the major car companies having its own proprietary type of gasoline that works only in its cars. In many scenarios the unique systems are acceptable, but in schoolwide adoptions, a cross-publisher platform had advantages. In a few cases, a campus or at least one department may be willing to standardize on a given publisher, and in those cases the problem goes away, but experience suggests that very few US campuses are willing to entertain such standardization, and so in reality, the market is better served in many cases by third-party e-textbook platforms that normalize features and functions and unify logins for content across all classes.

Turn of the Decade: Arrival of the E-textbook

Finally, as the decade waned, along came Amazon's Kindle, and not too long after, Apple's iPad. Indications are that these devices are changing people's attitudes about reading on screen, and while the connection is not likely direct, the release of these devices in recent years has unquestionably coincided with growing sales of e-textbooks. Coincidentally or not, industry groups like NACS, MBS, and Simba have indicated rapid growth and rapid acceleration of growth in digital textbook sales during the period that these devices have entered the market.[11]

Ironically, neither device has to date delivered more than a sprinkling of what most of us would recognize as "textbooks." The Kindle's screen, being black and white, is not ideal for full-color textbooks, and the device does not offer the strong integrated web browsing, media support, or external application support (for things like Word and Excel), typically expected for study in most modern subject areas. The iPad, while certainly more developed in color, browsing, and application support, has more limited battery life and has yet to demonstrate broad title availability. In the fall of 2010, another big name in the book industry, Barnes and Noble, joined the fray by releasing an education-specific version of its Nook e-reader, called Nook Study. These device-centric reader solutions have elicited mixed reactions so far, but they will continue to improve and will certainly impact the market significantly going forward.[12]

In the meantime, a few companies are working with publishers to create a new breed of e-textbook products specifically for the iPad/iOS environment. Inkling and Modality, for example, have both identified iOS as a key content delivery platform in the coming decade, and both companies are working to make a broader set of titles available in their own apps.

Types of Digital Textbooks

As suggested above, many pages could be filled debating what exactly constitutes an "e-textbook." Some

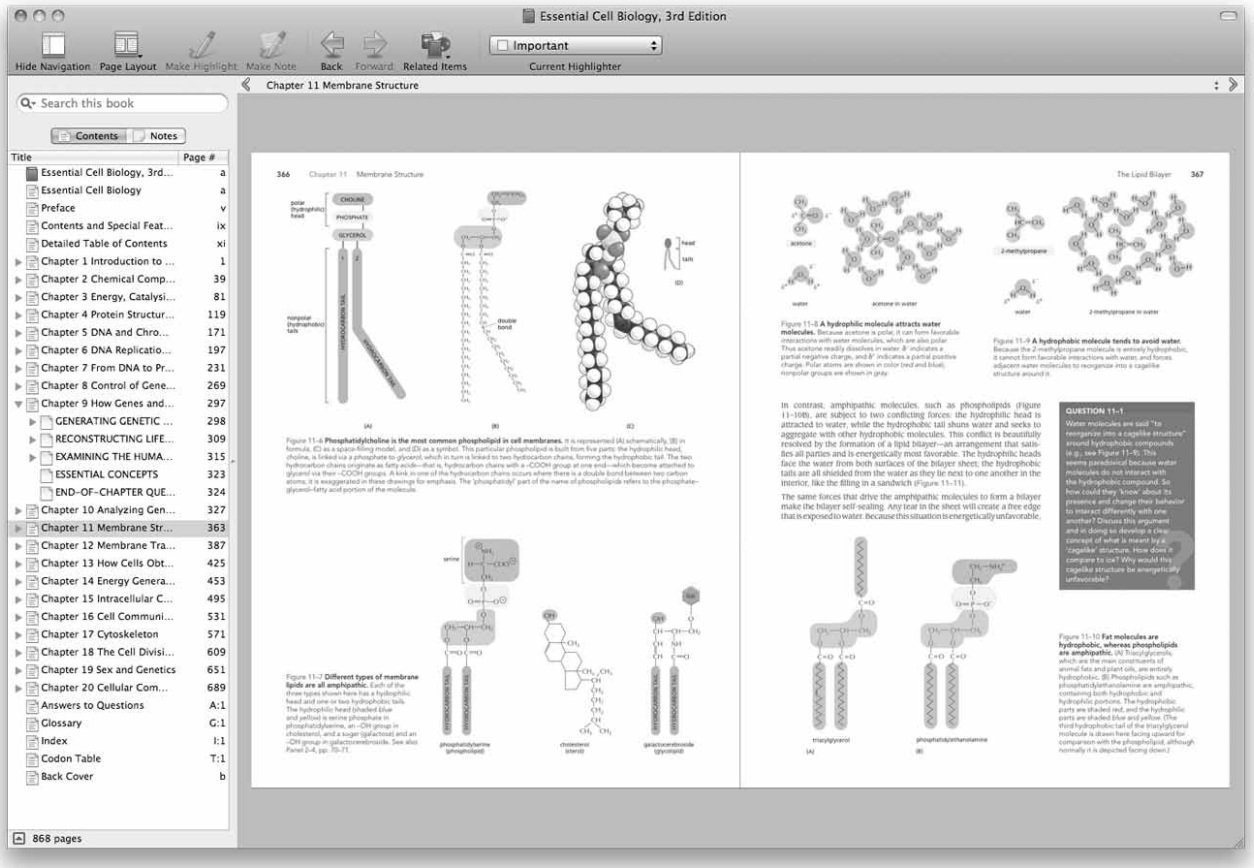

Figure 5.1
Example of a page-fidelity e-textbook. This screen capture is from a VitalSource-based version of Albert's *Essential Cell Biology,* third edition, from Garland Press. It is an exact reproduction of the printed page (used with permission from Garland 978-0-2038-2820-5/page/367).

