Library Technology
R E P O R T S

Expert Guides to Library Systems and Services

The No Shelf Required Guide to E-book Purchasing
Sue Polanka, Editor
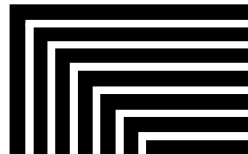
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About the Editor

Sue Polanka is the moderator of the award-winning *No Shelf Required,* a blog about the issues surrounding e-books for librarians and publishers. Sue has been a reference and instruction librarian for over twenty years at public, state, and academic libraries in Ohio and Texas and is currently the Head of Reference and Instruction at the Wright State University Libraries in Dayton, Ohio. She edited *No Shelf Required: E-books in Libraries* from ALA Editions and *E-Reference Context and Discoverability in Libraries: Issues and Concepts* with IGI Publishing and is currently editing *No Shelf Required 2: Use and Management of Electronic Books* for ALA. She has served on *Booklist*'s Reference Books Bulletin Editorial Board for over ten years, serving as chair from 2007 to 2010. Her column on electronic reference, Off the Shelf, appears in *Booklist* quarterly. Polanka was named a 2011 *Library Journal* Mover and Shaker.

Abstract

According to recent studies, e-book penetration in libraries of all types is rising rapidly. Creating or expanding an e-book collection is a complicated challenge. In addition to facing the same challenges a librarian would face in developing a print collection, librarians developing an e-book collection also face a host of unprecedented legal, technological, and vendor challeges. This issue of *Library Technology Reports* will examine these challenges, focusing on strategies for purchasing e-books in a consortium, working with vendors, implementing e-reader programs in an academic environment, and purchasing eletronic textbooks. Although the challenges are significant, this issue will show how they can be overcome and how the effort it takes to develop an e-book collection is well worth the effort.

De Gruyter is pleased to sponsor this issue of *Library Technology Reports*, guest edited by Sue Polanka.

For more than 260 years, the name De Gruyter has been synonymous with high-quality, landmark publications in the humanities and natural sciences. In 2010, De Gruyter launched "e-dition," on-demand retro-digitization of over 50,000 titles from De Gruyter's entire publishing history. De Gruyter also pioneered "Make the Switch," a program offering favorable conditions to customers wishing to convert their collections from print to electronic. In late December 2011, De Gruyter will launch De Gruyter Online, a new integrated platform leading not only to title information, currently accessible on www.degruyter.com, but also to De Gruyter's eBooks, eJournals and databases, at present still available on www.reference-global.com. The website's advanced features will include sleeker navigation, an improved webshop, more sophisticated alerting options, content customization, and purchasing options down to the chapter, article, or database entry level. The publishing house has locations in Berlin, Beijing, and Boston.

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Purchasing E-books in Libraries

A Maze of Opportunities and Challenges

Sue Polanka

Abstract

With the introduction of library e-books in 1999, the once-straightforward process of buying books took on many complexities. This chapter of The No Shelf Required Guide to E-book Purchasing *offers an overview of these challenges and the advantages and disadvantages of purchasing from different vendor types.*

For those libraries looking to purchase e-books, you are not alone. According to the *Library Journal* 2011 survey of e-book penetration and use in libraries, 95 percent of academic, 82 percent of public, and 44 percent of school libraries are already offering e-books, and many more are considering it.[1] For anyone contemplating purchasing e-books, asking why is the most important question. What are the primary goals of purchasing e-books in your library or your consortium? Is it to expand the collection or to increase the buying power of a group of libraries? Is it to replace existing print collections, offer new services, or experiment with new business models in the hope of saving money? Whatever the reason, it is imperative to keep one's goals in mind throughout the process. Buying e-books is a complicated process. To do it effectively is an even greater challenge due to the many ways to procure e-books. This article will explore available business models; dissect the ownership and lease models of e-books; compare and contrast purchasing from aggregators, publishers, and wholesalers; and discuss the benefits and challenges of consortial purchasing.

Print to Digital

Buying a print book is relatively easy. With the introduction of library e-books in 1999, however, the once-straightforward process of buying books took on many complexities. First, for purchasing and accessing e-book content, vendors require license agreements. These agreements contain terms of use and restrictions on access. Second, e-books are priced differently from print. Instead of the traditional print list price (or list price with a discount), the price of an e-book is generally the list price plus a percentage. The final price is determined by the business model selected, the number of people who will use the book, or the size of a library's user group. Third, new business models were developed—and continue to be developed—to fit the diverse needs of libraries and vendors. Many of these models are very different from traditional print purchase models. Fourth, the notion of ownership has come into question with e-books. Do libraries actually own the content, or is it leased? Libraries must circle back to the license agreement to determine the answer to this question.
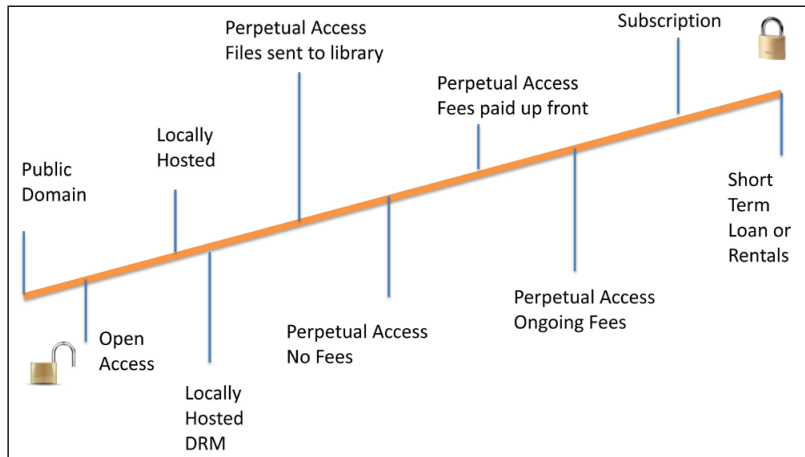
Business Models

There are a variety of business models available for purchasing e-books. Several options are one book/one user, multiuser, unlimited simultaneous use, subscription, patron-driven acquisition, and short-term loan

(aka pay-per-use). Depending on the model selected, a library may own the title in perpetuity (perpetual access) or use the content for a designated period of time (lease). Many vendors also require libraries to pay ongoing access fees. Fees may be waived if a negotiated purchase amount is spent with the vendor annually. However, some vendors, such as OverDrive, calculate annual fees based on existing collection use data. Libraries that choose not to pay the access fees could lose the content. Therefore, it is imperative that librarians carefully read the license agreement to determine if e-book content can be used when access fees are withheld.

Perpetual Access
Files sent to library

Subscription

Perpetual Access
Fees paid up front

Locally
Hosted

Public
Domain

Short
Term
Loan or
Rentals

Open
Access

Perpetual Access
No Fees

Perpetual Access
Ongoing Fees

Locally
Hosted
DRM

Figure 1.1
A comparison of e-book access levels for libraries.

Librarians, used to the security of print copies stored on local shelves, may be uncomfortable with many of these business models. For these librarians, selecting models that offer more control of the content are best. For example, e-books in the public domain and those provided via open access offer greater ongoing access to libraries than e-books purchased with a short-term loan plan. Some libraries negotiate with vendors to obtain e-book files and host them on local servers. This provides greater control, but requires technological expertise to develop the interface and load content. A vendor may also send content files directly to libraries for archival purposes while at the same time providing access through its interface. Good intentions aside, the files are of little use to libraries without the servers, interface, and technological expertise to deliver content to users. In figure 1.1, e-book access levels are put into perspective. Those which grant libraries more access control are on the left, with less access control on the right. Note the line rises as it moves right, signifying the increase in vendor control and the increased risk level for ongoing access to content. Thus e-books paid for through a short-term loan, on the far right, provide temporary access for one patron. The content is not owned and cannot be accessed once the negotiated term of use has expired.

Publishers, Aggregators, and Wholesalers

E-books can be purchased directly from publishers, through aggregators (vendors that distribute content from multiple publishers), or wholesalers (vendors that distribute print and electronic content from publishers and aggregators). Keeping the prime directive in mind, libraries should investigate the opportunities and challenges of purchasing e-books from all vendor types. When buying directly from publishers, libraries have more room for price negotiation since there is no intermediary. Publishers may be the only vendor for top-producing or backlist titles, providing a larger title list from which to choose content. Furthermore, publishers that offer book, journal, or multimedia content may provide access to all formats through a single interface. Because the interface concentrates on one publisher, unique features may be available to augment the content. Elsevier's SciVerse Hub is a great example. Users can download customized applications in the Hub to greatly enhance the search experience.

The greatest challenge of purchasing directly from publishers is that some publishers will not negotiate with libraries. This is particularly relevant in trade publishing. Some publishers, such as HarperCollins and Random House, will sell titles only through aggregators, and others, such as Simon and Schuster, will not sell content to libraries. Institutions that choose to work with publishers will find themselves negotiating business models and license agreements multiple times. This process will require significant library staff time, particularly for licensing and electronic records management. Moreover, each publisher supplies a unique interface for e-book content. Purchasing from ten publishers will require libraries to learn, teach, and troubleshoot ten different interfaces.

Some of these challenges can be alleviated by working with an aggregator. For instance, one license agreement and one business model can be negotiated with one aggregator, providing access to hundreds of publishers and thousands of titles on one interface. In addition, content from small niche publishers is indexed with content from large monograph publishers. Users have a better chance of discovering the niche content because it is centrally indexed and not hidden in a list of databases on the library website. Furthermore, two prominent e-book aggregators are owned

by companies with large discovery systems. Metadata and full text from thousands of e-books are included in the index of these tools, providing greater discovery for subscribing libraries.

Purchasing from aggregators does bring its share of challenges, however. Aggregators can sell only the titles that publishers make available to them. As was mentioned earlier, publishers may not offer backlist titles or top sellers to aggregators. Publishers may also embargo new content for a time, allowing them an exclusive opportunity to generate revenue from that content before having to share revenue with aggregators. There may not be as much room for price negotiation with aggregators since revenues are shared with publishers. Because aggregators represent hundreds of publishers, any change in business models, digital rights management (DRM), or license terms must be renegotiated with all publishers. This can be a time-consuming process and may delay the availability of new services.

As e-books emerged in libraries, traditional print wholesalers were not equipped to handle transactions for digital products because their systems were based on a print model. Innovations in recent years have opened the market for wholesalers to offer e-books. Purchasing through a wholesaler allows libraries more flexibility to purchase single or multiple e-book titles from numerous publishers or aggregators. Wholesalers are similar to aggregators because they negotiate the licenses and track billing and ordering (and shipping for print titles). But they differ from aggregators in that most do not have an e-book interface. Many wholesalers will sell access to e-books from multiple aggregators. For example, Yankee Book Peddler offers e-book content from ebrary, EBL, and eBooks on EBSCOhost. Wholesalers also offer approval plans for print or electronic books. Libraries can choose to have an "e-preferred" status in the approval plan. Publishers are excited that libraries can now buy digital content through wholesaler systems because their content is readily available in print or electronic formats. In a sense, old school sales methods have adapted to incorporate the sale of digital products, even with traditional library wholesalers.

Wholesalers are also similar to aggregators in the challenges they present with e-books. They can sell only content made available by publishers. Additionally, price negotiations are not as flexible because two parties are seeking revenues from the same sale.

Buying through Consortia

Libraries that are members of consortia will discover many benefits in operating as a group when purchasing e-books. First, libraries can increase their buying power and access larger collections by negotiating as a group. In other words, twenty libraries with $5,000 each will acquire far more content than a single library with a $5,000 budget. Second, the e-books can be shared across a consortium. This loosens the limitations of interlibrary loan, a primary library service that is excluded in most e-book license agreements. Third, libraries in the consortium have equal and consistent access to content. For example, a liberal arts college with fewer than 2,000 students can access the same content as a state university with 25,000 students. Finally, the licensing and technical work can be centralized, saving individual libraries staff time and money.

Despite all these advantages, there are some drawbacks to buying e-books through a consortium. Determining the content, vendors, business models, and level of access is difficult for one library. Within a consortium, however, this problem is exacerbated by the number of libraries involved. As a result, the unique needs of libraries may not be met by group purchases. For example, the science, math, and engineering content required at large universities may not be relevant at a liberal arts college or a two-year school offering technical degrees. Once the best mix of content is finalized, the consortium must negotiate with vendors to determine the price of the e-book collections. The purchasing history of member libraries comes into play in negotiations. Vendors determine how many consortium members have already purchased their titles, and from this they determine a multiplier. The multiplier is the number of times the list price will be paid to provide unlimited simultaneous access to the consortium members. For instance, a consortium with thirty-four members may negotiate a multiplier of six times the list price. A title with a $100 list price will cost the consortium $600. For trade titles in the public library setting, determining the number of copies to purchase is often a dilemma. How many copies of a best-seller are needed to serve eighty-seven libraries in New York with a combined population of eight million people? The larger the population, the greater the chance for long holds lists on popular titles. Some consortia say that negotiations among members take as much effort as negotiations with vendors. For a more detailed look at this process, see chapter 1 by Susan Hinken and Emily McElroy.

Evaluating Vendors

No e-book should be selected, no money exchanged, and no license signed without properly evaluating vendors. Libraries should again visit their prime directive and determine the criteria most important to their purchase decision. The sidebar "Questions to Consider When Evaluating Vendors" offers examples of questions to ask when evaluating vendors. Once criteria or questions are determined, the easiest way to conduct the evaluation is by tracking data through a matrix or

Wellesley College shared a working example on Google Docs. This spreadsheet offers criteria and responses from several e-book vendors. It is open for public editing. Finally, the Joint Information Systems Committee (JISC) in the United Kingdom maintains an academic database assessment tool for e-book vendors. Users select vendors, and comparison data is displayed. Links to all of these tools are provided in a *No Shelf Required* blog post.[2]

Equally as important, e-book publishers and aggregators have existing clients. Find them. Ask them questions. Solicit their advice.

Conclusion

Transitioning to e-book purchases in libraries offers many opportunities and challenges. These challenges, however, are not insurmountable. New business models continue to emerge. Changes and improvements are occurring in the industry every day. These changes will continue as publishers, libraries, and vendors experiment with the growing market of e-books. The most important thing that librarians must do in this changing environment is to articulate clear e-book purchasing goals. With these goals in mind, libraries need to find the content they desire, seek the best price possible, determine sustainable business models, analyze license agreements, and evaluate vendors to effectively purchase e-books. It's a complex labyrinth. But one day, it will be easy.

Notes

1. Josh Hadro, e-mail message to the author, Aug. 16, 2011; information to be published in October 2011 *Library Journal.* Full survey data available for purchase at www.thedigitalshift.com/research/ebook-penetration/.
2. Sue Polanka, "eBook Platform Evaluation Criteria," No Shelf Required (blog), June 10, 2009, www.libraries.wright.edu/noshelfrequired/2009/06/10/ebook-platform-evaluation-criteria.

spreadsheet. There are several good examples online that can be adapted by libraries. The University of California, Irvine's matrix was developed in 2010 to evaluate patron-driven models. Deb Lenares from

Consortial Purchasing of E-books

Orbis Cascade Alliance

Susan Hinken and Emily J. McElroy

Abstract

This chapter of The No Shelf Required Guide to E-book Purchasing *studies how a consortium of thirty-six academic libraries in Oregon took a collaborative, consortium-wide approach to e-book purchasing. The alliance reacted to the threat of individual library e-book purchases limiting resource sharing by creating several teams to investigate and develop a shared e-book program.*

The Orbis Cascade Alliance is a consortium of thirty-six academic libraries in Oregon and Washington. According to its mission statement,

> The mission of the Alliance is to strengthen member libraries through collaboration in order to support the work of our students, faculty, staff, and researchers. Alliance members join together to enhance our services, share our information resources and expertise, enrich and preserve our collections, and develop library staff to meet the challenges of a rapidly changing information environment.[1]

The organization grew out of the 2003 merger of two regional consortia, Orbis (Oregon) and Cascade (Washington), in order to strengthen services within member libraries and the region. Core elements of the Alliance's overall success were its strong history of collaboration and the collective strength of the print monographs collection accessible to users in all member libraries through patron-initiated borrowing. As the number of e-books purchased by member libraries increased, restricted access to these individual purchases could have decreased the value of the cumulative resources of the Alliance. Technological constraints and digital rights management issues rendered individual e-books purchased by a member library inaccessible to the entire membership. With the changes in the monograph marketplace, the Alliance decided to proceed with a demand-driven pilot project that guarantees shared e-book access for all member libraries. The Alliance's evaluation process and recommendations are one example of a consortial approach to sharing e-books.

The organization of the Alliance fostered collaboration on a number of levels. The Alliance Council and its executive council established committees to help manage the ongoing work of the organization with a representative from each library and led by seven member steering teams. Among the first committees created were Electronic Resources (ERC) and Collection Development and Management (CDMC). The successful evaluation and selection of a preferred monograph vendor by CDMC for collaborative collection development initiatives was foundational for the work to come. Following on that accomplishment, the Alliance created an e-book task force to evaluate a shared e-book program and to issue recommendations. Based on that team's recommendations, a second team investigated different vendors and options for a shared e-book program. Out of this structure, this environment, and these activities emerged the plan for the demand-driven initiative (see figure 2.1).

In 2005, the CDMC began exploring the designation of a single preferred consortium monographs

2003	Merger of two regional consortia, Orbis (Oregon) and Cascade (Washington) into Orbis Cascade Alliance.
2007	Alliance selects YBP as its preferred consortium monographs vendor.
April 2009	First brainstorming session on exploring a consortium e-books program.
May 2009	First e-book team created.
June 2009	Report submitted to Alliance Council.
November 2009	Council approves the report's recommendations.
December 2009	Council creates second e-book team.
January 2010	First meeting of second e-book team.
February 2010	Survey issued to Alliance libraries.
April 2010	RFI issued.
May 2010	Responses received.
July 2010	Revised proposals received.
August 2010	E-book team selects EBL and a demand-driven pilot project.
November 2010	Council approves recommendations.
December 2010	Third e-book team created.