lists would include only replicas of traditional print products, others would add new "open" or "wiki" textbooks, and still others would add nontraditional content like online assessments and labs as well as games and animations. In all cases, though, there is at least this commonality: a finite content and/or activity set has been collected to support the mastery of a given area of study. This set is being delivered to faculty and students digitally and is consumed on screens.

In practical terms, the vast majority of e-textbook products available to students today are derived from a print product. This means they originate to some extent in a traditional publisher's print workflow and are therefore more often than not a rigid or semirigid representation of the print book. These products—available through industry leading channels like VitalSource, CourseSmart, CafeScribe, and more recently Barnes and Noble's Nook Study—are easy for consumers to find and available for most undergraduate courses. Figure 5.1 shows a digital textbook derived directly from print workflow. In these cases, publishers are working with independent software and distribution companies to make their products available to the market.

At the same time, publishers also continue to develop and market their own individual digital books and ancillaries. Products like Wiley's WileyPLUS and Pearson's MyLabs online environments can be used as standalone products or can be linked into their companion downloadable or online e-textbooks. Some in the industry predict these online systems are on the way to replacing the traditional textbook in some subject areas.[13]

WileyPLUS
https://www.wileyplus.com

MyLabs
www.pearsonhighered.com/pearsonchoices/premium.html

As the student computing footprint has expanded to near complete coverage for student populations in the United States,[14] publishers are now under increasing pressure to respond to consumer demand for products

that can be accessed on laptops, tablets, and smartphones. Publishers have been forced to look carefully at both their internal workflows and at the third-party platforms for scalable, reproducible processes that would allow their digital business to grow across multiple titles, multiple imprints, and multiple courses.

After years of worrying that the business of textbooks could go the way of the music business, most publishers now believe they are witnessing a consumption tipping point where the switch to digital will only continue to accelerate in coming years.[15]

Page-fidelity E-textbooks

By far the most common form of digital textbook today is the "page-fidelity" or "print-fidelity" product: exact screen renderings of the printed pages. These products rigidly maintain the layout of the paper version of the book, and indeed are most often built from PDF source files exported directly from the publisher's print workflow. More often than not, the PDF source is ingested into a third-party platform that applies some level of search and annotation functionality as well as DRM.

Proponents of page-fidelity e-textbooks point out they can be easily produced in great numbers through a single workflow. Production and quality assurance processes can be standardized and streamlined across multiple imprints, making it a cost-effective approach. These products do not therefore typically represent a substantial extra cost for publishers, and a very wide range of titles can be made available in the market very quickly.

In addition, the resultant products are familiar to students and faculty (they look like print books, have familiar tables of content and indexes, etc.) and are supported in most of the major DRM schemes in the market, such as those employed by Adobe's Digital Editions, CourseSmart, VitalSource, and CafeScribe. Best of all, they *require little change in teaching behavior to be used in the classroom* (so professor adoption is less stressful).

Detractors point out, though, that the products are fairly static, do not usually take advantage of the basic media and communication capabilities that make a computer so interesting in the first place, and are inherently inaccessible for the disabled.[16] Worst of all, they *require little change in teaching behavior to be used in the classroom* (so there is no real classroom innovation, and learning is not necessarily enriched).

Other significant concerns include large file sizes (in download models files sizes can be hundreds of megabytes) and difficulty in integrating multimedia. Media objects may be linked to product, but with PDF-sourced documents, media objects cannot typically be embedded inline in the page.

In U.S. higher education, CourseSmart is a particularly informative case study. It implemented a page-fidelity product workflow in 2006–7 that scaled across not only imprints, but across multiple publishers. It was therefore able to grow its inventory of titles very quickly. These page-fidelity products have limitations as well, though. They do not typically introduce the new capabilities or enhancements that often make the switch to digital most attractive to many educators and learners.

Reflowable

"Reflowable" digital textbooks, on the other hand, maintain all the content from the print textbook, but often strip away or dynamically deal with components of page layout (see figure 5.2). These products—typically constructed from XML source files instead of PDF—have fluid line and page breaks. Here, lines of text wrap and/or resize as viewing windows are adjusted or as different devices cause readers to encounter different screen sizes. A reflowable e-textbook allows users to adjust font sizes and adjust windows to their liking without causing the entire page to resize. In many cases users can also designate their own preferred background colors for pages, figures, or box features.

Proponents of this class of product point out that reflowable texts provide a better experience on handhelds and other smaller device screens. Reflowable products also allow content creators to link or embed multimedia objects directly inline in the text, thereby presenting them within the context of the given chapter of study and making them more likely to be used. For smaller devices and for richer content, reflowable e-textbook environments would therefore appear advantageous (see figure 5.3).

Additionally, an XML-based reflowable product has to date proven to be a better option for disabled users. A document's XML markup allows for embedded tagging that describes figures, equations, and other nontext objects. The reader software uses this explanatory language to describe nontext items to visually impaired users. The more structured mark of XML also provides a clearer technical path for screen readers, Braille readers, and other external devices to follow for navigation, thereby improving windowing, menu advancement, and text-to-speech options (see figure 5.4). Schools and organizations dedicated to serving the disabled community and meeting their obligations under Section 508 of the US Federal Rehabilitation Act are likely well served by understanding the options provided by reflowable e-textbook product.

Section508.gov
www.section508.gov

The primary disadvantage of reflowable e-textbooks has been the investment cost needed to create

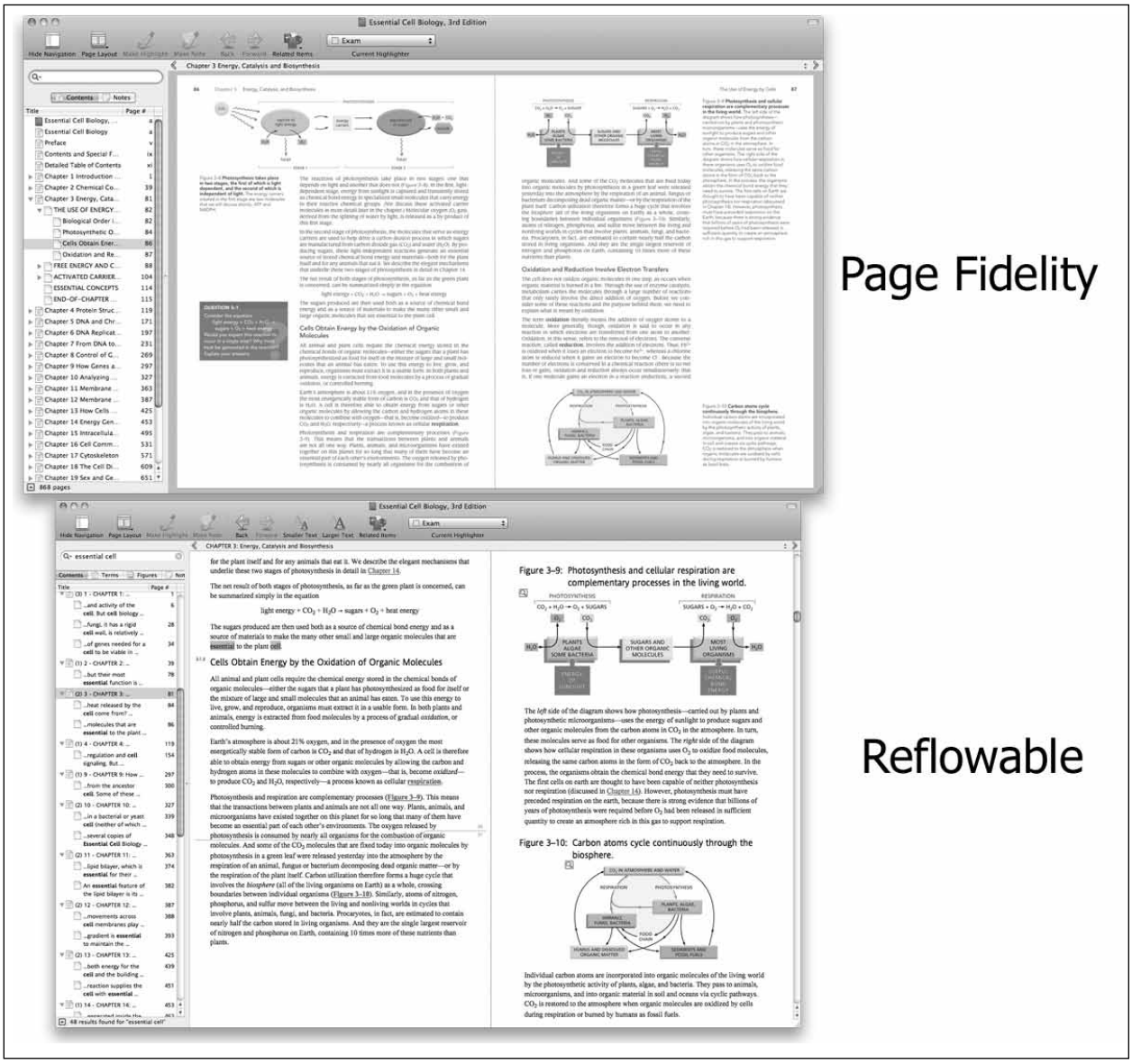

Figure 5.2
Format comparison. The VitalSource Bookshelf reader supports both page fidelity and reflowable products. This figure below display pages from the same title, Albert's *Essential Cell Biology,* third edition, in both formats. Note the sidebar and cross-column features of the page fidelity view at top. The reflowable view loses those features, but font size controls can be seen at the top of the page.

product. The product is typically generated from XML source files, and these files are not typical products of the traditional print process. In fact, the XML standard itself has not been evenly applied across education publishers (to say the least), and there are wide variations from one publisher to the next both in how the specification is defined and how it is applied.