Figure 2.1
Timeline of events leading to the Alliance's demand-driven e-book pilot project.

vendor to help facilitate cooperative collection development. After surveying member libraries, the Alliance Council, consisting of library deans and directors, charged the CDMC to undertake a number of projects aimed at improving cooperative collection development. Foremost was to move forward with identifying a preferred vendor.

During the vendor evaluation, YBP Library Services was asked about its interest in working with Alliance libraries to develop consortium-wide access to e-books selected at the individual title level, initiating, at the outset, the conversation about a partnership to provide access to e-books. In 2007, the Alliance announced its selection of YBP as its preferred book vendor. This partnership would continue through different investigations of a shared e-book program. In 2009, the executive council set a strategic agenda, with cooperative collection development named as a top priority. CDMC was encouraged to develop a collaborative opt-in pilot for a single-title e-book–purchasing plan. An early proposal involved interested libraries participating in a centrally funded program while exploring consortium workflows and designating selectors to build collections for the Alliance as a whole. Early discussions focused on examining the e-book landscape: vendors, proprietary interfaces, delivery methods, packages versus individual title selection, digital rights management, and discovery and access issues. At one meeting, a YBP representative said that the Alliance was in a unique position to devise an innovative model, which could include recent developments such as "patron on demand" selection. This representative encouraged participants to focus on a pragmatic pilot project but to also dream big, building on the Alliance's collaborative nature.

A variety of elements were seen as crucial to a shared model: individual selection, universal access among members, consortium-level licensing, provision of MARC records, seamless authentication, leveraging the relationship with YBP, and making use of the features of YBP's GOBI selection tool. Volunteers were solicited to continue the work, and a recommendation was drafted asking the Alliance Council to appoint a group to craft an Alliance-wide e-book proposal. The executive council appointed the EBook Task Force in spring 2009 and charged members to consider and provide recommendations to implement a consortial approach to purchasing eBooks, with the goal of sharing titles purchased by individual members. Examine the idea of centrally funding an eBook collection to which all Alliance members have access.[2]

The nine-member committee represented the Alliance geographically and by library type, including public and private, community and liberal arts colleges, and an ARL-sized institution. A member of the Alliance staff served as liaison to the team. The charge focused on defining what was crucial to the consortium. Although the relationship with YBP was seen as essential, the team did not include YBP as a full partner at this time. A literature search revealed that little had been written about collaborative collection building for e-books; the team was moving in a new area. The team decided to develop a new model to purchase e-books to combine power of Alliance libraries, work with YBP to build buy-in from e-book aggregators and publishers, and ensure that all titles should be shared among member libraries. Participation by member libraries was seen as strictly voluntary, leaving the team to struggle with how to meet its charge to develop a model to share among all members with an equitable funding model through a strictly opt-in program.

Concepts were beginning to take shape. Focusing merely on a short-term pilot would raise as many

questions as taking a longer-term view; any proposed model should serve as both a test and a longer-term foundation. Clarification regarding a number of issues was needed but not easily found. These issues included the role of a short-term pilot in a long-term vision to share resources; the role or absence of centralized funding; diverse needs of consortium members; and how possible partnerships, especially with YBP, could help us progress. Team members identified the following tasks: identify desirable elements of a consortium program; outline logistical issues, such as discovery and access, workflow, and funding; and develop a report timeline.

Working for short periods of time via the phone was a useful start, but, in hindsight, the lack of early face-to-face meetings hindered give-and-take that could have moved the work forward more rapidly. A more sustained, in-person meeting allowed team members the time to craft a first draft of what would become the team's report to the Alliance Council. The plan that emerged centered on a number of elements: an Alliance e-book program should focus collection development on the individual title level; selection should be prioritized to benefit the maximum number of member libraries; all members should participate and support the program through a fair model of funding; and the Alliance would partner with YBP to develop a program. This model was seen as the most viable first step because it built upon the strengths of current selector purchasing behaviors and an established relationship with a consortium vendor and would open access to all member libraries. The team recommended the work be continued by a second team with expertise in these areas.

YBP confirmed interest in working with the Alliance. In less than a month, a report was presented to the Alliance's executive council. The report focused on five recommendations:

1. Create a subsequent Task Force to leverage the existing relationship with YBP to create an entirely new eBook Consortial Purchasing Model that allows consortium-wide access to titles purchased by individual member libraries. the Task Force will focus on developing and implementing the new model, and on addressing the concomitant issues.
2. Alliance wide access to eBooks purchased through this program necessitates full participation, including financial support, by all Alliance member libraries.
3. Develop a funding model to support the program in an equitable manner.
4. Develop a model that prioritizes selection in a way that benefits the most members possible.
5. Evaluate the project to determine ongoing viability.[3]

The report noted, "It makes the most sense to play to our strengths."[4]

By leveraging relationships within the Alliance and with its preferred vendor, team members recommended the Alliance pursue the development of an entirely new e-book selection model. The report called for a new team consisting of members with expertise in the issues outlined above; proposed that the team work with other Alliance committees and task forces, particularly CDMC, to move the idea forward; and suggested that the combined FTE and acquisitions budgets of Alliance libraries could be used to sway the e-book market.

The Alliance's executive committee approved the following charge for a subsequent team:

- Leverage the existing relationship with YBP to create an entirely new eBook Consortial Purchasing Model that allows consortium-wide access to titles purchased by individual member libraries.
- Focus on developing and implementing the new model, and on addressing access, collection development, financial, and technical issues outlined in the eBook Task Force report of June 12, revised August 5, 2009. It is expected that the team will work with the Collaborative Technical Services Team charged with developing technical services operations that support collaborative cataloging/processing for eBook collections.
- Develop a funding model to support the program in an equitable manner.
- Develop a model that prioritizes selection in a way that benefits the most members possible.
- Evaluate the project to determine ongoing viability.

It is broadly understood that Alliance-wide access to eBooks purchased through this program will require full participation, including financial support, by all Alliance member libraries. We expect that the membership's shared commitment to collaborative strengthening of the Alliance collection will enable the team to craft a program all members can support.[5]

The Alliance's executive committee appointed six members to the e-book team, a chair, a staff member from the Alliance, and a liaison to the Alliance Council. Members of the team again represented the consortium geographically and by library type and size. YBP participated as a full partner, with two representatives on the team. Early discussions were devoted primarily to brainstorming potential purchase models and issues around a shared e-book program. A crucial issue for the e-book team was creating funding and selection models that would work for a diverse group of institutions. A critical piece of the team's success would depend on each library finding value in the model selected. The group brainstormed future purchase models and considered which model would earn enough support in the Alliance. However, the team was far from consensus on a final purchase model. The team thus decided to

survey member libraries to determine their interest in a variety of purchase models and start working with the aggregators that presented at the CDMC's fall meeting.

The survey included questions on the following topics:

- Do you have a preference for one of the three aggregators, EBL, ebrary or NetLibrary?
- What do you like about the aggregator platforms, and are there any reasons you do not want to order from one of the three vendors?
- Can you please rate the six purchase models described in the survey?
- How do you handle licensing electronic content and budgeting for e-books? Are they ordered through YBP? Are selected e-books core or supplementary material?

The team proposed the following models: pay-per-view; combination pay-per-view and demand-driven; individual title selection; purchase collections; subscription; or demand-driven. Results did not provide the team with a clear direction. Of the three e-book aggregators mentioned in the first question above, the nineteen respondents preferred EBL and ebrary, with a stronger preference for EBL's pricing model. Responses on the pricing models were mixed, with a subscription model receiving a slightly higher score than any other model. The pay-per-view, demand-driven, and hybrid models received a significant number of votes when combined. The purchase of collections received the lowest ranking of the proposed models.

The team discussed the survey results and decided to thoroughly analyze all e-book options that could work with YBP's GOBI system. To gather additional information, an informal Request for Information (RFI) process was employed, with inquiries sent to EBL, ebrary, NetLibrary, and a select group of publishers. In the case of the individual publishers, there was considerable concern that they were not likely to change current business models to suit the consortium's needs. However, the team felt it would be worthwhile to keep them involved and aware of what our consortium wanted.

Each respondent was asked to submit pricing information for four purchase models: purchase of collection or collections; individual title selection; demand-driven; and a demand-driven/pay-per-view hybrid, along with information about platform features, archiving capabilities, and possibilities for interlibrary loan. Each was to assume that all thirty-six Alliance libraries would participate in a shared e-book program and all would use YBP's GOBI system. Although the team was open to the publishers' responses, the team believed the aggregators could provide more pricing and selection possibilities.

The team received numerous questions from recipients of the RFI. A significant amount of time was spent explaining the models the consortium was considering and stressing that this proposal included all thirty-six members of the Alliance. At least one publisher, concerned that pricing and discounts for individual customers might be revealed, asked whether the purchasing history of member libraries was expected as part of the response. Due to the additional questions, the deadline was extended a week, at which point responses from all three aggregators and five of the six publishers were received.

In reviewing the responses, three themes emerged. First, all of the respondents agreed to work with YBP. Initially this was perceived as an obstacle for the publishers, but that was dismissed as soon as responses were reviewed and follow-up conversations with the vendors were held. Second, publishers' responses acknowledged that all were not very far along in their development of funding or access models proposed by the team. The majority of publisher responses focused on purchasing large collections with standard pricing models. A few publishers indicated that they were investigating demand-driven models, but that option would not be available for six to twelve months. Finally, and most importantly, every response offered pricing that was out of reach for the consortium. One team member said the pricing left her speechless. The majority of proposals offered pricing based on a multiplier format. A multiplier formula took the cost of an individual e-book and priced it anywhere from five to twenty times the original price.

At the same time the team sent out the RFI and reviewed the responses, the CDMC Steering Team began analyzing the number of print copies purchased in the consortium to recommend a threshold or maximum number of copies purchased within the Alliance. The CDMC Steering Team reviewed Alliance-wide YBP monograph purchasing data, which showed that four or fewer copies were purchased for 91 percent of new titles; only 9 percent of new purchases exceeded four copies.[6] Using this information, the team started wondering how it could demonstrate to the RFI respondents why their multiplier formulas would be difficult to sell within the consortium based on the YBP purchasing data.

At the end of the deliberations, the team decided it could not recommend any of the current proposals to the Alliance's Leadership and asked all of the respondents to reconsider their proposals. The aggregators and publishers were told that the team was leaning towards either a demand-driven model or individual selection of e-books to be shared in the consortium. The team also emphatically said that any multiplier greater than four was problematic and referred to the data analysis conducted by the CDMC Steering Team. The team gave everyone a month to submit revised proposals.

The three aggregators and three publishers sent revised proposals. The six vendors reduced their pricing

for the consortium. The first round of deliberations narrowed the choice of vendors to ebrary and EBL. There was consensus that the publisher proposals were too expensive, would limit the pilot project to content from only one publisher, and did not met the team's charge. At this point, the remaining vendors were notified that their proposals were no longer under consideration.

When the team met to finalize its recommendations to the Alliance Council, it voted and agreed to move forward with EBL as the vendor of choice with its demand-driven purchase model. EBL demonstrated a real understanding of what we wanted to accomplish and was on task at every turn. Throughout the process, EBL provided excellent customer service, demonstrated a clear understanding of Alliance needs and goals, was highly responsive to requests, and met deadlines set by the committee. Most importantly, the team found the short-term loan model the most attractive option for a pilot project. The team made the following recommendations to the Alliance Council, which approved the recommendations in November:

- Use an aggregator rather than purchasing a publisher package with EBL as the aggregator of choice.
- Implement a demand-driven selection model.
- Create a preliminary funding model for the initial six months based upon member library FTE.
- Implementation led by the CDMC Steering Team with assistance from the Collaborative Technical Services Team.
- Evaluation during the pilot project and after six months.[7]

The entire RFI and evaluation process was time-consuming. Two teams spent a significant amount of time researching the marketplace, brainstorming ideas with member libraries, and talking to vendors about the needs of the Alliance. It especially took time to explain the Alliance's desired program to vendors, as many indicated that they had never encountered a proposal for full participation of thirty-six libraries with limited funds for the project.

Good communication was essential to making progress and maintaining momentum. The two e-book teams tried a variety of methods to work on their reports and recommendations. The second team learned an important lesson from the first; it was challenging to work certain issues over the phone. In addition to one conference call and a webinar, the second team met in person on a regular basis. While this created some expenses, the team was able to work far more efficiently. Regular reports were submitted to the Alliance Council and the executive committee. Discussions were held at annual meetings, with all of the CDMC representatives to answer questions and share findings. Finally, minutes of every meeting were posted on the Alliance website, along with regular e-mail updates to various Alliance e-mail lists.

Because of the diverse range of institutions in the Alliance, the second team struggled to find a purchase model that would work financially for every library. The team knew that the initial funds for a pilot project would likely be limited due to budget pressures facing many of the libraries. Even though the pilot project received strong support from the Alliance Council, the team knew it had to start small, which was difficult for publishers to understand. Both teams assumed that publishers saw a large number of institutions or a large FTE and perceived that substantial funds were available. In reality, most of the institutions are small, and the larger institutions were facing severe budget cuts. A funding model was based on one used by the electronic resources program for shared electronic resources. In the future, the e-book implementation team will review the funding model for ongoing support.

Collaboration at several levels also helped move the teams forward. Alliance standing committees, along with the task force and team, worked together to gather background information, define issues, and develop interest. Essential to the work of the second team was the full partnership of YBP and its staff, who worked alongside Alliance libraries to develop the proposal for the demand-driven pilot that was slated for launch later in spring 2011.

Both teams worked in a rapidly changing marketplace, and team members had to be flexible and open-minded about developing the best model. EBSCO purchased NetLibrary during the deliberations, and ProQuest purchased ebrary shortly after the Alliance Council approved the recommendations of the second e-book team. The advice from an YBP representative—to ask for development of needed products and outcomes rather than accept the current situation— was invaluable. In addition, the discussion of demand-driven acquisitions exploded in the library community between January and June. The more case studies team members read, the more they started to wonder if this purchase model would become the team's preferred model. When the team began to investigate a demand-driven model for the consortium, members realized that access issues could take on greater importance than actual selection of content and questioned whether the existing team was the best fit for addressing access issue. CTST would work on discovery and access issues. The responsibility of leading the project through developing a long-range funding model, providing ongoing support through assessment and collection development, was handed to CDMC.

In December 2010 the Demand Driven Acquisitions Pilot Implementation Team (DDAPIT) was appointed by the executive council to act upon the recommendations of the second e-book team. CDMC assigned members

to the team. DDAPIT is moving forward, mindful of the lessons learned by the earlier teams. It continues to draw upon collaborative relationships both within and outside the Alliance. Members are from a cross-section of Alliance libraries and are working with other Alliance teams, most notably the CTST. Key contacts in each member library have been identified and consulted to move the pilot forward. Training and evaluation plans utilizing Web-based resources and face-to-face encounters are under development. EBL has joined YBP as a full participant in the planning process. The DDAPIT is also looking to work with OCLC to address access and discovery issues.

In conclusion, the Alliance reacted to the threat of how individual library e-book purchases would limit resource sharing by creating several teams to investigate and develop a shared e-book program. Over a period of sixteen months, two teams spent a significant time identifying the issues involved in a shared e-book program, sending out an RFI, evaluating vendors, and selecting a model and vendor that would work for the Alliance. Working in a quickly changing marketplace, the e-book team learned that it was important to identify the project's goals, allow enough time for deliberation, and not be disappointed with the options presented by publishers and vendors. As the DDAPIT begins its work, the team looks forward to the collaboration with the Alliance member libraries and its vendor partners.

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Academic Library Dilemmas in Purchasing Content for E-readers

Debit Cards, Sales Tax, and Workflow Issues

Eleanor I. Cook

Abstract

This chapter of The No Shelf Required Guide to E-book Purchasing *examines the challenges that of purchasing e-books for academic libraries from online vendors and suggests solutions and workaround for these common problems.*

Introduction

This chapter addresses specific problems within the larger picture of lending e-reader devices to library patrons—problems related to purchasing workflows and how to handle sales tax when acquiring content for e-readers. What happens when a tax-exempt library acquisitions department (at a state-funded or other nonprofit entity) encounters sales tax charges when purchasing e-book content? What are possible work-arounds for the immediate future, and what are possible long-term solutions? What other related factors should be addressed when developing acquisition workflows for e-book reader content? A serious concern for all aspects of processing e-readers in the future is scalability. Librarians have faced similar hurdles of a practical nature when developing electronic journal processing and have risen to the challenge to solve those through collaboration, ingenuity, and entrepreneurship. Can these relatively minor problems be solved using similar efforts?

Setting the Stage: East Carolina University's E-book Reader Pilot Project

East Carolina University (ECU) is part of the University of North Carolina system of sixteen schools and universities. ECU is the third largest university in the system, with over 27,000 students and over 2,000 staff and faculty.[1] ECU is considered a Doctoral/Research university in the Carnegie scheme. There is a health sciences complex, which includes a medical school and a newly established dental school. Libraries include J. Y. Joyner Library and a music library on the main campus and Laupus Health Sciences Library on the west campus.