XML is a "markup language" and as such is simply a set of rules by which a document should be "tagged," or marked, so that applications know how to display the content. Applications receive these tags as instructions (essentially, "make this word **bold**, that one *italic,*" "insert this picture here," "start a new section there," etc.), but various software platforms have different versions of the rules. The result is that without a common industry standard for markup, a content creator may have to tag a document separately for each potential channel. In theory, software translators can be created to automatically export to the various sets of rules, but in practice the process almost always involves some level of human decision making, and that in turn means an extra quality assurance (QA) step should be introduced for each channel. In recent years, publishers have paid

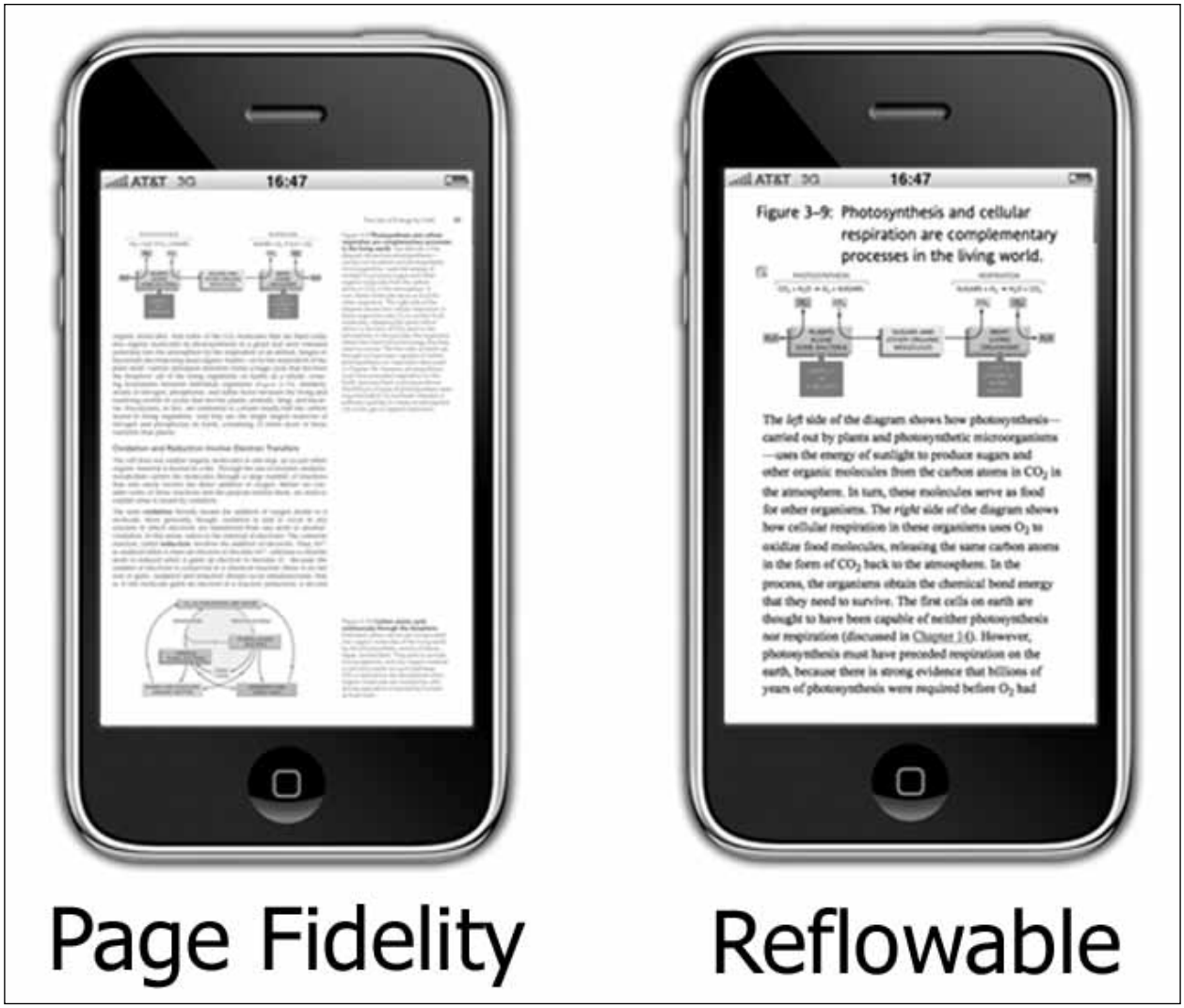

Figure 5.3
Resizing windows. Notice that as the page windows are resized for a handheld device, the rigid page-fidelity product becomes largely unreadable as the entire page scrunches into the smaller window. The reflowable text, by contrast, adjusts layout to display less content on the screen and thereby maintain readability.

external publisher-services companies, primarily in India, for this process.