In the spring of 2010, Joyner Library began a year-long pilot project to provide library users exposure to handheld e-book readers. Joyner Library had purchased a Sony Reader and an Amazon Kindle prior to the pilot, and those devices were preliminarily tested in-house by selected staff. Starting in May 2010, one Kindle 2, two Barnes and Noble Nooks, and two iPads were purchased. Over the summer of 2010, these devices were used by a wider number of staff to gain familiarity with them, get a chance to make comparisons, and provide a basis from which to plan for a public program to lend them to library users. Calls were made to neighboring academic libraries (Duke University and North Carolina State University) that already had similar programs underway so that reinventing the wheel could be avoided. Additional devices of each brand were purchased over the summer. In November 2010, Joyner Library began circulating six

Kindles and six Nooks. Starting January 2011, ten iPads began circulating. In addition, four Nook Colors and thirteen iPad 2s were purchased in the spring of 2011.

The project required quite a bit of collaboration between several departments within the library. Library Technology (LT) personnel were responsible for purchasing the devices, registering them in the library's equipment inventory, maintaining warranties, and developing procedures for security and technical troubleshooting. Personnel within Collection Development and Technical Services (CD&TS) took responsibility for deciding what content to add to the e-readers and worked on procedures for acquiring this content, as well as cataloging the readers and content. Circulation staff had responsibility for the actual lending of the e-readers, collecting assessment surveys from patrons, and communicating with both LT and CD&TS as needed when public interface problems arose.

Summary of Purchasing Procedures

As a state institution, ECU is governed by a number of state regulations. Joyner Library staff in several departments use state-issued Visa Procards in order to take advantage of the efficiencies of online purchasing. The use of debit cards for academic library acquisitions is a standard practice, and many states allow their use. These Visa debit cards are tied to State of North Carolina Bank of America accounts. Staff who are issued these cards have specific types of suppliers from which they are allowed to purchase goods, depending on the type of merchandise they are responsible for procuring. The library's two acquisitions units (Monographs, Electronic and Continuing Resources) include staff who use Procards routinely to acquire books, serial subscriptions, and other library materials for the library's collections.

Studies done within the financial industry conclude that it costs an average of $89 to cut a check in order to pay for a single purchase to a single vendor.[2] Because of the high cost of traditional accounts payable processing, everyone at ECU responsible for procurement is urged to process payments through Procards whenever possible.

While it was a natural assumption that acquisition department Procards would be used to obtain e-book reader content, it was not until the process was actually tested that more careful thought went into what this actually would mean in terms of workflow. After all, in spite of the fact that Procards save the university and the state money by reducing the need to process paper invoices and cut paper checks, there are unintended consequences to using Procards.

One of the hidden costs of using Procards to make individual e-book purchases through the supplier website is that when staff reconcile their Procard statements at the end of the month, the reconciliation for e-book purchases can add significant extra time, depending on the amount of activity in a given billing period. For

e-book purchases, each *separate* transaction has to be verified and signed off on within a Bank of America account interface. Each unique transaction can require between ten and twenty mouse clicks to complete the signoff process. Because e-content cannot be ordered as multiple line items on a single invoice, each individual transaction has to be reconciled separately. Furthermore, every e-book has to be entered and paid as a separate invoice in the library's integrated library system acquisitions module. This situation results in three different systems in which the staff member must verify essentially the same data. In addition, if sales tax is refunded, the Procard monthly statement may not be able to be fully reconciled within the billing period, which means the individual responsible has to keep track of those refunds for one or more billing periods, which can become very confusing.

When starting to experiment with the purchase of e-book device content, several other payment options were considered. For example:

- **Would it be possible to purchase a gift card that would bypass problematic issues with suppliers' website designs?** No. The university does not allow us to purchase gift cards, except under very limited circumstances and not for purchases of this nature.
- **Could we ask the vendor to send us a traditional paper invoice for the content?** No. Both Amazon and Barnes and Noble sell e-book content only via their websites.

The representative from the local Barnes and Noble store offered to load content on Nooks for Joyner Library, but once it was determined what the Barnes and Noble website required for the purchase process, it quickly became apparent that was not going to be possible for him to accomplish.

Herein lies the problem—the purchase process includes the transmission of individual digital files, which is triggered by the online sales process. This process was developed for the consumer market to be fast and efficient on a one-by-one basis. However, it does not result in efficiencies for libraries, which expect to be able to buy multiple books at the same time. Most suppliers expect, and therefore design their systems for, buyers who purchase content one book at a time. Therefore, it is not currently possible (by design) to put more than one e-book into a shopping cart. To understand why this doesn't work well for libraries, imagine buying one paper clip at a time or going to the grocery store and buying each item in your shopping cart separately. While books are unique items and cannot be managed like paper clips, it is (as with similar merchandise coming from the same supplier) far more efficient to batch-order books. Purveyors of e-books should recognize this issue and fix it—after all, if customers of any type (not just libraries) wish to buy multiple e-books at one sitting, shouldn't they be able to do so?

Most libraries experimenting with e-book reading devices have been willing to put up with these types of inefficiencies because they know that eventually the companies providing the content will work out these details. However, these companies may not put much effort into overcoming these hurdles unless customers point them out and do so loudly and regularly. That is because these suppliers are (logically) more interested in the general consumer market, and libraries are not a significant percentage of their business base, despite the evidence that library circulations actually help sales.[3]

There is even doubt in some people's minds as to whether libraries are legally able to circulate e-book devices based on the licenses that come with those devices when they are sold. This chapter won't try to address that issue, and at this writing, no seller of e-book readers has asked libraries to stop making the devices available to their users.

Enter Sales Tax: The Elephant in the Room

The collection of sales tax has been a hot issue for individual states ever since online interstate sales became possible. Historically, mail-order companies such as Sears successfully convinced the U. S. Congress years ago that out-of-state sales should not have sales tax collected since they were not physically present in every state. Because the collection of sales tax has been tied to "brick and mortar" for so long, it is difficult for the patchwork of state regulatory agencies to wrap their collective minds around the fact that in the Internet age, it doesn't matter where you are; this is true not only nationally, but globally. In other parts of the world, particularly Europe and the UK, libraries purchasing e-books may be faced with a VAT charge of 17 percent or more.[4] Stateside, the collection of sales tax has become even more critical than ever as local economic conditions are vulnerable to the changing overall retail market. According to Mark Scanlan, "Bruce and Fox (2004) estimated that lost state and local tax revenue from e-commerce would reach between $21.5 and $33.7 billion in 2008."[5] It is not the intent of this chapter to weigh whether or not interstate online consumer sales should be subject to sales tax. Regardless of how individual states and the federal government ultimately resolve the problem, the fact remains that tax-exempt entities exist in all states, and these purchasers should have a mechanism for bypassing sales tax, period. Unfortunately, no matter how the collection of sales tax plays out in the bigger scheme of things, the confusion continues to bedevil nonprofits that are tax-exempt. Online retailers find themselves trying to manage an increasingly complex set of conditions under which they are supposed to either collect tax, not collect it, or refund it. Let's look at the two models Joyner Library has been dealing with in relation to the purchase of e-book content.

Two E-reader Purchasing Models

Barnes and Noble Nook

At the Barnes and Noble website, when purchasing print materials (and essentially anything other than an e-book), the customer interacts with a page where shipping information is entered; on that same page, there is a place to check off whether or not the purchase is tax-exempt. Returning customers who have already established their tax-exempt status with Barnes and Noble simply check this off, and no other effort is required.

However, the e-book purchase flow is completely different. One can only assume that since e-books do not need to be physically "shipped," it made sense to the designers of the workflow to skip that whole step, but in the process, they also eliminated the opportunity to check off the tax-exempt status. Therefore, when institutional customers buy e-books through the Barnes and Noble site, it is necessary to apply for tax refunds *separately, on every single item.* There is *one individual* employee at Barnes and Noble at this writing who manages *all* the tax refund requests. Right now the traffic for tax refund requests may be relatively light, but it is growing steadily, and the process will only get more cumbersome for everyone as time goes on. If Barnes and Noble were able to make a design adjustment to its website and put the tax-exempt checkbox back in for the e-book purchase stream, it would eliminate much extra work for all involved. This adjustment might take only a few lines of computer code—although it is hard to know for sure, since repeated requests for communication with Barnes and Noble about this question have gone unanswered.

Amazon Kindle

The situation at Amazon is a bit different. This is because Amazon has not historically charged tax to customers since its business model is not tied to brick and mortar stores. However, a number of large publishers have started insisting that tax be charged, depending on states where they have a physical presence or "nexus." Trying to figure out when tax will be charged and when it won't is often a guessing game from the customer's end. The best clue that can be found on Amazon's website is the statement "This price was set by the publisher." (An example of this can be found on Amazon's website under Pamela Duncan's book, *The Big Beautiful,* for Kindle). This shift in business model is referred to in the book publishing trade as the "agency model."[6]

If this statement is on the screen under the title entry, then tax will be charged. Relying on Amazon's list of publishers that charge tax does not work well because the list changes constantly and is not updated immediately. For more information about how Amazon

handles sales tax, look at Amazon's Help information for tax-exempt customers.

Amazon's ability to keep track of all this fails in the realm of customer service. Institutional customers that are tax-exempt discover that receiving tax refunds from Amazon on a case-by-case basis is very difficult, if not impossible. Information received from customer service representatives varies greatly. In desperation, some university libraries conducting pilot projects with e-book readers have simply refused to buy any books from Amazon if tax is charged. Another strategy used by some institutions is to file a compiled intermittent refund request through their State Attorney General or local financial office, which is far more efficient. Originally, the ECU campus Procard office insisted that Joyner Library staff pursue every single tax refund individually. When it became apparent that requests were being ignored or flat out denied, Joyner Library was allowed to stop pursuing refunds in this fashion in the hopes that the university could succeed in collecting the refunds through a centralized method.

Solutions Summarized and Conclusion

In summary, library customers would benefit greatly if sellers of e-book content would provide the following enhancements:

- Provide the ability to purchase more than one unit at a time in a shopping cart.
- Provide the ability to self-select out of having to pay sales tax (after having provided proof of tax-exempt status). If this is not possible, at least allow customers the ability to file for tax refunds on an aggregated basis.
- Establish a customer service point specifically for institutional customers.

The purchase process for e-book content for institutional customers is still evolving. Suppliers such as Amazon and Barnes and Noble need to respond to the library market's needs. Academic institutions face continuing pressure to work more efficiently, and efforts to do so are thwarted when key business partners cannot or will not be responsive.

It is hoped that by the time this chapter is published, some if not all these problems will have been rectified. However, my having been in contact with both these companies on a regular basis since the fall of 2010 and not having seen a solution for any of the problems yet suggests that the wheels of progress in this realm will continue to turn slowly. Librarians are ever hopeful that progress towards solutions will be made, and that the *No Shelf Required* blog and other communication channels will be able to publicize these improvements as they are realized. E-books are here to stay, and libraries will continue to want to provide them to their patrons, so it behooves us to collaborate with the suppliers as much as possible.

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Open Access E-books

E. S. Hellman

Abstract

As e-books emerge into the public consciousness, "open access" (a concept already familiar to scholarly publishers and academic libraries), will play an increasing role for all sorts of publishers and libraries. This chapter of The No Shelf Required Guide to E-book Purchasing *discusses the meaning of open access in the context of e-books, the ways open access e-books can be supported, and the roles that open access e-books will play in libraries and in our society.*

The Open Access "Movement"

Authors write and publish because they want to be read. Many authors also want to earn a living from their writing, but for some, income from publishing is not an important consideration. Some authors, particularly academics, publish because of the status, prestige, and professional advancement that accrue to authors of influential or groundbreaking works of scholarship. Academic publishers have historically taken advantage of these motivations to create journals and monographs consisting largely of works for which they pay minimal royalties, or more commonly, no royalties at all. In return, authors' works receive professional review, editing, and formatting. Works that are accepted get placement in widely circulated journals and monograph catalogs.

In the late 1970s and 1980s, academic libraries became acutely aware that an expansion of research activity had resulted in the growth of both the numbers of journals and the numbers of articles published in the journals. The combination of increased subscription prices and the number of journals needed to support research resulted in a so-called "serials crisis." Libraries were forced to cancel subscriptions.

The reduction in circulation forced publishers to raise subscription prices further to make ends meet, and the resulting cycle of cancellations and price increases led to a fear that the whole system would collapse. If few libraries could afford subscriptions, fewer scholars would be able to read the articles, diminishing the attractiveness of publishing.

The advent of Web-based publications in the 1990s led many to believe that the solution to the serials crisis would be a shift of the scholarly publishing industry to so-called "open access" business models. Open access publications are those that can be read at no cost to the reader or the reader's institution. The traditional model of publishing supported by subscription fees was thus styled "toll-access" publishing. It was hoped that the cost reductions from the combination of digital distribution and automation would stop the cycle of rising expenditures.

Perhaps the most successful implementation of open access has been arXiv, a database of digital pre-prints and reprints ("e-prints") originally focusing on the particle physics community. Started by Paul Ginsparg, a physicist at Los Alamos National Labs, arXiv is now located at Cornell University and hosts more than 700,000 scientific articles in e-print form.[1] Authors deposit articles they've written into the repository, and other scholars are free to search, browse, and download articles without needing any sort of subscription.

> *arXiv.org e-print archive*
> http://arxiv.org

One reason for the success of open access archives has been that they have grown up in a parallel

coexistence with the traditional academic journals, which have mostly shifted onto the Web. In the so-called "green" model for open access, many journals allow versions of accepted articles to be made available via repositories. Authors can thus submit their articles to high-prestige subscription-supported journals without worrying about colleagues' access because scholars who need to read their works can always access versions from free sources.

Meanwhile, the shift of traditional journals onto the Web has allowed the rise of secondary distribution channels. Most academic libraries today enjoy access to a much broader range of journals compared to twenty years ago because of the availability of article databases that aggregate content from large numbers of journals.

The past decade has also seen the rise of "gold" open access journals. These journals leverage low-cost Internet distribution to allow articles to be read universally with no subscription charges. These journals cover expenses by charging publication fees to the submitting author (BioMed Central, PLoS) or through private or public funding (SciELO).[2] They build prestige and avoid becoming vanity presses by establishing rigorous review processes.

BioMed Central
www.biomedcentral.com

PLoS
www.plos.org

SciELO
www.scielo.org

What about E-books?

The success of open access journals and articles has for the most part not yet been duplicated in the world of books. There are a number of possible reasons for this. The first is the matter of cost. Publication fees for open access journal articles are in the range of $600 to $3,000;[3] editing and production expenses for a book published by a university press are estimated to be a lot more. While a book that's mostly text might cost as little as $10,000 to produce professionally, a book with figures, photos, equations, and cover art will cost a lot more to edit, design, and produce.[4] Author-funded publication fees this large are unlikely to be practical, even with significant institutional subsidies.

Another factor holding back open access books may be a preference for print books over e-books. Books are much longer than journal articles, and many readers are uncomfortable reading a book on a computer screen. It's only in the past two years that

dedicated reader devices such as the Kindle and tablet computers such as the iPad have improved the e-book experience enough to gain wide consumer acceptance.

The business environment for book publishers is another possible factor. The university publisher loses money on much of its catalog but compensates by having one or two titles that cross over to be successful outside the academic environment. Amazon.com has bolstered this pattern by providing wide distribution for small-print-run titles that would never have been available in bookstores before. In contrast, journal articles almost never cross over into nonprofessional markets.

Nonetheless, there have been a few notable attempts to publish open access e-books. I'll cover these later in a section on business models for open access e-books, but it wouldn't be right to omit mention of Project Gutenberg (PG) at this point. PG produced not only the first open access e-books, it produced the first e-books, period. Started by Michael Hart in 1971, PG aimed to take the text of public domain works and make them available via the Internet.[5] To date, PG has put over 36,000 works into its collection, entirely through the efforts of volunteers.[6]

Project Gutenberg
www.gutenberg.org

Distribution of open access e-books can be thought of as an enterprise separate from their production since the costs involved are of a different nature. The scaling laws of Internet distribution favor centralization, and as a result, organizations such as the Internet Archive are able to distribute appropriately licensed e-books on a vast scale; businesses such as Google are able to search and organize them; libraries, blogs, and portal sites are able to select and "curate" them. To some extent, this type of distribution depends on the self-contained nature of the book; it shouldn't require the context of a specific website to retain and accumulate value.

Open access for e-books provides many benefits in addition to allowing people to read for free. Access to the full text of books makes for more complete indexing. The utility of Google Books and the effort Google has put into digitizing books from libraries, even when it is unable to make the books available because of copyright, are testament to the value of indexing the full text. Long-term preservation of our cultural heritage is another public benefit of open access to e-books.

What Does Open Access Mean for E-books?

There are varying definitions for the term *open access,* even for journal articles. For the moment, we'll use

it as a lower-case term broadly to mean any arrangement that allows people to read a book without paying someone for the privilege. At the end of the section, we'll capitalize the term to designate e-books that are freely available in both monetary and practical terms. Although many e-books are available cost-free in violation of copyright laws, they will be excluded from this discussion.

Public Domain

The most important category of open access for books is work that has entered the public domain. In the United States, all works published before 1923 have entered the public domain. Works published in the United States from 1923 to 1963 entered the public domain twenty-eight years after publication unless the copyright registration was renewed. Public domain status depends on national law, and a work may be in the public domain in some countries but not in others. The rules of what is in and out of copyright can be confusing and sometimes almost impossible to determine correctly.

In addition to public domain books that are made available by Project Gutenberg, works digitized by other efforts may be available on an open access basis. It's not true, however, that any digitized public domain book is also open access. That's because the digitizer can use license agreements to restrict access to the works. For example, JSTOR has many digitized public domain works included in its subscription products, but the terms of the subscription prevent republication of its scans. Similarly, Google puts restrictions on the public domain books from partner libraries that it has scanned, digitized, and included in Google Books. While they're available at no cost, there are limits on what you can do with them.

> *JSTOR*
> www.jstor.org

The public domain is more than just cost-free; it belongs to everyone. We are free to do with these works what we like. Public domain works can be copied, remixed, altered, or extended. A book publisher can take a public domain text, print up bound volumes, and sell them in bookstores. A movie producer can create a cinematic dramatization of the public domain work; derivative works such as the movie acquire copyrights of their own and are not in the public domain.

Free Copyrighted Content

Laypeople often confuse public domain for "free" (meaning free of cost), and vice versa. Most content available at no cost on the Web is copyrighted, which restricts what people can do with it. Often, the content is made available using an advertising model, trading the opportunity to read and interact with content for the user's attention to ads or links to e-commerce websites. But website users are usually not free to republish content or to e-mail the content to friends beyond the bounds of fair use. They're bound by whatever terms and condition the website chooses to employ; if no explicit terms and conditions are stated, they still can't copy the website's content for other uses.

Even professional publishers are sometimes confused by copyright on the Web. In 2010, the editor of *Cooks Source,* a Massachusetts magazine, got into hot water for republishing a blogger's work without permission. The editor's response to the blogger, on being asked for restitution, made the rounds of the Internet and is striking for the bellicose ignorance it betrays: "But honestly Monica, the web is considered 'public domain' and you should be happy we just didn't 'lift' your whole article and put someone else's name on it!"[7]

Many "free" e-books are available on a similar basis as free websites. They may include advertising or advocacy. Promotional literature and instruction manuals often fall into this category. Many publishers make free e-books available for limited periods of time as a means of marketing them; that doesn't make them free to redistribute, though it happens.

Creative Commons Licensing

Creative Commons (CC) licensing arose to expand the range of creative works available for others to build upon legally and to share. Many authors really want their works to be redistributed for free in venues such as *Cooks Source,* but they want to make sure attribution is given and often want to prevent their work from being altered or chopped into pieces. Others want to make sure that if their work is altered or somehow improved, the altered or improved version will also be available for free. Sometimes, authors are happy to have their works reused noncommercially but want to keep their works from being commercially exploited without permission. CC licenses give authors the tools they need to accomplish these goals.[8]

> *Creative Commons*
> http://creativecommons.org

The different licenses available from CC are designated with a special mark, with added code letters that indicate the features invoked by the rights holder. For example, the Attribution-ShareAlike license is denoted by the letters *CC BY-SA* and the mark shown in figure 4.1. This license requires attribution as to the author of the work, and the ShareAlike features bind the
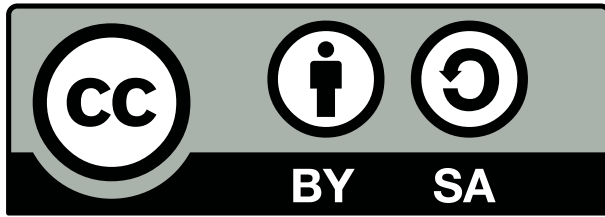
Figure 4.1
The Creative Commons mark indicating an Attribution-ShareAlike license.

licensee to share any modifications or improvements.

It's important to note that in the CC licenses, the owner of the copyright does not give up ownership of the work. Owner may relicense their work under any terms they desire and can still sue people who infringe on the copyrights. The owner licenses the work to the user, who accepts the license as a condition of use. The user can in turn distribute the work along with a copy of the license to other users, who accept the terms of the same license from the copyright owner as a condition of their use.

CC licensing is now widely used for cost-free e-books distributed on the Web. Perhaps the best known e-books using CC are the works of Cory Doctorow, a blogger, science fiction author, and advocate for copyright law reform. It's also used for *Wikipedia* contributions and is supported by Flickr for use in photos.

Copyleft

While CC licenses are the most frequently used for e-books, other licenses can be used to allow for the cost-free reading of books. Noteworthy among these is the GNU Free Documentation License (GFDL), created by the Free Software Foundation to allow software documentation, manuals, and other text to be distributed with strong "copyleft" provisions compatible with the General Public License software they're meant to accompany. The GFDL can easily be applied to e-books; many e-books have been released with this license and with other Free Software Foundation licenses.

Free Software Foundation
www.fsf.org

The idea of copyleft is that licenses can be used to prevent someone from taking from the commons without also giving back. For example, when a book publisher adds commentary and illustrations to the text of a Shakespeare play, the resulting book is covered under copyright, and permission must be given for redistribution even though the underlying work is in the public domain. This would not be allowed by a copyleft license, which requires that any derivative works be made available under the same license. The CC ShareAlike licenses have weak copyleft; the GFDL is stronger, and even forbids the use of digital rights management (DRM). For example, it would not be legal to distribute without permission from the author a GFDL e-book to a Kindle e-reading device in the encrypted format usually used by Amazon.

Open Access versus open access

Consider the book *How Wikipedia Works* by Phoebe Ayers, Charles Matthews, and Ben Yates. Is it an open access e-book? What about *What Matters Now* by Seth Godin? Or how about the author's PhD dissertation, posted on his personal website? If you go by the licensing, you might say the first is "free," the second might be, and the third isn't. *How Wikipedia Works* comes with a GFDL license; it's clear what you can do with it. *What Matters Now* doesn't come with any license except for the statement "feel free to share this"; it's still covered by copyright law. The third has the copyright statement "All rights reserved" and is registered with the copyright office.

The practicalities are quite different. If you search for *How Wikipedia Works* on Google, you'll have to dig quite a bit to get a free e-book. Amazon will sell you the Kindle version for $14.37.[9] You can buy it in three different formats from O'Reilly or from No Starch Press, the publisher, for $23.95.[10] Google Books has the book through its publisher program; it appears to fully available, and Google doesn't try to sell it to you.[11] You can find the e-book in a library through WorldCat, but the libraries that hold it restrict access to their own users. *Wikipedia* itself has a page for it with links to a PDF and the Google Books version. [12] *What Matters Now* and the author's dissertation can both be found on both Google and WorldCat, but the listing for *What Matters Now* in WorldCat covers only a print version apparently published through Lulu.com.[13] The author's dissertation is not only accessible through WorldCat but has been made available as a PDF download by the Stanford University Library.

The lesson of these examples is that for an e-book to be both cost-free and effectively available, there should be an intent by the publisher to make the e-book openly available, expressed with an appropriate license, and there must be effective distribution. This combination is what makes an e-book Open Access with capital *O* and *A*.

Business Models for Creation of Open Access E-books

Any model for e-book publishing must include a business model for recouping the expenses of production:

reviewing, editing, formatting, design, etc. In this section, I'll review methods that can be used to support Open Access e-book publishing.

In 2009 Cory Doctorow put together a collection of short stories called *With a Little Help* and documented the process of publishing it in a series of columns in *Publishers Weekly*.[14] He used a variety of business models to support the project, as detailed below, and the e-book version was released under a CC license.

DIY Publishing Models

One way to meet the costs of e-book production is to keep those costs close to zero. Free blogging sites have made it simple for authors to produce blogs and other sorts of websites; additional tools are available to add keywords, links, and images. Other tools can convert a blog or similar website to the EPUB e-book format; EPUB export is available in Apple's Pages word processor, and it's likely that other programs will soon follow suit.

Given these tools, authors can produce e-books on their own, with no other expense than the value of their time. For *With a Little Help,* Doctorow did most of the production himself; as the title suggests, he got friends to help out with things such as cover and book design.

In the do-it-yourself, or DIY, model, there are essentially no expenses to recoup. If the author wants to earn something, additional money needs to be spent on an ISBN and a bit more to get metadata into a feed for Amazon. But if income is not the object, the e-book can simply be posted on a website and made available to the world. A CC license allows the e-books to be distributed in a wide variety of channels.

In fact, with the consent of the editor, this chapter will be released as a DIY Open Access e-book in EPUB format, with a CC BY-ND license. The author hopes to profit primarily from the experience of doing so.

Freemium Models

Freemium refers to the business model, common on websites, of offering one level of service for free, and then, when the user is solidly hooked on the use of the service, offering a premium level of service for a fee. The difficulty of this model is to have a service that's attractive enough at the free level to drive premium conversions, and at the same time limited enough at the free level that upgrades deliver significant value.

In the e-book space, the traditional premium service is typically either the print version or an updated or otherwise enhanced digital edition. O'Reilly has used this model to great effect, by allowing authors to make free PDF versions available on websites while O'Reilly sells print versions through traditional channels.

In Doctorow's project, he offered print-on-demand versions through Lulu.com for $18 each, along with 250 "super-limited hardcovers" for $275 each: These were hand-bound on acid-free paper and included original paper "ephemera" and came with a memory card with the full text of the book and audiobook. The $275 version turned out to be the big moneymaker.[15]

As e-book readers become preferred over print by users, using print as a revenue engine may run out of steam. Bloomsbury Academic is building a platform that also uses e-book versions as the premium. While CC noncommercial versions are available for reading online, the books will also be issued for purchase in print and on Kindle and Sony readers. It's possible that publishers will look at enhancing e-books with supplementary content or deep semantic markup as their revenue driver; a bare-bones Open Access version would serve as promotional vehicles for the core product.

> *Bloomsbury Academic*
> www.bloomsburyacademic.com

Advertising and Promotional Models

Cost-free and Open Access content can promote more than just a premium edition of the same content. E-book formats are much like HTML websites in that they can embed links; even JavaScript functionality is becoming available in e-book content. Publishers can use these types of functionality to generate revenue through advertising. A quick look at iPad or Android app stores reveals a huge selection of free, advertising-supported apps, including many apps that simply wrap e-book content.

In one scenario, an author of a book series might produce an Open Access electronic version of the first in the series. The free e-book could have embedded links or "in-app purchase" buttons for subsequent books in the series. Open Access e-books might also be supported by contextual links or product placement; imagine a story featuring a sports car where the brand and model of the car are chosen based on support from a car company.

Another type of promotion that can be furthered by all types of free e-books is personal brand building. It could be argued that Cory Doctorow's biggest payoff from the *With a Little Help* project was that it increased his fame and thus his ability to make money on appearances, commissions, and the Boing Boing website. (One story in the collection was a $10,000 commission.[16]) Seth Godin, author of the above-mentioned *What Matters Now,* is another personal brand builder. *What Matters Now* is a compilation of inspirational snippets from seventy "big thinkers" that loudly proclaims "share me."

Public Funding

Some books, such as those relating to education, public health, political or social advocacy, or scientific research, fulfill a public purpose. Publication of these

books using a form of Open Access will further their public purpose. The costs of production and release of these books can be financed by foundations, charities, political action committees, private individuals, or governments.

European governments have joined together to fund the digitization and distribution of cultural heritage works through Europeana. Funded by the European Commission and national ministries of culture, Europeana acts as a portal enabling distribution of large numbers of Open Access e-books. In the United States, books created by the federal government belong by law to the public domain, but there's no centralized funding of Open Access e-books or their distribution.

Europeana
www.europeana.eu/portal

In developing countries, governments seeking to provide textbooks to large numbers of students will eventually find that producing e-textbooks, released for free, is the only scalable method of providing for their national educational needs. Many states in India, for example, already release their state-published textbooks on an Open Access basis.

A variation on public funding for Open Access e-books in the context of academic monograph publishing has been proposed by Frances Pinter. Her idea is for libraries to join together in a cooperative, diverting a fraction of their acquisition budgets to fund the fixed costs of producing new monographs by university and commercial scholarly presses; the monographs would then be made Open Access. She estimates that individual libraries could save over 75 percent, depending on the participation rate.[17]

Another sort of public funding model with a long history of use is the "tip-jar", or more profitably, the pay-what-you want model. Here, the creator urges his audience to leave some money as a "thank you" in return for value received. Doctorow has reported receiving over $2,700 using a PayPal-powered donation box, much better than his print-on-demand offering.[18]

Crowdsourcing

Wikipedia and the more specialized wiki sites it has spawned are excellent examples of Internet resources created by large numbers of individuals working together virtually. These volunteer collaborations have replaced printed encyclopedias for most people and might be considered to be the largest, most dynamic Open Access e-books in existence. Most users wouldn't consider these websites to be books, even though the printed equivalents certainly were.

An organization called Distributed Proofreaders is an aggregation of volunteer effort clearly focused on e-books. Many of the digital texts in Project Gutenberg have been produced by Distributed Proofreaders volunteers, who check and correct OCR (optical character recognition) transcriptions of scanned books. While OCR can be very accurate for modern books, books and magazines printed in the nineteenth century and earlier present a variety of challenges. The resulting digitized works are dedicated to the public domain.

Distributed Proofreaders
www.pgdp.net/c/

Crowdfunding

The model that the author is working on at Gluejar, Inc. is crowdfunding. It's analogous to the method by which public radio and public television stations are funded in the United States, except that every book that's to be released with a CC license has a fund drive of its own. Once the producer's price has been matched by reader pledges, an Open Access e-book is released. The pledge drives are managed by a website.

Gluejar
www.gluejar.com

Authors have used crowdfunding websites such as kickstarter.com to cover the expenses of completing a new book. For example, Mur Lafferty raised over $19,000 from more than 250 backers to fund book design, cover design, and e-book conversion for a fantasy audio series.[19] In a few cases, the projects use CC licenses. Stephen Duncombe, a professor at NYU, raised $4,350, more than his goal of $3,500, from 111 backers to fund the further production of an open-source version of Sir Thomas More's *Utopia,* which is distributed with a CC BY-SA license.[20] (Of course the underlying work is in the public domain, but the new translations, annotations, and commentary are subject to copyright.)

Kickstarter
www.kickstarter.com

The Open Utopia
http://theopenutopia.org

To get a better idea of how crowdfunding might scale to large numbers of books, consider the author of a romance series. Rights for the earliest books in

the series have reverted to her, but there's no cash to convert the book to e-book formats. She contacts the pledge-drive website and enters an offer to release the first book under a CC license in exchange for a lump sum payment that she considers to be fair and that covers the conversion to e-book. Fans of the series can then go to the site and pledge support. If the author's offer price is met, supporters get billed, and the author gets the payment. The resulting e-book file is sent to all the people who have pledged and put on a feed for the rest of the world to pick up. Since the e-book is now CC licensed, it can be redistributed for free.

In another scenario, a reader, perhaps someone who has found the book in a library, launches the pledge campaign. The library metadata is pushed to the pledge-drive site, and other fans can pledge their support. Eventually, the pledge amount gets big enough to attract notice from rights holders, who can then show up, deliver the e-book, and take the cash off the table and divide it among themselves.

Libraries and Open Access E-books

One of the missions of libraries is to provide access to all sorts of information, including e-books. So if an e-book is already open access, what role should libraries play?

Here's a thought experiment for libraries: imagine that the library's entire collection is digital. Should it include Shakespeare? Should it include *Moby-Dick*? These works are available as public domain works from Project Gutenberg; providing them in a library collection might seem to be superfluous. Many librarians have been trying to convince their patrons that "free stuff on the Internet" is often inferior in quality to the information available through libraries. There are certainly e-book editions of these works available for purchase with better illustrations, editing, annotations, etc. Should libraries try to steer patrons to using these resources instead of using the free stuff?

For the most part, libraries have not done a good job of incorporating resources such as those available from Project Gutenberg into their digital collections. OverDrive, the leading provider of e-books to public libraries, now offers Project Gutenberg titles for no extra charge, but they are offered as a separate collection. At present, if a user searches for *Moby-Dick* in a library collection, a result will be returned only if the library has a purchased edition of *Moby-Dick,* which may be in use by another patron. A separate search must be done to retrieve the free edition.

As we saw in the section on types of open access, for an e-book to really be Open Access, there must be an appropriate license (or public domain status) and effective access. There are a number of ways that libraries can work, both individually and through cooperative effort, to make that access effective.

Similarly, Open Access e-books can play an important role in supporting the mission of libraries. This section will consider libraries' roles in access, selection, archiving, community, and production of Open Access e-books.

Access and Storage

Most libraries can avoid worrying about access and storage of Open Access e-books, thanks to services such as the Internet Archive's Open Library project and HathiTrust, a "partnership of major research institutions and libraries working to ensure that the cultural record is preserved and accessible long into the future."[21] These services provide reliable low-cost file storage and bandwidth. Adding effective access to cost-free e-books at other sites may need a bit more work; figuring out and tracking stable, persistent URLs at multiple locations can create a logistics burden for libraries that could help manage access. Library-oriented "knowledge base" services from vendors such as OCLC, ProQuest, and Ex Libris may prove to be useful in this regard.

Open Library
http://openlibrary.org

HathiTrust
www.hathitrust.org

As users shift towards reader devices and tablet computers, libraries will find themselves spending a lot of time helping users figure out how to move Open Access e-books onto their devices. In principle, Open Access e-books shouldn't require DRM and should thus be compatible with most devices. In practice, getting content free content onto a device can be nonintuitive and often "side-loading" or other indirect procedures are required; most e-reader devices have book shopping functionality, and the vendors are not motivated to push users to content that doesn't generate revenue.

Selection and Description

Metadata-based discovery and browsing have been a strength of libraries; without the motivation to sell copies, many cost-free e-books lack even basic metadata, let alone good quality catalog records. This is clearly an area where libraries can make significant contributions, especially when they work cooperatively.

With a flood of free content already available and much more on the way, there is a continuing need to highlight the material most suited to the needs of the user. Multiple editions can exist of public domain works; it makes sense for libraries to help patrons find the best ones.

Perhaps the best example to date of work in a library on selection and description of Open Access e-books is the Online Books Page at the University of Pennsylvania. Edited by John Mark Ockerbloom, it indexes over a million online books, all of them available for free to users.