Most of the large publishing houses have introduced XML into their internal workflow; however, it is typically more for archive and editorial control than for product mastering. By its nature XML is an extensible, or modifiable, markup language, meaning that each software provider can potentially ask publishers for a source file built to a different XML specification. Each different education channel has historically supported its own unique "flavor" of XML, so for publishers it has been expensive to export different flavors to the different reader platforms. The publisher would need to separately export (and separately QA) each version.

Unquestionably, XML-based product has many advantages in the market, so several years ago the publishing industry began to address the issue by creating an industry group to suggest standards for XML in publishing.[17] This group, the International Digital Publishing Forum, or IDPF, has released several iterations of an XML and file-packaging specification called EPUB. While early versions of the standard were focused on the trade publication market, the most recent—EPUB 3—has been substantially upgraded to handle many of the structural, page layout, and metadata complexities inherent in academic publishing.

One promise of this new EPUB standard, with its more elaborate support for page layout, is a blending of reflowable and page fidelity formats into a single file workflow that will retain some measure of page fidelity in most circumstances, but also allow form-factor or device-specific adjustments when appropriate.

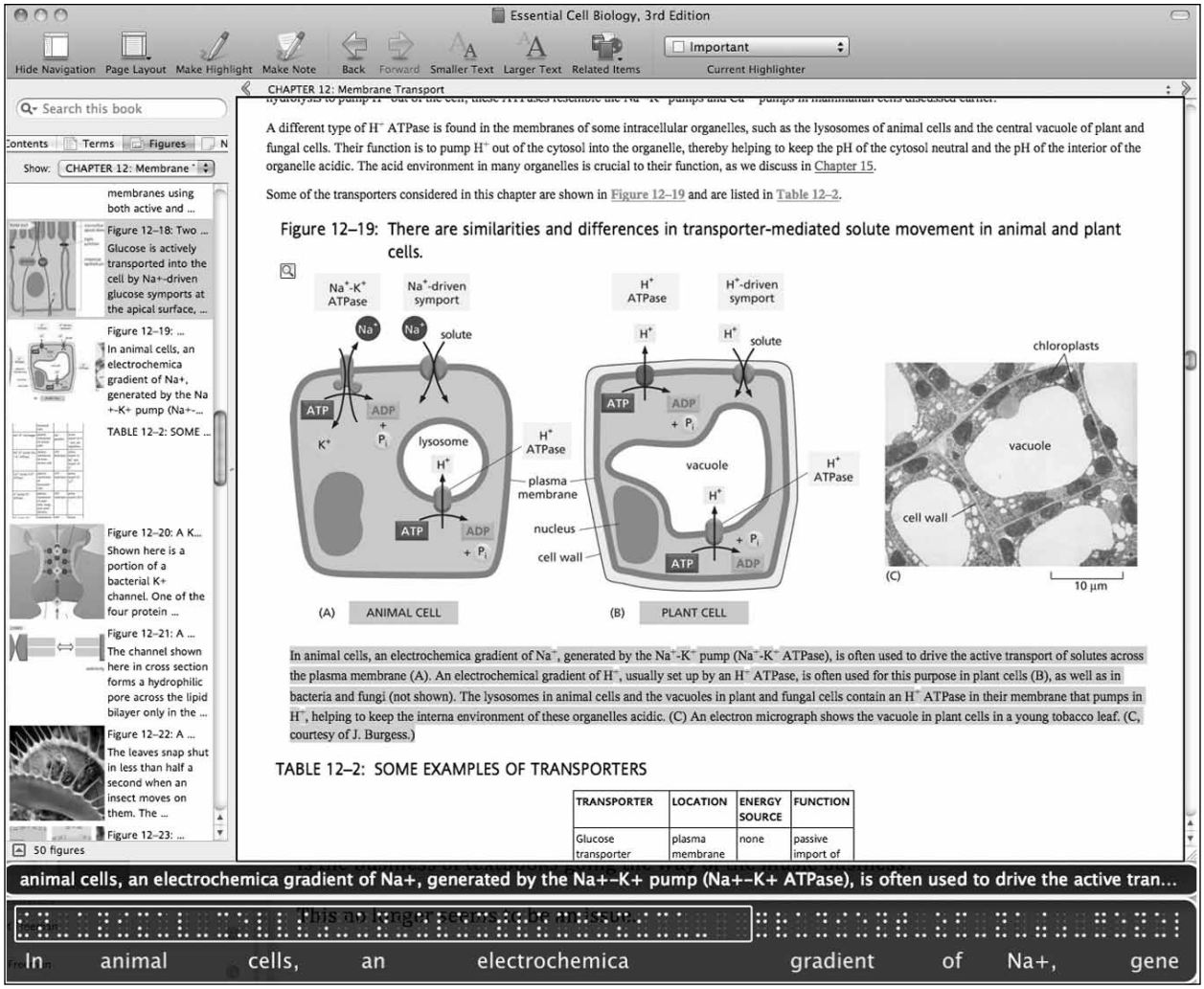

Figure 5.4
Accessibility. This screenshot is also from the VitalSource version of Albert's *Essential Cell Biology.* In this picture, the text-to-speech and Braille reader "feeds" can be seen at the bottom of the screen. The application creates the appropriate data and feeds it to external devices. These monitoring screens can be accessed in Apple's OS system preferences.