The Online Books Page
http://onlinebooks.library.upenn.edu

Archiving and Preservation

One of the biggest uncertainties presented by e-book licensing is whether today's e-book acquisitions will meet the needs of future readers. As we celebrate the fortieth anniversary of the first e-books, it's hard to ignore the fact that most libraries have print collections that reach back a hundred years and more. We don't know what parts of today's written culture will be in demand one hundred (or even forty) years from now or how readers will expect to approach them. For that reason, texts must be in a form that can evolve with reading technology, and the evolution must not depend on the permission and continued existence of publishing companies, platform vendors, rights management software, proprietary software, or hardware. Formats must adhere strictly to standards. The forty-year-old texts from Project Gutenberg can still be read today because they used very simple formats; these are being converted to newer, more capable formats such as EPUB for easy consumption on e-book readers. Going forward, there will be continuing challenges in the evolution of photos, graphics, mathematics, scripting, and linking of e-books.

Another concern for the future is the potential loss of material. The threats facing e-book survival include media degradation, bit rot, cosmic rays, natural disasters, wars, bankruptcies, legal actions, societal breakdown, and human stupidity. Many preservation specialists believe that making many dispersed copies of material is the most robust way to ensure long term; the more important the material, the more copies should be made. This is the philosophy behind LOCKSS, a peer-to-peer preservation system in which libraries are taking the lead in preserving e-journals and other websites. LOCKSS has been working to extend its digital preservation efforts to e-books; about 45,000 e-books are "in-process," and it's expected that another 30,000 will be added in 2012.[22]

LOCKSS
www.lockss.org

Community and Context

Open Access e-books give libraries new ways to reach out to the communities they serve. The social aspects of reading are well known to libraries; the story times and book clubs nurtured by public libraries are excellent examples. Although an e-book isn't tied to location the way a print book is, people and their social circles are tied to places. There are two types of advantages for the use of Open Access e-books in a library's outreach efforts. Cost is an obvious factor; public libraries have an obligation to support reading by community segments that might not be able to afford the books they need. A second advantage is that of context building. The sort of annotation, commenting, and discussion around books that can take place in a group of friends and neighbors is quite different from that which occurs anonymously in a global forum. At the same time, the availability of free, untethered e-books from libraries, free from DRM or Internet monitoring, allows individuals to obtain and read books with real privacy.

Participation

As technology lowers the barriers to e-book production, more and more people will be able to produce and distribute e-books. Just as the combination of YouTube, cheap video cameras, and editing software allows Rebecca Black to become a viral sensation, the corresponding e-book technologies are already starting to nurture grassroots authorship. Libraries may play an important role in enabling and promoting community-created content. Books that may not be commercially viable may still be important to a community, and libraries can play a role in connecting local authors to communities both near and far.

Libraries can also fill the need for educating grassroots authors about the meaning and importance of public licenses. Some authors will of course need to use traditional licensing strategies, but most will be unfamiliar with CC and other types of licenses. The social benefit of the use of these licenses is aligned with the library's mission of promoting access to information, and libraries should not be hesitant to promote their use.

Changing the World

As applied to the scholarly journal, the goals of the Open Access movement have been diverse. The success of the movement must be judged against those goals. There's no doubt that Open Access has been successful at its core goal of increasing access to many types of information. But some other hopes pinned on the movement have been unrealized. Serials budgets at libraries have continued a seemingly inexorable rise.

It's been estimated that 4 billion books are printed

each year.[23] That seems like a big number until you remember that the world's population is almost 7 billion. A large fraction of the world's population has minimal access to books. Yet the number of cell phones in the world has been estimated at 4.6 billion.[24] As more and more cell phones become capable of delivering e-books, the fraction of the world's population with access to e-books may soon exceed the fraction of the world's population with access to physical libraries.

The majority of the people in the world will not be able to pay $9.99 for an e-book. Even in wealthy countries, the cost of food, clothing, shelter, transportation, and medical care limit many people's ability to buy content licenses. Yet the thirst for literature, learning, and culture is not confined to the wealthy of the world. Open Access e-books can help to slake this thirst and help to create a global community of understanding and knowledge. Through shared access to culture and ideas, Open Access e-books can erase some of what separates the nations of the world, rich and poor.

For Open Access e-books to have this sort of impact, their production and distribution must be effective. Production can occur through a variety of business models, including models that reward authors and creators for their efforts. New distribution channels must be created and supported. Libraries have a clear and vital role in this process and must work cooperatively to meet the needs of their diverse communities. Venues for such cooperation already exist (OCLC, Open Library, HathiTrust, Europeana, and various national libraries) or are being planned (the Digital Public Library of America), but new ones will also be needed.

Together, we must strive to make sure that the best and most thoughtful of the world's e-books are not lost in a deluge of free drivel, free come-ons, and free polemics. If people are to govern themselves in peace, they should have easy access to good ideas and honest information.

Digital Public Library of America planning Wiki
http://cyber.law.harvard.edu/dpla/Main_Page

Notes

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3. Several journal submission sites were surveyed for this article.
4. The $10,000 figure was obtained by analyzing the operating budgets for independent university presses as discussed in this blog post: Eric Hellman, "A Library Monopsony for Monographic eBook Acquisition?" *Go to Hellman* (blog), Aug. 10, 2010, http://go-to-hell man.blogspot.com/2010/08/library-monopsony-for -monographic-ebook.html. Numbers were confirmed privately.
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ALA American Library Association

The E-textbook Revolution

William D. Chesser

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

The No Shelf Required Guide to E-book Purchasing   **Sue Polanka, Editor**

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
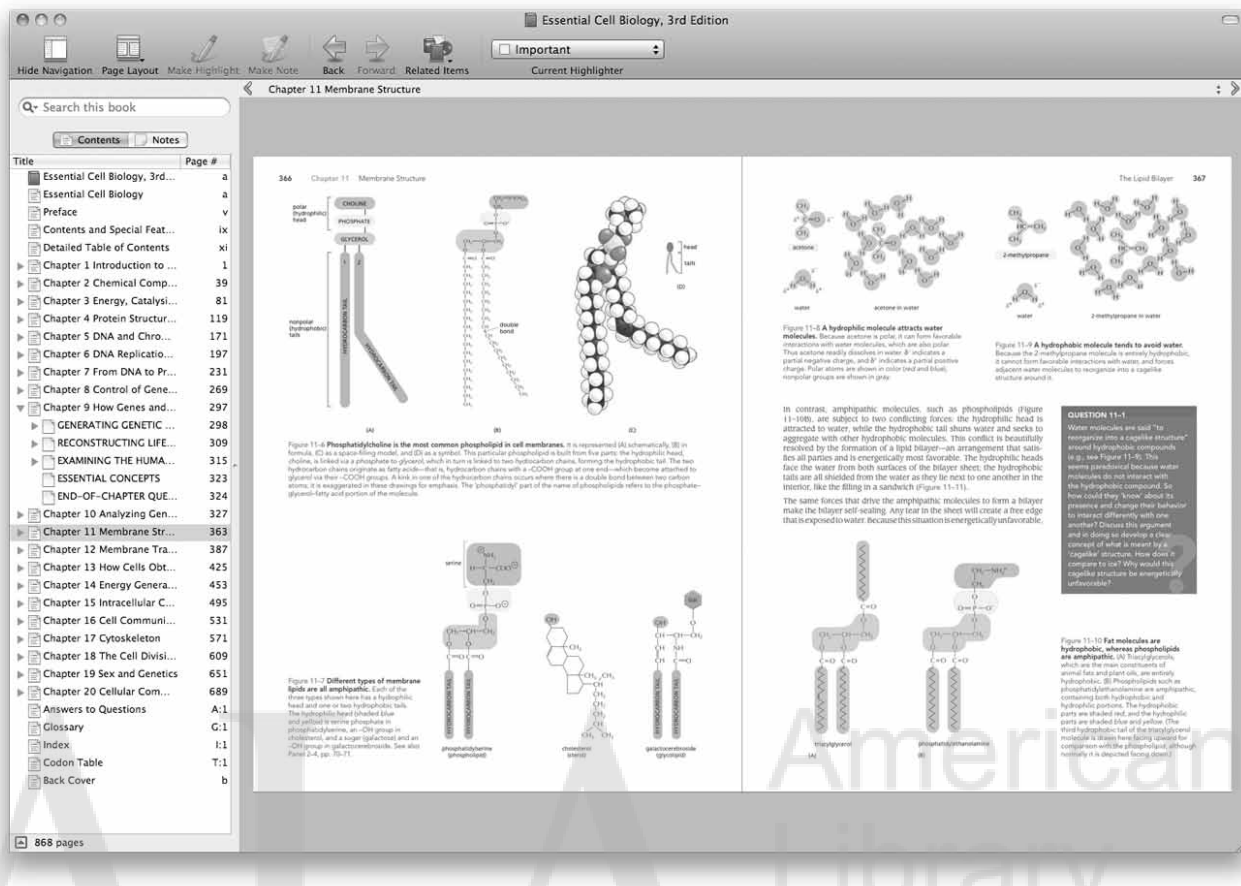
Figure 5.1

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

The No Shelf Required Guide to E-book Purchasing **Sue Polanka, Editor**

that can be accessed on laptops, tablets, and smart-phones. 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.
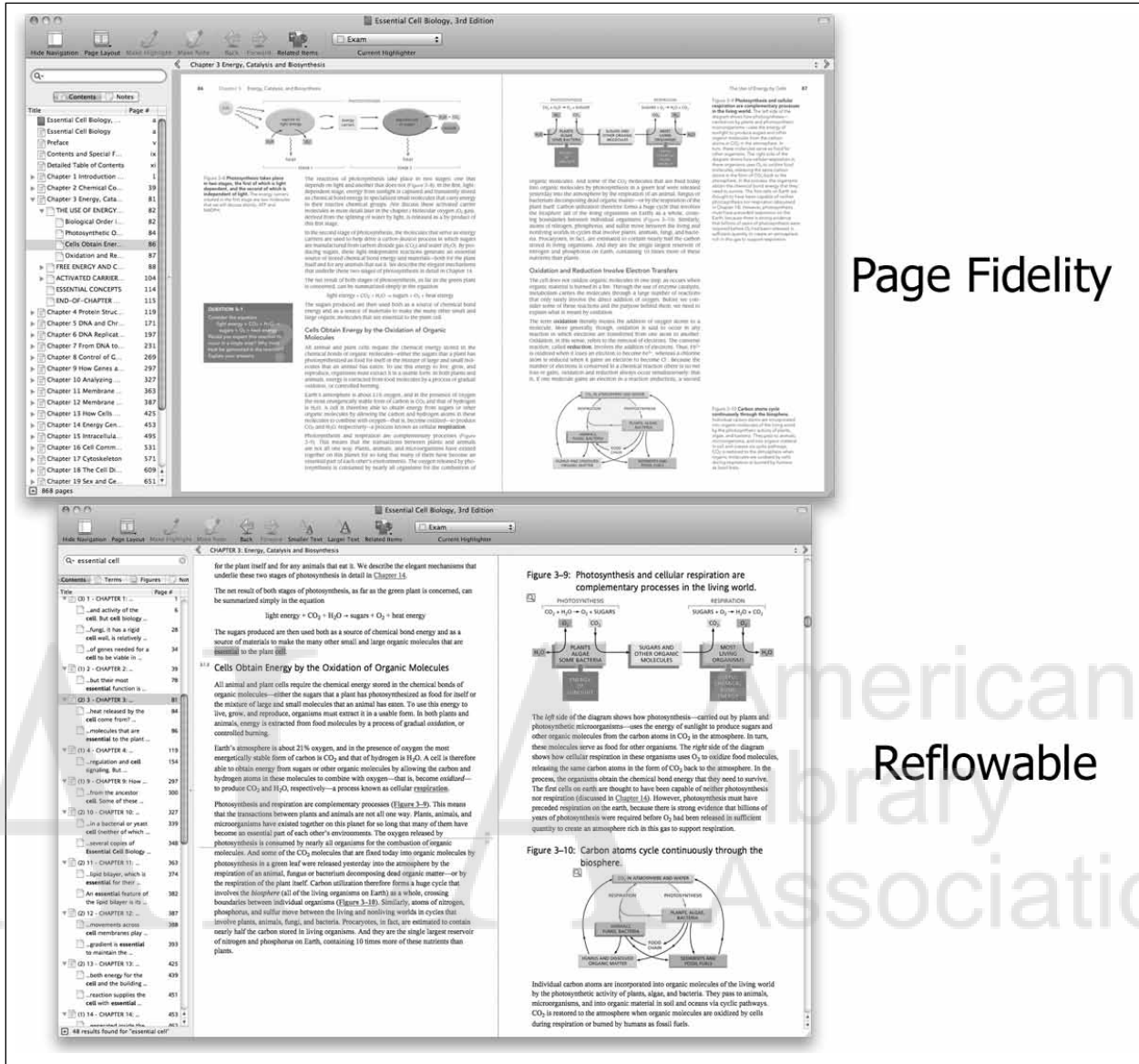
Reflowable

"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 hand-helds 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
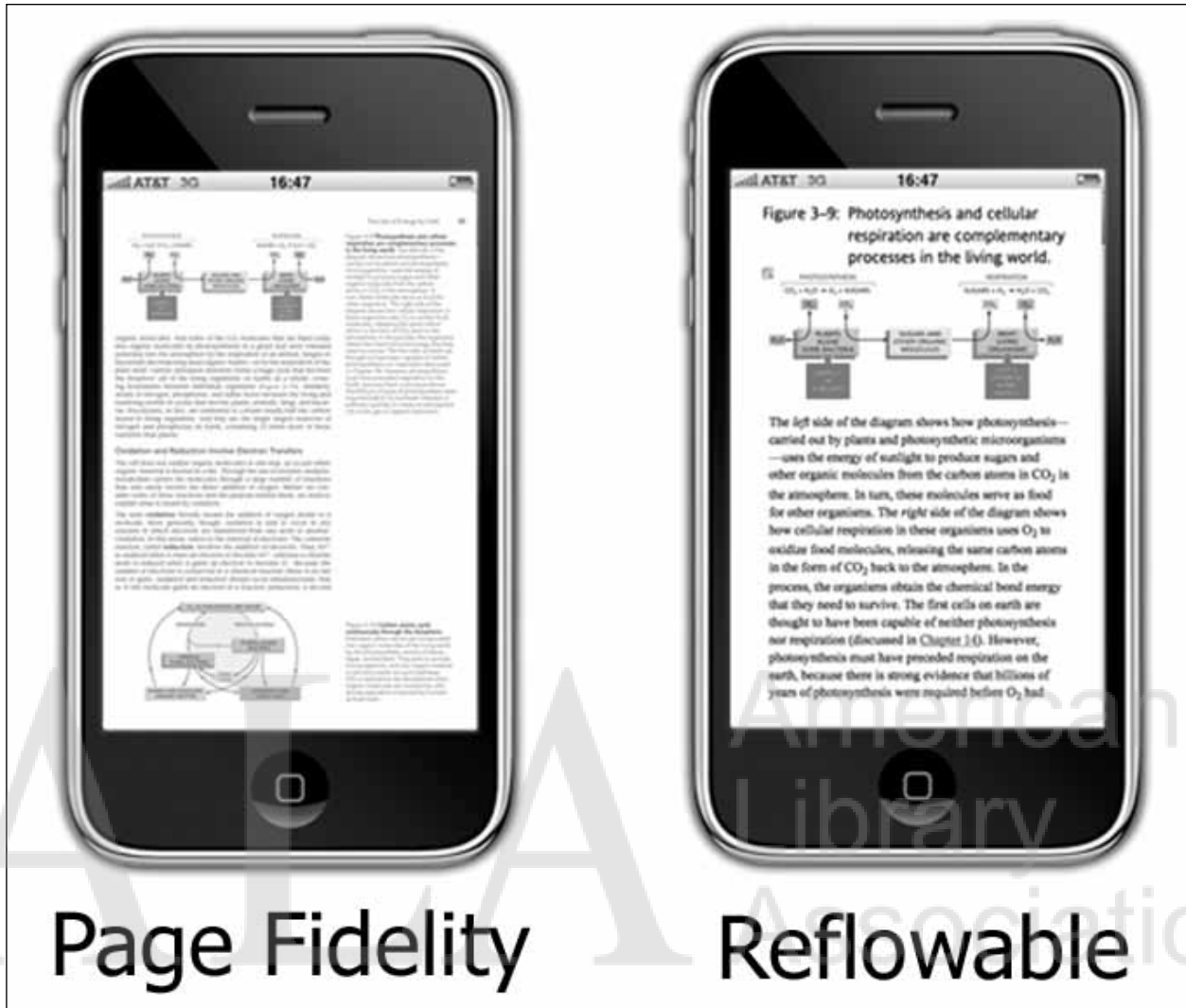
Figure 5.2

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
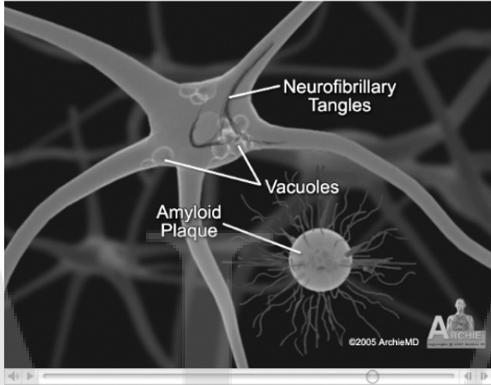
Approximately 4.5 million Americans suffer from AD. It is estimated that 5% of people ages 65 to 74, and nearly 50% of those over age 85, have AD.[7] Most patients live 8 to 10 years after being diagnosed, although some patients live for 20 years. The economic cost of caring for persons in the United States with AD is at least $100 billion annually.[8] The burden on the patient, family, caregivers, and society as a whole is staggering.

The incidence of AD is slightly higher in African Americans. AD has been associated with lower education level and poor access to health care. [More research is] needed to determine whether ethnic differences are related to environmental risk factors. Women are more [likely to develop AD] primarily because they live longer (see the Ge[netics box]).

Note
This video will be part of the exam.

60.7.1 Etiology and Pathophysiology

60.7.1.1 Alzheimer's Disease

Neurofibrillary Tangles
Vacuoles
Amyloid Plaque
©2005 ArchieMD

The exact etiology of AD is unknown. Similar to other forms of dementia, age is the most important risk factor for developing AD. However, AD is a disease that destroys brain cells, which is not a normal part of aging. Only a small percentage of people younger than 60 years old will develop AD. When AD develops in someone less than the age of 60, it is referred to as

early-onset AD. AD that becomes evident in individuals after the age of 60 is called *late-onset AD* (see the Genetics in Clinical Practice box).

60.7.1.2
60.7.1.2.1

GENDER DIFFERENCES

Alzheimer's Disease and Dementia

Men	Women
• Men have a higher incidence of vascular dementia than women.	• Alzheimer's disease affects more women than men. • Women are more likely to develop Alzheimer's disease than men, probably because they live longer. • About twice as many women as compared to men die each year from Alzheimer's disease.

Persons in whom a clear pattern of inheritance within a family is established are said to have **familial Alzheimer's disease** (FAD). Other cases in persons in whom no familial connection can be made are termed *sporadic.* FAD is associated with earlier onset (before 60 years of age) and more rapid disease course. In both FAD and sporadic AD, the pathogenesis of AD is similar.

Characteristic findings of AD relate to changes in the brain's structure and function: (1) amyloid plaques, (3) neurofibrillary tangles, and (3) loss of connections between cells and cell death.[9] Fig. 60-1 shows the pathologic changes in AD disease.

As part of aging, people develop some plaques in their brain tissue, but in AD there are more plaques in certain parts of the brain. These plaques consist of clusters of insoluble deposits of a protein called *b-amyloid,* other proteins, remnants of neurons, non-nerve cells such as microglia (cells that surround and digest damaged cells or foreign substances), and other cells, such as astrocytes. β-Amyloid is cleaved from amyloid precursor protein (APP), which is associated with the cell membrane (Fig. 60-2). The normal function of APP is unknown. In AD, plaques develop first in areas of the brain used for memory and cognitive function, including the hippocampus (a structure that is important in forming and storing short-term memories). Eventually AD attacks the cerebral cortex, especially the areas responsible for language and reasoning.

Neurofibrillary tangles are abnormal collections of twisted protein threads inside nerve cells. The main component of these structures is a protein called

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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).

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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.

The No Shelf Required Guide to E-book Purchasing   **Sue Polanka, Editor**

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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Digital Textbooks

A State-Level Perspective on Affordability and Improved Learning Outcomes

Stephen R. Acker

Abstract

This chapter of The No Shelf Required Guide to E-book Purchasing *examines the impact of textbook costs on students in higher education. The author reviews digital textbook market trends, examines their impact on libraries and students in Ohio, and offers proposed solutions.*

Author's Note

This chapter on digital textbooks and their increasing adoption is written in three major sections: where we've come from, where we are, and where we're going. Reading habits and resultant author strategies have changed, and therefore readers don't need to read this chapter in a linear manner. For an immediate scan of state of Ohio projects, jump to the second section: Where We Are. These initiatives were crafted with collaboration and input from the multiple players involved in the high-stakes, but broken textbook market: bookstores, publishers, libraries, faculty, students, our state policy-makers, open educational resources providers, and disability services offices. For the principles that drive these undertakings, start at the third section: Where We're Going. Articulate and follow your own principles for introducing digital materials into your learning environment; this will protect your strategic planning process from the transient bling in the marketplace. If you prefer a traditional narrative structure, just read on.

While the ideas and policies described in this chapter emerged from many spirited interactions with other policy makers and educators, the opinions and expressions are those solely of the author.

A State-Level Context

We seem to have been on the cusp of a digital textbook "revolution" since at least 2005, and many would argue from even earlier. This chapter explores where the market stands in this transformation and the markers that will determine our progress going forward. The presentation is from the perspective of Ohio's statewide system of thirteen public university campuses, one medical college, twenty-four regional branch campuses, and twenty-three community colleges, as well as adult literacy and adult workforce centers. In addressing new learning opportunities from a state perspective, one size does not fit all, so this diversity is served through a variety of pilot projects.

Higher education systems and the states in which they operate have a challenge and a problem. The challenge is how to graduate and retrain more of their citizenry to meet the economic and social needs of their states. For example, the state of Ohio's ten-year strategic plan calls for enrolling 230,000 new individuals by 2017 and increasing graduation rates an additional 20 percent.[1]

The ever-rising cost of education is the single biggest problem that must be faced to meet these goals. Since 1978, after adjusting for inflation, the cost of higher education has tripled and student surveys report that cost is the single greatest reason that makes them consider dropping-out or delaying their education

(Anonymous, *Chronicle of Higher Education*; April 20, 2011).[2] Adding to pricing concerns, the cost of new textbooks has risen to more than $1,000 per year for most students, and in the last several years textbook cost increases have exceeded 10 percent. The Government Accountability Office presents the data this way:

> College textbook prices have risen at twice the rate of annual inflation over the last two decades, following close behind annual increases in tuition and fees at postsecondary institutions. Rising at an average of 6 percent each year since academic year 1987–1988, compared with overall average price increases of 3 percent per year, college textbook prices trailed tuition and fee increases, which averaged 7 percent per year. Since December of 1986, textbook prices have nearly tripled, increasing by 186 percent, while tuition and fees increased by 240 percent and overall prices grew by 72 percent.[3]

Public institutions face growing pressure from legislators, and all colleges and universities hear vociferous complaints from parents and students regarding educational costs. Faced with reducing either the rate of internal cost increases—tuition and fees—or exogenous costs associated with textbooks, schools and systems will push for textbook affordability first and only then tackle their internal costs and cost structure issues.

From the textbook publishers' perspective, the price of textbooks as part of the escalating cost of higher education can be addressed through an information fee paid by all students for universal access to learning materials. Commercial publishers cite the precedent of an institutional technology fee, a bundled cost of education used to rapidly introduce learning technologies on campuses in the 1990s. These publishers promise very significant per-student discounts in exchange for universal class adoption of their learning materials. This approach would also benefit faculty, since all students would have no-excuse access to assigned learning materials. However, for many reasons—increased cost, faculty members who run their courses without using the required textbook, the inconvenience of low-bandwidth access to the Internet-—not all students would be well served by a mandatory information fee. Currently, 15 percent of students purchase no textbook.[4] We may be better served through a mass-customization strategy,[5] where individual students find cost-reducing solutions from a variety of alternatives we can present to them.

Further, to follow the publisher recommendations for an information fee is politically sensitive since the increased fees would be immediately apparent, while the benefits of universal access to the learning materials would necessarily lag. In addition, faculty members fear an assault on their academic freedom and autonomy as textbook selectors—would there be pressure to select the lowest cost content rather than the content best fitted to the instructor's teaching approach? And from the perspective of improving learning outcomes, does an information fee leverage the projected benefits of a digital revolution that may be achievable?

After a brief history of textbook pricing and digital market development, this chapter presents a series of strategies the state of Ohio has identified to address the escalating costs borne by students. At the heart of the question for a state system seeking to improve graduation rates by 20 percent is whether improved learning outcomes can accompany lowered textbook costs, thereby compounding a reduction in the per-unit cost of instruction. State systems can commit to textbook affordability agendas only if student learning also improves, as evidenced by increased persistence, retention, and graduation rates.

Where We've Come From

Until the mid-1980s, the textbook market was relatively placid. Textbooks were updated every three to four years, and annual price increases were not a topic of public outrage or systemwide debate. The book distribution chain was simple—author to publisher to bookstore to student—and the modestly sized used book market was handled at the bookstore, typically university-owned or independently owned in a mutually supportive relationship with the university. Bookstores served a student-support role and had characteristics of a cost center (like a library or advising unit), rather than as a profit center that contributed to the coffers of the university.

The bookstore existed to help students acquire the books they would need, based on faculty requests, that were ordered, delivered, exchanged, and often returned at the end of the academic term. The bookstore and the financial aid office had even worked out a relationship that allowed a student to purchase textbooks on credit until the student's loan grant had been processed. The unintended consequence of this once student-friendly relationship is that today's students using financial aid aren't able to purchase lower-cost textbooks if offered by Internet-based services such as Amazon, Half.com, or Chegg. More attractive pricing on textbooks and other learning materials often can be found online.

The 1980s—A Time of Ferment

Many things happened simultaneously in the textbook market during the 1980s that set in motion the slow-building transformation from print to digital. Independent bookstores became affiliates of national chains—notably Barnes and Noble and Follett—gaining

market expertise and also a mandate for greater profitability—jointly preferred by the bookstore operator and the university. These university-owned bookstores absorbed a shift in values and tried to balance a legacy focus on providing student services with a need to extract additional revenue from students. If this new dual mission couldn't be met, the campus bookstore was defenseless against the university outsourcing the bookstore to private enterprise.

By around 2005, approximately half of the bookstores in Ohio were managed by either Barnes and Noble or Follett. As this new business realignment occurred, the used book market became more concentrated and rationalized. Campus stores and independent book buyers funneled excess used book inventories to members of the Used Textbook Association. Founded in 2006, this association brought together Nebraska Book Company, MBS Textbook Exchange, and other wholesalers. The association helped promote used book sales by matching buy-back inventories with book lists across multiple universities.[6] Since the profit margin on used books exceeds that on new books, the used book market flourished at the expense of the new book market. The devil's dance picked up pace—the lower cost of used books, typically saving a student at least 25 percent off the new print list, became the first sale of interest to the student and to the bookstore. The publisher, faced with fewer new book sales (the major source of its revenue), responded by steadily increasing the price of the next edition of its textbook. Publishers also shortened the revision cycle to kill the used book market for the outdated edition. Although this pricing and editorial policy was a perfectly rational business response, its undesired consequence was increased upward pressure on the price of the next generation of the textbook. As the price of the new textbook increased, the price of used textbooks, set at approximately 75 percent of the price of the new textbook, moved in lockstep with the new textbook price, further disadvantaging students.

This shift in the textbook market structure paralleled the textbook industry becoming increasingly oligopolistic in its structure. Whereas it was once the purview of editorial teams fashioned around particular disciplines, large publishers swallowed smaller publishers and assumed the posture of publicly traded corporations legally responsible to maximize return on investment for stockholders. As textbook development philosophies aligned and as new content delivery projects grew in size, an appetite for risk and a distortion, though not departure from, the original impulse for innovation fled the publishing market. This conservative new bent in textbooks was exacerbated by the consolidation of the trade book market as the large superstores from Borders, Barnes and Noble, Walden-Books, and Little Professor encouraged greater investment in high profile authors, fewer low-volume titles,

and less reliance on publisher backlists for revenue.[7] Today, Pearson Education, McGraw-Hill, and Cengage Learning control a majority of the textbook market.

Things haven't been quiet in the academy either. Committees increasingly managed the introductory courses that enroll large numbers of students, and the committee's "all-or-none" adoption decision created a higher-stakes game for publishers. Publisher marketing expenses went up, often dramatically, as more and more representatives were deployed to demonstrate and sell textbooks that covered essentially identical content differentiated mainly by the author's style and tone. State systems contributed to this hyperfocus by establishing transfer and assurance guidelines that normalized required course learning objectives. These transfer assurance guidelines allowed students to move more easily among schools, but also funneled textbook content into specific and overlapping content areas.

In this same mid-1980s timeframe, colleges and universities began to change hiring practices, shifting their faculty profile toward adjuncts as replacements for more expensive tenure-track, full-time teachers. To serve an unsettled and less experienced faculty, along with a healthy dose of ever-new graduate student teaching assistants, the textbook maintained its role as a "disciplinary canon" that clearly explained the foundations of the subject. This diverse faculty profile further encouraged curriculum committees to recommend textbooks as the common resource for large undergraduate courses.

Wrapped within the major social changes introduced by the Internet, course (learning) management systems (LMSs) began a migration to digital learning environments. One milestone in this digital transformation of instruction was the emergence of MadDuck's Course-in-a-Box (1998). Course-in-a-Box is now most remembered as the first acquisition in 2000 by Blackboard, a fledgling competitor at the time. In the next ten years, Blackboard acquired other early competitors, including WebCT and ANGEL, and in 2010 claimed nearly 60 percent of the LMS market.[8] In the same timeframe, Desire2Learn, a Canadian-based company, rose to prominence. However, the growth in LMS has been fractious and expensive, and new open source systems, notably Sakai and Moodle, have emerged.

As more and more faculty and students became comfortable in a learning environment supported by technology, the seeds were being sown for a more rapid introduction of digital content. With the rapid growth of distance education, another vehicle that requires familiarity and the convenience of digital, additional opportunities for digital content have emerged. In the 2010 Campus Computing Survey, nearly 80 percent of IT leaders indicated "eBook readers will be important platforms for instructional content in five years."[9]

As often is the case at transition points, things in the digital content world have gotten worse before

they will get better. Increased investment in digital delivery (formatting concerns, reliability concerns, distribution dynamics) have increased costs, screen resolutions and contrast ratios that create eyestrain and fatigue weakened the monitor as a reading surface, and inaccessible digital "shovel ware" that didn't take advantage of digital benefits resulted in a backlash rather than a springboard for a transition from digital to print. As recently as 2010, the National Association of College Stores found that students preferred print to digital by a ratio of three to one.[10] Institutions often preferred their students to have print as well—print textbooks reduce demands on faculty to improve their own digital literacy, on libraries to convert e-reserves from print to digital, and on the campus IT organizations to establish single signon procedures to make the far-flung digital environment an easier learningscape to traverse for the campus community. At the same time, publishers began marketing their own learning management systems and web portals. For example, Pearson bought eCollege and rebranded it as Pearson LearningStudio. Not surprisingly, these vertical integrations optimized the use of the publisher's own content catalogs. The campus environment, seen from afar, has become a Tower of Babel, many different technology platforms that create suboptimized confusion in the digital learning space.

To address this confusion, at least two substantial efforts have emerged to rationalize the textbook environment. First, a limited liability corporation named CourseSmart was founded in 2007. CourseSmart is owned by Cengage, McGraw-Hill, Pearson, Bedford, Freeman and Worth (Macmillan), and John Wiley and Sons. CourseSmart offers around 90 percent of new textbook titles from these and several other publishers in digital format at less than 50 percent of the cost of a new print textbook and provides "page faithful" renditions of the print textbook. Although CourseSmart's one-stop shop simplifies selection and purchasing for both students and faculty, the digital price point is only marginally better than that achieved with the common student practice of buying a used print book and then selling it back to the bookstore at the end of the term. In defense of the CourseSmart business model, digital licensing (as well as the recently emerging textbook rental model) does help a student predict the true cost-of-use and avoids students being blindsided by an edition change in the middle of the academic term.

The other major stabilizing influence on the textbook market was the passage of the 2008 Higher Education Opportunity Act (HEOA, 2008). [11] This federal legislation required publishers to expose the wholesale costs of their learning materials, unbundle the main textbook from ancillary materials such as DVDs and problem-solution manuals, and make this information available in a timely manner so that instructors can include cost considerations in their textbook selection process. The legislation further requires colleges and universities to publish a net-cost calculator by October 2011 to help students determine their costs of learning materials. The thrust of this legislation is admirable, but our lack of experience with the information adds to the complexity of textbook marketing.

Students Speak

In 2004, the state Public Interest Research Groups (PIRGs) produced a seminal student perspective on textbook affordability in a report titled *Ripoff 101: How the Current Practices of the Textbook Industry Drive Up the Cost of College Textbooks.*[12] To emphasize another of their study's themes, the publishing industry's rapid turnover of editions without fundamental changes, *Ripoff 101, 2nd Edition,* was issued just one year later.[13] Both reports gained a great deal of mainstream media attention, and their polemic nature was eminently quotable: "Three-fourths (76 percent) of the faculty surveyed in our 2004 report said that they found new editions justified only half the time."[14] The PIRG's Make Textbooks Affordable campaign continues to advocate strongly for textbook market reform. One of the principal solutions to expensive textbooks championed by the PIRGs is textbooks published as open educational resources, the focus of the next section.

Make Textbooks Affordable
www.studentpirgs.org/textbooks/research

The Rise of Open Educational Resources

For as long as faculty have taught, they have assembled learning materials to augment the textbooks they have selected for their classes. As long as this cottage industry practice only offered companion compilations to textbooks, the publishing industry generally overlooked the copyright violations that were occurring. Then, during this same 1980s period of ferment, course packs began to replace, rather than simply supplement, the textbook in classrooms. This shift resulted in windfall profits for copy centers and growing loss of revenue for publishers. The practice was remedied by the 1991 court case between Basic Books and Kinko's Graphics.[15] As a result of the court settlement, much more rigorous and complex copyright clearance procedures replaced the a-wink-and-a-nod faculty guarantee that course materials were reproduced with permission.

The Copyright Clearance Center emerged as the marketplace solution for purchasing chapters and other small units of copyrighted content. However, the clearance procedures were time-consuming, based on unpredictable cost expectations, and from the perspective of a faculty member trying to get a reading list or

syllabus together at the last minute, provided a solution that was not really very workable. Despite these practical limitations, the Copyright Clearance Center did offer a method for protecting the intellectual property of the copyright holder and therefore was supported by institutional and state policy for supplementing textbooks and creating course packs.

Copyright Clearance Center
www.copyright.com

The new hassles faced by faculty wishing to customize their course learning materials had interesting unanticipated consequences. What would happen if those who created content (copyright holders by the act of their content creation) were motivated by noneconomic incentives? What if the licensing procedures that should be followed to use copyrighted materials were relaxed, greatly reducing complexity, time pressures, and use conditions? A desire for "openness" of practices and procedures that others should follow to use the work of a copyright owner spawned the open educational resources (OER) movement. In short order, OER advocates evolved the Creative Commons licenses that became the standard by which copyright holders seek flexible ways to encourage use (but not transfer ownership) of their original creations. The process is remarkably simple and requires the copyright holder to answer two basic questions in establishing the use license: Can others use the work in a for-profit environment? Can users of the work modify it in any of a number of ways (the 4 *R*s—remix, reuse, revise, and reproduce)?