This new version of the standard does a much better job than previous versions of supporting style sheets, for example, and so should make it possible to create a richer layout. As an XML standard, though, EPUB-based products should maintain strong support for accessibility for the disabled. The EPUB 3 Working Group Charter specifically mentions expanding support accessibility, including use of the DAISY accessibility standards.[18]

Platforms like Adobe Digital Editions and the VitalSource Bookshelf support both page-fidelity and reflowable product. In the past, they have done so by allowing content creators to submit one type of source file or the other, and so the user would receive either the one type of product or the other. There has not been an option in the market for the user to "toggle" between types as they choose.

Media-Rich, Integrated, Interactive, Beyond

In the last year or so, the market has seen the emergence of e-textbook products with more interactivity and more embedded media. The traditionally leading platforms are working with publishers to embed video and links to external systems directly in their content, and new companies are taking advantage of emerging hardware platforms—like tablets based on the Android operating systems or Apple's iPad devices—to apply new levels of interactivity to books. Figure 5.5, for example, shows an inline video in an Elsevier Science nursing book in Elsevier's Pageburst application.

Inkling and Modality are two newer companies leading the way in creating books specifically for the iPad. Both companies substantially re-engineer the publishers' source files to allow for greater user

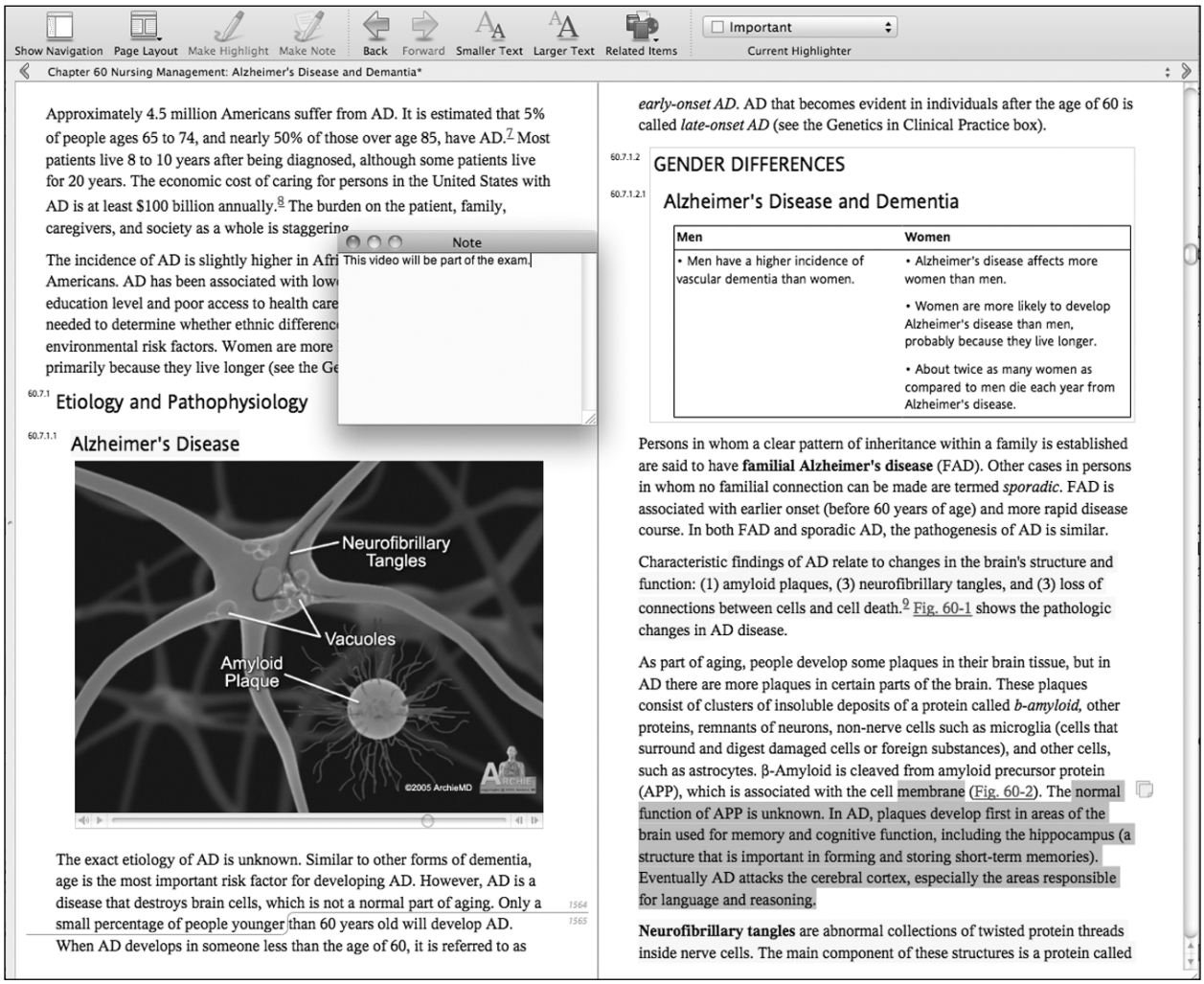

Figure 5.5
Embedded media. Several platforms allow content providers to embed multimedia directly in the page view of the file. The sample in this figure is from Lewis's *Medical-Surgical Nursing* in Elsevier's Pageburst program. This figure also shows how students can highlight and leave margin notes in various colors. (used with permission from Elsevier Health Science).

interactivity. While the new levels of functionality are exciting, the scalability of the approach is not yet proven. Many other, smaller companies are releasing titles as individual apps for iOS, but to date these applications have been primarily for trade and reference books and not textbooks.

At the same time, as the leading publishers in the space look for new ways to enhance their titles, they are also delivering new media-rich and interactive types of products. One such product released in 2010, Cengage's MindTap, is essentially a web-portal-based book that offers assignable and gradable quizzes, and what Cengage calls "adaptable learning paths" that adjust the ordering of units based on student performance and preferences.[19] Going forward, the publishers will continue to balance the need to develop their own unique solutions with the need to participate in multipublisher implementations through third-party platforms.

In the market today, all the largest publishers have their own "internal" media-rich or interactive e-textbook products:

- Pearson MyLabs
- Cengage Brain (formerly iChapters)
- McGraw-Hill Create and Connect
- WileyPLUS and Wiley Desktop Editions
- Elsevier Health Pageburst
- Macmillan Dynamic Books

As publishers learned back in the 90s with title-specific CD products, though, title-specific media enhancement and interactive features can mean substantial investment on a per-title basis.

Open E-textbooks

Another important recent development in the e-textbook market is the advent of the "open" e-textbook. Many teachers or otherwise concerned individuals are creating their own versions of course support content and are using the Internet as a cheap and easy avenue for sharing these documents. If the content is conceived and distributed as "open," it is free for anyone's use and is in most cases available to be adapted and changed as needed by anyone in the market. When content is delivered under the Creative Commons licensing rules, the only real intellectual property requirement is that any derivative works should also be open and freely available. Open textbooks are currently in use in many schools around the world. Some of the most notable instances are the Open Courseware projects at MIT and Harvard.[20]

Creative Commons
http://creativecommons.org

To date, these open access products are typically online and are often created and maintained by a group of authors. In fact, the community aspect is thought by many to be critically important. Since there is no traditional, "old-school" publisher coordinating content development, peer review must be accomplished by the ongoing, active monitoring, updating, and authoring of a community of interested souls. *Wikipedia* (perhaps the original of the species) says an open textbook can be "any free, openly licensed learning resource" and suggests that at a minimum, baseline rights must allow users (1) to use the textbook without compensating the author, (2) to copy the textbook (with appropriate credit to the author), (3) to distribute the textbook noncommercially, and (4) to shift the textbook into another format (such as digital or print) as desired.[21]

This is obviously a very broad definition and can include even the simplest of teacher-made documents posted on a website. However, there are also sophisticated publishing companies attempting to reinvent the textbook market by posting or otherwise delivering a product that anyone can edit and anyone can use. Flat World Knowledge, for example, develops textbooks that it makes freely available online and that it lets instructors modify. Flat World subsequently sells print copies and other ancillaries as its basic business.[22]

From the standpoint of the traditional publishing and distribution industries, these products are often seen as threats to well-established business. For the most part, the traditional publishing industry has looked at them as unregulated products of primarily amateur or vanity publishing rank. Open products almost always lack peer review, publishers point out, and the credibility of the content creator is usually difficult to verify.[23] Another signal difficulty is copyright control. There is rarely a disciplined copyright review process involved in the creation of open e-textbooks, so as content is posted and later modified the opportunity exists for copyrighted materials to be distributed illegally.[24]

Since the emergence of *Wikipedia* a few years ago—and the ensuing collapse of the print encyclopedia business—some in the industry have been predicting the emergence of a similar phenomenon in the textbook market.[25] Typically, the argument goes something like this: interested persons around the world, especially instructors, will band together to create an open textbook in their discipline. Students can access the resource online, they can print or copy as needed, and they pay nothing. Individual instructors can recommend what they like, argue with what they like, and update what they like. The key is that instructors work together and monitor and maintain the quality of the content. In fact, one central difficulty in this model would appear to center around motivation for the content creation. Will busy academics create content for free? Will they maintain it? Will they create multimedia and interactive learning objects? While the promise remains, and several teacher-based resources have emerged, a serious question also remains about whether teachers perceive that they have the time needed to monitor and maintain the content.[26]

Where Next?