Creative Commons licenses
http://creativecommons.org/licenses

David Wiley and others argue that open licensing is a core value of education, and that educators are driven to share knowledge without limit as part of their profession.[16] Many in the OER movement agree with this altruistic, mission-driven perspective and invest much time and energy crafting high-quality content to be used under Creative Commons licenses. Other authors invest less time and energy in creating their expressions, and further don't expect their work to have much, if any, economic value. Since neither the altruist nor the unconcerned content contributor is operating within a traditional publishing model that reviews, revises, and checks for accuracy, the quality of the OER materials varies widely, and content users need methods to evaluate the quality of the OER content.

The star rating system used by The Orange Grove and MERLOT, two repository/referatories of open content, is one notable model of quality assurance. Disciplinary community members evaluate the work and assign it one to five stars. If the community rates a resource highly, future adopters have insight into the quality of the work. Connexions, a third OER repository, uses a similar user evaluation system called "lenses." Since the OER materials can be edited or abandoned at less cost than a commercial adoption, faculty risk less when experimenting with vetted OER learning materials.

The Orange Grove
www.theorangegrove.org

MERLOT
www.merlot.org

Connexions
http://cnx.org

Revisioning the Library

Libraries have thrived following Chris Anderson's long-tail business model—aggregate highly specialized research materials and serve the collective faculty/student population with "deep" individualized resources.[17] Like other service providers, however, library organizations still conform to the 80/20 rule—80 percent of their patrons' needs are satisfied by 20 percent of their collection,[18] which raises recurring issues for those charged with selecting library resources. Today's budgetary environment encourages a modification of the long-tail model; it may be better to also serve the high-demand needs of users and preserve the surplus value created to invest in the traditional long-tail demands of library patrons.

An argument can be made that library collections should expand to better serve the very-high-demand textbook-usage needs. Students line up to take advantage of two-hour windows of reserve room checkout and grow especially frustrated during exam periods when the materials aren't available. Meeting this demand by purchasing additional print textbooks and warehousing them behind reference desks is a losing strategy, with ever-escalating demands that are hard to estimate. Contracting with publishers for key licenses, or seats, for simultaneous user access is a preferred approach. Allocating digital textbook seats would permit a set number of students to use the textbooks for variable periods of time determined by policy established through experimentation and usage logs. A patron acquisition model would further maintain costs for libraries willing to move into this escalated level of user service.

How should this expansion in service be paid for while remaining faithful to the needs of research

communities? James Neal reissues the call for a National Digital Library.[19] If specialized, and seldom used, resources can be offered through a multi-institutional referatory system, scarce collection dollars could be allocated to textbook purchases and offer libraries justification for securing additional operational funding. Neal characterizes academics library as (paradoxically) an "information poor profession" and calls for a network of libraries for experimentation to move ideas quickly from concept to market.[20]

OhioLINK, the Ohio Library and Information Network, is a consortium of eighty-eight Ohio college and university libraries and the State Library of Ohio that, in some important respects, models a National Digital Library on the state level. The consortium members work together to provide Ohio students, faculty, and researchers resources, both digital and print, for teaching and research. OhioLINK's membership includes sixteen public/research universities, twenty-three community/technical colleges, forty-nine private colleges, and the State Library of Ohio, which together serve more than 600,000 Ohio students.[21] OhioLINK is Ohio's contribution to a rapid iteration learning environment that can help move library ideas from concept to market. OhioLINK serves as an important implementation environment for University System of Ohio policy in the area of digital textbooks. Several of OhioLINK's experiments will be detailed in the Where We Are section of this chapter.

OhioLINK
www.ohiolink.edu/about

Universal Access Is Key

For ethical, legal, and practical reasons, it is imperative to have a comprehensive and inclusive strategy for textbook affordability. For example, in the state of Ohio, the Rehabilitation Services Commission spends in excess of $1.3 million on textbooks needed by its clientele.[22] This allocation does not include the budgets and work efforts of Disability Services Offices that serve students on each of Ohio's campuses. As one point of reference, the Ohio State University Disability Services Office invests on average eighteen hours of staff time to make one textbook accessible, in Braille or digital formats, to a student with print disabilities,[23] and up to 300 texts annually are prepared by this one university alone.[24]

Students with print disabilities must declare their disability to the disability services office prior to receiving accessible textbooks. If the procedures for converting the textbook aren't started until the beginning of the academic term, students can expect to wait up to three weeks before a usable version of their textbook is available. Without a textbook, students fall behind, their learning outcomes are compromised, and the likelihood of their not successfully completing the course is increased. To address this concern, OhioLINK has partnered with five accessibility centers/disability services offices with expertise in providing these services. The partnership addresses ways to accelerate distribution of digital learning materials that work on mobile devices and that are "born digital" to serve the immediate needs of students with print disabilities. Materials being evaluated are provided by the AccessText Network, a service organization founded by the American Association of Publishers and headquartered at the Alternative Media Access Center on the Georgia Tech campus.[25]

Where We Are

Given the many crosscurrents in the arena of affordable textbooks and the goal of improving student learning outcomes, the University System of Ohio (USO) established the Ohio Digital Bookshelf (ODB) project within OhioLINK in 2008. Although many arms of the USO focus on aspects of affordable, high-quality education and improving student learning, the ODB was conceived as a vehicle for experimentation and community awareness, piloting promising initiatives and sharing outcomes with Ohio colleges and universities as well as the national academic community. This section briefly presents the current range of ODB projects underway.

The Buyer's Co-op—Faculty Autonomy and Student Choice

The Buyer's Co-op was the initial project of the ODB. It began with a survey of Ohio faculty to determine introductory psychology textbooks in use in Ohio. Introduction to psychology is the largest single course offered at Ohio's public institutions, with more than 70,000 students taking the course every year. Five major publishers—Bedford, Freeman and Worth; Cengage Learning; McGraw-Hill; Pearson Education; and John Wiley and Sons—shared their sales data for this course. We crossreferenced and reconciled the sales list and faculty survey and identified twenty-four psychology textbooks that were most used in Ohio.

We next negotiated with the publishers for discounts on digital versions of these textbooks. These discounts were as much as 70 percent off the list price of new print textbooks, and in most cases resulted in prices lower than other sources for digital textbooks. Importantly, the "net cost of use," what a student pays to have access to the content while taking the course, was lower than most other options—including buying the book used and then selling it back at the end of

the academic term. The digital license, typically 180 to 360 days, carries no risk of edition change. Since there is no resale value for an expiring digital license, a student knows at the point of purchase what access to the book will cost (similar to a rental program). The student is shielded from attempting to resell a book that has changed editions, an occurrence that drops the textbook's resale value from 50 percent to less than 10 percent. Since textbooks now change editions every two-and-a-half to three years, this risk will be encountered many times in a four-year college career.

From the USO's perspective, the co-op supported twenty-four faculty-selected titles, allowing the USO to honor faculty autonomy in choosing a textbook. This autonomy is a valued aspect of academic freedom, as well as an appropriate goal for supporting faculty-directed student learning.

Build the ODB Community—Workshops and Forums on Using Digital Materials

To serve our mandate for increasing awareness, we used the Ning platform to facilitate communication among faculty interested in digital learning materials. Our community was launched in April 2010 with seventeen members. One year later, the membership has grown to 300.

Within the ODB, the community shares information about conferences, events, webinars, and projects. Our most important skills-building event is the Ohio Digital Pioneers' Workshop, at which our publishing partners share new learning platforms and Ohio faculty demonstrate best-practice use scenarios. We also crosspromote efforts of other communities focused on affordable textbook solutions. One of the most prominent and useful is the College Open Textbooks Community; it has a particular emphasis on open educational resources.

Ohio Digital Bookshelf Community
http://ohiodigitalbookshelf.ning.com

College Open Textbooks Community
http://collegeopentextbooks.ning.com

Open Educational Resources—Reuse, Revise, Remix, Redistribute

OhioLINK, in partnership with five Ohio community colleges (Edison, Lakeland, Lorain County, Sinclair College, and Southern State) has received a Next Generation Learning Challenges grant, a program administered by Educause and funded by the Gates Foundation and the Hewlett Foundation. Two core elements of the proposal are (1) a rich, multimedia open educational resource (OER) set that is (2) used within concept mastery courses (math) and usable in linked applied learning courses (engineering). This project will help students succeed in developmental and credit-bearing mathematics, the coursework most responsible for lack of persistence and retention in Ohio's community colleges. Improving Science, Technology, Engineering, Math (STEM) outcomes is essential to meet the statewide commitment to re-emerge as an advanced engineering economy.

Flat World Knowledge Mixed Model—"Free" Digital and Pay-for-Print

Flat World Knowledge is a start-up publisher with an intriguing business model—hire respected authors, edit their work, augment it with additional learning resources, and then give it all away for free reading on the Internet. Students seeking the convenience of content saved to their computer or who prefer print can purchase a digital download or black-and-white or color print versions of the textbook along with various study aids. Since approximately two-thirds of students who use these textbooks pay for some of the content, the business model, which offers very affordable textbooks and simultaneously facilitates student format preference, may well be sustainable.

Flat World Knowledge
www.flatworldknowledge.com

The state of Ohio purchased 1,000 digital licenses that will be given to seven Ohio institutions to help test the efficacy of the materials and their acceptance by students. The licenses permit downloads of both the complete textbook and ancillary learning materials, rather than relying on page-turning access on the Internet. The research will be published in early 2012 and give faculty evidence gathered at peer institutions regarding faculty and student acceptance of Flat World Knowledge OER materials.

Student Research—Accuracy, Thoroughness, Coverage, Engagement, Learning Tools

Because of the high cost of learning materials, more students are deciding not to purchase assigned textbooks. Some students postpone the pursuit of their degrees because the costs of textbooks coupled with the cost of tuition are simply not affordable. For a generation raised on the Internet, free online searches for class materials often replace purchasing the textbook. University of Cincinnati Professor Charles Ginn, a founding member of the ODB community, wondered

whether students could depend on the accuracy of what they find on the Internet? Working with the University of Cincinnati's chapter of Psi Chi, an international honor society composed of upper division psychology majors, Dr. Ginn set out to answer this question and to compare commercial and OER resources on a variety of dimensions important to students.

In the fall of 2010, eleven University of Cincinnati Psi Chi members evaluated introduction to psychology course materials from three different sources—materials provided by a commercial textbook provider, a Flat World Knowledge textbook, and the open Internet accessed using Google search terms. Treatments of key psychology concepts were evaluated for accuracy, thoroughness, clarity, and success in creating student engagement. Students rated the three formats as comparable on all of the above dimensions. The learning tools (test banks, websites) by the commercial textbook provider were found to be more helpful for faculty than competitive sources, a notable factor that influences the textbook adoption decision.

Comparative Pricing—Evaluate Student Indifference Curve for Price versus convenience

It is taken at face value that price is the dominant factor influencing where students purchase their textbooks. The Bowling Green State University Bookstore decided to evaluate whether convenience and availability of expert advice might offset the higher cost of textbooks at the university-owned bookstore. To conduct this evaluation, the bookstore website provided comparative pricing from other sources (e.g., Amazon) while also reminding students of the ease of using the bookstore, the assured accuracy of their purchase, and the generous return policy offered. The BGSU bookstore has experienced a slight uptick in student purchases and plans to continue piloting the Verba software that makes this approach manageable.

Verba
www.verbasoftware.com

Blanket Digital Licensing—Mandatory Student Purchase at Low Contractual Price

Mandatory purchase of digital textbooks has been piloted in the California State University system. In exchange for policies that resulted in nearly all students purchasing a digital license to the textbook, the publishers and bookstores priced their digital licenses at 65 percent less than the comparable new print price. Ohio is considering piloting this approach, but faculty autonomy and student choice must somehow be preserved.

Skin in the Game—Premium Payment to Publisher for Student Success

As in most states, Ohio's subsidy formula has long calculated payments to campuses based on third-week enrollment. For the past two years, there have been additional payments made to reward campuses based on student persistence and retention. This policy incentivizes "paying for student success." We are talking with our publishing partners about a similar model for textbook purchases—significant discounts for initial textbook purchases with an incremental bonus paid for each student who succeeds in the course. Students would purchase their assigned textbook from the ODB in two parts, with the second purchase required only of those students who remained in the class at the end of the quarter. This approach squarely aligns institutional interests in graduating more students with the publisher's interest in producing high-quality content that serves student needs.

Stair-step Pricing—Sequential Price Reduction as the Edition Ages

Publishers earn up to 70 percent of an edition's revenue in the first year of the textbook's release. Thereafter, the used book market steadily cannibalizes the publisher's revenue. Greater discounts in the second year of the book's existence for digital licenses would smooth out and increase the publisher's revenue cycle, benefit students, and promote the transition to a digital learning environment.

State Procurement—The State Buys and Distributes Textbooks and Learning Materials

Popular in the K–12 environment and under consideration in the state of Texas for higher education, the idea of a state-issued RFP for content creation merits further discussion. Materials are purchased under work-for-hire terms, so the state owns the copyright, and the licensing terms, update procedures, and pricing can be set for the benefit of the student. To be of most use in higher education, the state-owned content would need to be modular and editable by individual faculty members.

Leverage Accessibility Initiatives—Demonstrate Universal Design for Learning Benefits of E-reader Devices

OhioLINK is leading a research project in mobile computing and accessibility to determine whether learning for students with print disabilities will improve as iPhones, iPads, netbooks, and other e-readers proliferate and born-digital learning materials become available. Outcomes of the research will serve curriculum

construction, blending of snatched moments-of-learning and sustained at-the-desk learning, as well as the needs of students with print disabilities.

Expand Library Role—Patron Acquisition, Modular Course Pack, Dynamic Licensing

Textbooks should be made available as digital licenses procured and managed by libraries. The funding should be a mix of increased institutional support and reallocation of existing collection budgets. The patron-driven acquisition model that is developing and bolstered by deduplicating within consortial partners could reduce purchasing costs. Payment schedules to publishers should mirror value to students and be offered under much more dynamic and flexible models. Educational institutions, on behalf of their students. should pay premiums for additional access to digital textbooks just prior to test periods and final examinations and experiment with pricing models based on user needs. Pilot programs, like those underway at the CTW Consortium,[26] should be expanded and results shared.

Strategic Planning Symposium—Engage All Players to Revise Learning Materials Market

In April 2011, the University System of Ohio convened a strategic summit. Representatives of bookstores, faculty, libraries, OER providers, publishers, and students offered policy recommendations that they thought would serve student needs, serve their own interests, and be palatable to other stakeholders. Each role contributed policy proposals that paralleled the initiatives presented earlier in this chapter. The entire collection of thirty-five policy recommendations (available in the ODB Ning community) will inform policy, practice, and pilots for our community over the next year. Similar multiperspective gatherings offer insights often missing from conferences and meetings in which all participants come from a single tradition.

Where We're Going

We are nearing the tipping point in a shift to digital learning materials, and the times ahead are best addressed through a series of short forward steps based on experimentation rather than a predetermined master plan. Nonetheless, we know that our experimental steps should be principle-driven, lead us in the direction of improved learning outcomes, and provide traction in holding down the rate of increase in the cost of textbooks. We'd encourage institutions, other states, and coalitions to explicitly articulate their own principles. In the process, educational consortia will gain buy-in from their members and signal to partners that serve students (publishers, bookstores, libraries,

accessibility centers, granting agencies) what drives the consortial model. The following principles and values define OhioLINK's approach to innovation in a changing marketplace.

- **Act on principle—don't chase the fad of day.** Marketing campaigns and disciplinary trends often are transitory. Change takes time, so select goals and principles that guide multiyear strategies and policies.
- **Avoid the tragedy of the commons—respect the needs and requirements of all stakeholders that shape textbook affordability and learning outcomes.** Almost without exception, we've been impressed with the integrity and character of those with whom we partner. We don't expect to find villains or a single source of the rising cost of learning materials. Instead, we seek to work together to avoid the tragedy of the commons—the economic model in which each actor's practices hurt as much as help student achievement and educational affordability. The model for creating, distributing, and using textbooks and other learning materials is broken; we all have to pursue new, cooperative strategies as we transition to a digital learning environment. Continued pursuit of individual interests without accounting for the needs and interests of other players in the system will result in harm to students, the constituency all stakeholders ultimately serve.
- **Claim the disruptive innovation in the service of service—benefit from Clayton Christensen's history of innovation and avoid the death of the organization.** Clayton Christensen reminded us not to overly sample the opinions of those for whom we are succeeding, but to pay attention to

those whose needs are not being met.[27] His examples from the computer storage industry, automobile manufacturing, and classroom practices tell us that those who don't listen to complaints and address them can find themselves with no market at all when their service model is disrupted by new industry methods. Pay attention to those not served rather than listening only to the accolades of those well-served by your educational model.
- **Commit to accessibility—universal design for learning serves all.** Nearly all of us have been disabled at some point in our lives, whether from accident, age and infirmary, or some other circumstance beyond our control. Everything done for those who self-identify with a print, mobility, or other disability serves all and is essential to achieving the goal of universal education. Educational materials that are designed from the beginning to reach all sensory modalities serve multiple learning styles as well as support the ADA and

Office of Civil Rights mandates for accessibility.