So, what does the future hold for the e-textbook? Reader-friendly devices like the Kindle and the iPad have swept away many lingering doubts about whether students will actually embrace reading from a screen, and technical infrastructure on campuses has reached a point of relative maturity, at least in the United States. If business models can now emerge that make it economically advantageous to purchase e-content instead of print, the e-textbook is on course to outsell print within the decade, and possibly much sooner.[27] Several key questions still need answering, but answers appear to be near.

Will a significant number of titles be available soon? For years, the e-textbook was haunted by the ghost of Napster, and publishers were slow to release content in digital form. The content creation industry watched with intense interest—and often with intense anxiety—as educators and software companies launched small-scale experiments in digital distribution. Only in the last two years, after a decade of experiments with no debilitating piracy, have the major titles become available for sale in multiple channels and in multiple formats. Is the business of textbooks going the way of the music business? This no

longer seems to be a significant worry for publishers.[28]

Will content-creation standards emerge? It is of central importance to the future success of e-textbooks that content format standards emerge and become adopted by the publishing and software players in the market. EPUB 3 standard appears to be such a standard. Early indications are that EPUB 3 will be broadly embraced by education publishers and software providers and should allow content creators to more quickly scale to provide rich, accessible products.[29]

Will platform standards emerge? Even though the individual publishers will continue to develop their own unique delivery platforms, for large schools and school corporations there is an equally important need for cross-publisher content platforms. Platforms that allow schools to implement a single solution that accommodates multiple publishers will make campuswide adoptions much more manageable for large schools, especially multicampus schools. Cross-publisher delivery solutions, like VitalSource, CourseSmart, and CafeScribe, have demonstrated the ability to make content access uniform across courses on a given campus, and this uniformity appears to speed adoption and lower frustration. In a particularly encouraging development, learning management systems and e-textbook platforms have shown a willingness to work together to standardize access paths to content.[30]

As e-textbooks deliver more dynamic, interactive content, and as students are able to access this content across more and more devices and platforms (of their own choice), and as new price and purchase options for digital content continue to emerge, it seems certain that e-textbook sales will continue to grow significantly in coming years.

Conclusions

There is another thing, of course, that everyone knows about textbooks: they have become outlandishly expensive, pound-for-pound closer in cost to a gold class ring than a spiral notebook. In many corners of the industry there is an expectation that the e-textbook will and must solve this problem. Does the removal of printing, warehousing, and shipping mean cost savings that may be passed along to the user? Or does the need for differentiated rich media and interactivity mean higher development costs?

For ten to fifteen years, the digital textbook has been ever so slowly crouching toward classrooms around the world, and stakeholders on both sides have been watching with increasing interest for that magical tipping point where suddenly the print textbook vanishes and the digital textbook reigns supreme. What is happening in the market today, though, is perhaps not so much a classic "tipping point" as an accelerating emergence of a whole new class of products, a class that both incorporates and mimics past products as well as pushes beyond them. E-textbooks can look exactly like the old print versions, or they can pull away slightly and remove page layout restrictions to adapt to new form factors, or they can now even add multimedia, active assessments, sharing, accessibility features, and interactivity to form entirely new offerings. They can be authored by the trusted publishers of old or by exciting new ad hoc consortia on the Web.

In fact, the market may be returning at last to that dual promise of a decade ago: lower cost distribution of a higher value product.

Alfred A. Knopf is supposed to have once described the textbook business as "gone today, here tomorrow" because of the problem of returns of unsold inventories.[31] As educators wrestle with the difficulty of textbook costs, many are recognizing the opportunity to use digital options as a way to help publishers control these costs and offer new digital business products and models. Publishers must be able to offer differentiated e-textbooks with features that make students more engaged and more excited. Only then will schools will be able to require these digital alternatives in place of costly print products. Every time an e-textbook sells, a used print product is removed from the channel. As instructors are enticed to sample digital products, and as returns no longer clog publisher warehouses, content creators have the opportunity to return to sustainable business models at attractive prices. The prices of textbooks will come down.[32]

Indeed, Simba Information expects the digital migration to grow and gather speed in the coming years, and it believes the second decade of the twenty-first century will likely be the key transformational period in course materials worldwide. As formats like EPUB 3 emerge and as digital delivery platforms like VitalSource, CourseSmart, MyLabs, MindTap and others mature, Simba expects:

- Print textbook sales in many disciplines will shrink.
- Digital course solutions will be widely accepted and licensed by departments and institutions.
- Textbook rental programs will take root, will migrate toward digital product, and will account for a significant share of how students acquire textbooks.
- Growth in licensing, textbook rental programs, and use of digital materials will erode the used-book market.[33]

Every major education publisher in the world has some digital content product in production today, and the largest players have multiple products already in the market. The number of independent platform and app providers continues to grow. Most schools, at least in higher education, have students on campus today using some form of e-textbook. Some of the more

aggressive schools are moving their entire textbook load to digital.

Getting the business, technology, and content aligned for a successful transition from print to "e" has been a slow, difficult process. However, there are now significant indications that the alignment is taking place, and this "planetary" shift may signal a fundamental change in the teaching and learning as we know it.

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