- **Meld OER and traditional copyright traditions—incentives matter for driving sustainability.** Content created as open educational resources is often the source of invention and channel instructional voices too impatient or new to earn the endorsement of a commercial publisher. To meld these voices with those supported by traditional publishing practices will lead to excellent learner-centered content. New models for modularizing content are forthcoming and will permit merged and mixed lists that effectively serve students and faculty.

- **Liberate the library—apply the great skills of this tradition to a broader definition of the social good.** The pre-eminent skills of librarians—identifying quality materials, indexing them, and suggesting selections for specific uses—are not adequately exploited nor perhaps well-rewarded in today's emerging learning environment. Leverage these disciplinary attributes in the move to digital textbooks.

- **Promote mass customizations—capture the discounts of volume; preserve the utility of the specialized.** OhioLINK is well-positioned to evaluate the community benefits of providing modular, indexed digital learning materials tied to high-enrollment undergraduate courses. A searchable basket of modular learning content can be tied to learning outcomes identified by Ohio faculty transfer and assurance guideline committee members. While the faculty identifies the desired learning outcome and means of assessment, students assemble those resources that most resonate with their preferred learning styles. This mass customization supports investment in globally usefully course materials compiled to meet the specific needs of individual learners.

- **Change is hard—offer credible rationale for new behaviors.** Our prime method to contribute to a digital learning landscape is to create pilots and experiments, make our data collection procedures and outcomes transparent, and share results with members of the community. By so doing, the faculty and institutions that are the actual adopters of changed behaviors have evidence to guide and support their own transformation.

Conclusion

All players who serve and work in education share responsibility for the success of our students. Our students and the individual missions of our schools differ; any strategies we recommend have to be mutable and flexible to be useful to each in the system. More than anything, we all must feel a strong sense of urgency;

we can't sustain the increasing costs of education nor bear the brunt of failed future efforts. Learn from history, appropriate some of the practices in use in the Ohio Digital Bookshelf, and map results to the principles that drive your actions. Single-minded pursuit of individual goals conceived as competitive rather than collaborative assure loss for all.

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ALA American Library Association

Water on a Hot Skillet

Textbooks, Open Educational Resources, and the Role of the Library

Greg Raschke and Shelby Shanks

Abstract

The rise of emerging technologies and the evolving needs of scholars have emboldened libraries to experiment more directly with digital scholarship. This chapter of The No Shelf Required Guide to E-book Purchasing *examines the problems associated with print textbooks and how electronic textbooks, although still an emerging technology, provide a viable future alternative.*

Overview and Context for Action

To promote change in the economics and publishing of scholarly information, libraries have well-established roles as advocates and educators about the nature of the scholarly communication cycle. Libraries can move adeptly to gather and present information about important scholarly communication issues, such as the National Institutes of Health (NIH) mandate for dissemination of funded research, and position themselves as expert advocates in support of positions such as authors' rights and copyright.[1] This advocacy role has largely been determined by the historic role of the library in the scholarly communication cycle—one of collecting, preserving, and brokering access to large quantities of scholarly information on behalf of an academic community. While not contributing as direct actors in producing or publishing scholarship, the traditional library role in impacting scholarly communication practices has logically centered around purchasing and advocacy. Change in scholarly publishing has been painfully slow and remains largely in the hands of scholars. The interdependency in the cycle of scholarly communication of libraries and scholars and the complicated relationship of academic publishing to promotion and tenure have made the possibility of libraries taking more direct action difficult.

Recently, however, the rise of emerging technologies and the evolving needs of scholars have emboldened libraries to experiment more directly with digital scholarship. While scholars remain largely focused on established channels for publishing scholarly information, many libraries have shifted their focus to scholarship that lacks established distribution and publishing channels or scholarship that is not integrated so closely with promotion and tenure. One such type of scholarship is the textbook market. Library experimentation in the textbook area is a logical outgrowth of technological developments in textbook publishing and libraries. As technology continues to broaden access to knowledge, traditional textbook publishing models increasingly stand in the way of progressive innovation. Textbooks, specifically the emerging digital textbook models, are a quickly evolving form of scholarship that presents both challenges and opportunities for libraries.

Although the North Carolina State University (NCSU) Libraries' initial steps in the textbook environment began in the traditional scholarly communication roles as advocates and information providers, we quickly realized that we could be direct actors and effect more change by experimenting and promoting new textbook models as part of our overall curricular resource strategy. Over the past few years, we've seen a growing interest in electronic educational resources and a move toward digital textbooks as a way to help financially distressed students. Burdensome textbook

prices cause students to share, pirate, and even do without required course texts. Indeed, textbook prices and fees have recently been cited as one of the top two factors in students not completing college.[2]

In contrast, new, affordable digital textbook solutions are emerging, including innovative models of open textbooks that leverage online access and low-cost alternative formats to enhance accessibility. The NCSU Libraries has experimented with both print and digital textbook models to introduce new, innovative textbook publishers to our campus, to engage our students and faculty in investigating potential textbook models, and to work with students directly on tackling the issue of textbook affordability.

Starting as Advocates

The textbook initiative at the NCSU Libraries evolved to meet a clear and growing need on our campus. The University of North Carolina (UNC) system, to which we belong, issued a resolution in 2006 calling on its universities, bookstores, and faculty to consider new strategies to aid in lowering textbook costs for our students.[3] The resolution required that all system universities gather information on textbook costs on their respective campuses and propose strategies by which they could reduce student expenditures on textbooks. The universities responded by launching rental programs, forming a consortium for bulk purchasing of textbooks, encouraging instructors to retain textbooks for multiyear class sequences, and implementing guaranteed buy-back programs, all in an effort to lower costs and reduce the likelihood of students getting stuck with books that have little or no resale value.[4]

In the NCSU Libraries, we heard the call and immediately recognized the problem as a familiar scholarly communications issue. As experienced advocates and professionals who were well-versed in the trials and tribulations of the inelastic scholarly publishing marketplace, we felt we were well-positioned to take a leadership role in the textbook initiatives on our campus.

Our first step was to launch a website to promote awareness of rising textbook costs and open textbook models (see figure 7.1). We conceived the site to be a clearinghouse for practical, viable solutions to the textbook problem. The site launched in 2008 and examines the textbook market from the affordability perspective and presents arguments in favor of open textbooks and new textbook models. Our initial progress was aided by the work of Jordan Frith, PhD student in communications, rhetoric, and digital media. Frith authored a white paper on open textbooks, which we made available for downloading on the site.[5]

At the same time, we sought opportunities for collaboration with the NCSU student body. The NCSU

Course Books on Print Reserve

Based on student feedback in Fall 2008, the NCSU Libraries implemented a comprehensive program in Spring 2009 to acquire at least one copy of every required textbook—2,400 in all—and place them on Reserve for students. The University Bookstores provides the list of all the textbook adoptions from faculty on campus. The Libraries then identifies what is already in the stacks, on Reserve, and what needs to be purchased. The purchase requests are sent to the Bookstores, where they are ordered and shipped to the Libraries in time for the start of the semester. Use has steadily increased from 10,315 circulations in Spring 2009 to 24,700 circulations in Fall 2010. Costs have dropped accordingly from the initial investment of $89,951 in Spring 2009 to $16,097 in Fall 2010. These somewhat surprising results—heavy use with stabilizing costs—lead us to conclude, at least for the near and medium term where print textbooks remain strong in the marketplace, this type of program is a reasonable part of any library's curricular resource strategy.

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student government had begun holding open meetings to discuss the issues surrounding textbooks from the student perspective. We sent senior library staff to these meetings and encouraged the students to consider the library as a partner in the fight against high textbook costs. These meetings with student representatives led to the establishment of a textbook reserve collection at the NCSU Libraries.

The NCSU Libraries' foray into directly impacting textbook options and affordability for students first came in the form of a print collection of textbooks on reserve (see sidebar), but quickly grew to encompass experiments in digital textbooks as part of a growing curricular resource strategy. The libraries agreed to purchase and provide at least one copy of every required textbook for fall and spring semester classes. The libraries currently make over 4,500 required texts available on reserve each year. These volumes are offered for short-term checkout to ensure availability to as many students as possible. Although the purchase costs were substantial, the potential cost savings for the campus easily recoups the expenditure. Assuming a relatively modest cost per volume of $50 and that a low-ball estimate of five students using each book in the collection, this textbook reserve program saves NCSU students more than $1 million per year.

Following the successful textbook affordability advocacy work and the provision of required print course books on reserve, the NCSU Libraries plunged into more direct experimentation in the textbook arena in partnership with the physics department. The head of the physics department contacted us

Figure 7.1
Screenshot of NCSU Libraries' textbook site.

about purchasing and hosting a digital textbook for its required introductory physics courses. His department had been concerned about the escalating costs of textbooks for some time. He had read the open and alternative textbook advocacy website material from the libraries and had finally identified a suitable, alternative electronic textbook for the department's use. It selected *Physics Fundamentals* by Dr. Vincent Colletta, which was released by an experimental publisher, Physics Curriculum and Instruction.[6]

Encouraged by the physics department's desire to break the textbook mold and excited by the chance to directly promote a more sustainable and cost-effective textbook model, we negotiated a deal with the publisher to purchase a site license for all NCSU students, faculty, and staff. Nearly 1,300 students take the introductory physics courses in an average year. A traditional physics textbook typically sells for $150–$190 each; the costs for traditional texts for this course alone would be well over a quarter of a million dollars. In contrast, *Physics Fundamentals* was made available online through the libraries' website for a negotiated $1,500 site license.

We released publicity about the collaborative effort between the libraries, the alternative publisher, and the physics department. The response was immediate. Positive stories appeared in local and national news: the *Technician*—the NCSU student newspaper, the *Raleigh News and Observer,* and the *Chronicle of Higher Education*.[7]

Dr. Michael Paesler, head of the Department of Physics, said rising textbook costs prompted the department to look for a more sustainable and cost-effective way to provide quality, peer-reviewed textbooks to their students.

"We've been talking about this for at least 5 years. This was the first time we felt there was a real option, and a quality option that would indeed save students money," Dr. Paesler said.[8]

While pleased with the publicity, we struggled to understand why this effort, among the many innovative ideas we incubate and attempt, gained this level of attention. When a colleague remarked that textbook costs and affordability are like "water on a hot skillet—anything new and interesting sizzles and gains attention," we began to grasp the scope of possibilities in directly experimenting with alternative textbook models.

Interest among faculty in other alternative publishers, like FlatWorld Knowledge, soon followed. The adoption rates of licensed electronic book content from commercial publishers like Springer and Morgan and Claypool for use as textbooks grew quickly. Electronic books offered from the library had entered into the pedagogical thinking of a small but influential group of faculty who began to leverage these licensed materials and learning technology tools offered by the university and the libraries in an effort to move away from traditional textbooks and save money for students. A dozen or so faculty dropped textbook requirements altogether in favor of a mix of licensed electronic books, licensed electronic journals, and open educational resources.

There are a number of ingredients that enabled the success of the NCSU Libraries' engagement and experimentation with new textbook models and licensed electronic book content:

- **Advocacy and awareness.** Advocacy initiatives helped educate stakeholders and provide the interested faculty with alternatives and reliable information about potential options for making changes in their course book selections.
- **Dissatisfied stakeholders.** Widespread dissatisfaction had spread among the many stakeholders in the textbook marketplace—including students, parents, administrators, librarians, scholarly communication and open access advocates, and a growing contingent of faculty. The dissatisfaction is primarily driven by cost increases that significantly outpace the rate of inflation, but also comes from a growing awareness among academics of the potential to mix and customize electronic content with learning technologies to meet specific pedagogical purposes. The combination of pressure from the university administration, parents, and students to reduce costs and the faculty's

willingness to experiment creates great opportunities for new alternative textbook publishers that offer more flexible and cost-effective models.[9]
- **A widespread willingness among faculty in an academic department to change their pedagogical approach** to incorporate new model electronic texts and work to save student costs.
- **Dysfunctional marketplace and new technologies.** Increased digital publishing capabilities of alternative textbook publishers such as Physics and Curriculum, Morgan and Claypool, and Flat World Knowledge have taken advantage of the dysfunctional textbook marketplace and the cost efficiencies of digital publishing. These publishers' products have attractive economies of scale when compared to traditional publishers' textbook options, which come with significantly higher prices.
- **Flexible licensing terms.** The digital textbook adopted by the physics department allows students to use the content in the format that best suits their needs and preferences. *Physics Fundamentals* is available online as a PDF, but can be copied by students to digital devices for their personal use, printed in its entirety on demand from the NCSU Bookstore and Kinko's for $40, or printed in segments as needed. When surveyed at the end of the first semester of the textbook's use, just over 60 percent of the students reported choosing to acquire a print copy and over 80 percent reported printing at least a portion of the electronic book. These findings seem to reinforce recent studies indicating the preference among students for the functionality and interaction currently offered by print versions of textbooks.[10]
- **Expertise in creating and hosting digital collections.** The NCSU Libraries' initiatives to create reusable and scalable digital collections and a repository infrastructure enabled us to quickly host and serve up electronic textbooks where appropriate.
- **Robust electronic book programs.** Electronic books are a well-established part of the libraries' collections and the culture of scholarship among NCSU users. The libraries' expertise in search and discovery, established advocacy programs in digital scholarship, and advanced collecting in electronic books helps to make content such as *Physics Fundamentals* and Morgan and Claypool titles discoverable, visible, and readily available to our community.
- **Integrative tools.** The NCSU Libraries has made several learning technologies available, such as Library Course Tools, which facilitate embedding electronic books in learning management systems. Library Course Tools is an application that dynamically generates student-centric views of available library resources and tools that correspond to

each course taught at NCSU. Library Course Tools is easily linked to by library systems and campus learning management systems.[11] ReservesDirect, another tool, is an open source reserves management system that enables users to upload files and link directly to online materials, and developers to embed reserves information in other applications.

Keeping the Sizzle—Hosting Faculty-Authored Content

The second opportunity for the NCSU Libraries to directly effect change and experiment with hosted textbooks also came in collaboration with the physics department. Faculty-authored textbook content—both short and long form—is now hosted in the NCSU Libraries digital collections for use by the entire NCSU community. Encouraged by the success of the licensed electronic textbook content, other physics faculty members who had been considering self-publishing textbooks were now willing to push those textbooks to completion. The ability to combine digital dissemination with growing print-on-demand capability at very moderate costs aided the adoption of the self-published textbooks. And for the students, the flexibility in formats (print or digital) was an attractive feature.

The incentive layer, always a critical piece to any evolution of scholarly communication practice, provided a number of positive inputs to encourage experimentation and alternative models. First, a great deal of the initial motivation to make a change to digital textbooks came from faculty's increased concerns over the rising costs of traditional textbooks and worries over continuing to pass those costs on to students and their families. Some of the dysfunctional elements of the academic journal marketplace, where the faculty are typically unaware of the costs of scholarly journals, are mitigated in the textbook market by the faculty's direct exposure to the cost of the textbook during the adoption process. Second, both pressure and rewards were applied to the faculty by the UNC system and NCSU to take steps to control textbook costs. The system provided funding and reward incentives to faculty applying alternative approaches but has yet to offer funding to libraries or institutions to experiment with centralized purchasing. Finally, the limited functionality of traditional textbooks motivated the physics department, a technologically sophisticated group of faculty, to look at alternative publishing models to leverage both technology and format flexibility in delivering course content to students. Partnership with the libraries provided a scalable and accessible distribution mechanism for the faculty-authored content. The combination of incentives and reduced barriers to dissemination provided the right mix to facilitate experimentation and innovation.

Inherent Challenges

While digital textbooks and open educational resources present significant opportunities for experimentation, inherent challenges remain for any library moving into the digital textbook arena. Traditional reserve models serve only one user at a time and fail to leverage many of the benefits of digital content. No digital models, even emerging offerings from new market entrants, come close to scaling in the context of existing library budgets and structures. Significant additional funding would need to be provided for any type of large-scale experimentation with digital textbooks in libraries.

Economic transference, from highly distributed and decentralized models with individual students and families funding their personal textbook needs to centralized models with a library or other organization providing funding, presents a number of challenges. Student fees or related models of creating a central funding pool are highly political and likely to create tension among portions of the student body. Centralized adoption and institutional licensing challenge independent pedagogical practices and instructor control over the selection of texts. As the larger commercial market for e-readers, tablets, and e-books emerges, textbooks will inevitably evolve to take advantage of device momentum to disseminate content. Personal, device-driven applications cater to the distributed, individual purchase model that now dominates the textbook marketplace. However, centralized licensing presents significant opportunity to move aggressively into new models, substantively reduce per student costs, and facilitate student choice among formats with print-on-demand, digital, and audio availability.[12] As libraries further integrate into learning technologies and course systems, their ability to leverage existing e-resource delivery infrastructure for digital textbooks increases. In short, the technological and licensing models to facilitate centralized approaches are emerging if the political and economic challenges can be overcome.

Conclusion

The textbook market is ripe for economically and technologically disruptive models. Despite there still being a strong preference among students for the *functionality* provided by print textbooks,[13] dysfunctional textbook economics, flexible format delivery, integrative course content delivery options, and the growing availability of new technologies associated with electronic textbooks can provide significant opportunities for innovators in the textbook marketplace, including libraries. New market entrants such as Flat World Knowledge, and Inkling and traditional textbook publisher models such as CourseSmart are just the

beginning. By leveraging a growing capacity to curate and disseminate digital collections, our knowledge and skills in advocacy for alternative textbook models, a faculty willing to experiment, and the collaborative imperative that drives innovative collections efforts, the NCSU Libraries has been able to directly impact the delivery of electronic textbooks to faculty and students. Our willingness to experiment combined with incentives from our institutions and a market-based trend towards alternative textbook options laid the groundwork. In scholarly publishing, culture almost always trumps technology. In the case of textbook models at NCSU, both culture and technology are working to enable experimentation with alternative digital models.

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Contributors

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