E-Books in Higher Education: Are We There Yet?

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The story of e-books, and specifically e-textbooks on campus, is an interesting one on several levels. We can talk about the growing awareness of e-books, thanks to products like the Amazon Kindle or the Sony e-book Reader. We can discuss the pedagogical and technology preferences of current and future students and faculty. We could hypothesize on the likely future form of the textbook in an age of open source and electronic editions. We could look at the e-textbook as a case study in the evolution and adoption of a technology-based innovation. We could extrapolate trends and make predictions as to the far-reaching implications that e-textbooks may (or may not) have on teaching, learning, and living in the educational environment, not to mention the potential effects for college stores, campus libraries, campus IT, and a host of other stakeholders.

Each of these levels of conversation brings up the specter of change for higher education. We ask, “Are we there yet?”—like kids on a car ride that has taxed our patience. Overly anxious evangelists of the e-textbook movement proclaim that their campuses will be 100 percent digital within the next one to three years. Skeptics argue that we have been hearing about e-books for over a decade and that e-books are no substitute for print. In the middle are a mass of individuals and institutions confused by the state and the trajectory of this new technology. Is it a marketing opportunity for institutions? Is it a panacea for textbook affordability? Should we invest more in e-book technologies, or wait to see what happens?

Each of these lenses and conversations gets to a more common and fundamental challenge for higher education: the continuous introduction of emerging technologies, and how an institution decides the right time to jump in. As with another ECAR bulletin on this topic, this bulletin presents an update to the rapidly changing e-book and e-textbook landscape and provides some higher education stakeholders with a clearer view of the road ahead. As Tamar Lewin said in the New York Times in August 2009, “Textbooks have not gone the way of the scroll yet, but many educators say that it will not be long before they are replaced by digital versions—or supplanted altogether by lessons assembled from the wealth of free courseware, educational games, videos, and projects on the Web.”

**Highlights of E-Books in Higher Education**

Most of us are familiar with Johannes Gutenberg, the German goldsmith who invented the mechanical printing press in 1439. Gutenberg was listed as one of the most important people of the last millennium by A&E Network’s Biography series, and his invention was rated the most important invention during the same period by Time.
The power of Gutenberg’s invention was in the access it provided to information. It has been credited with spurring the Renaissance and the subsequent scientific revolution by allowing information to spread faster than before and making knowledge more accessible.

What some people may not know is that the mechanical printing press was not a commercial success during Gutenberg’s lifetime. To avoid bankruptcy, he lost the press to his creditors. Even more than 50 years after the creation of the press, most went bankrupt in response to challenges with literacy, overproduction, and costs.

In some ways, the e-book of today faces some of the same opportunities and challenges Gutenberg faced. E-books can improve access to knowledge and increase the speed of knowledge distribution like never before. However, at the same time, we lack the devices and sufficient information literacy for the mass market to be comfortable with consuming books electronically. Producing e-books is still a costly venture at some levels, as publishers and retailers alike try to determine how to maintain the still much-preferred legacy model of print while transitioning to a new digital model—and still account for costly infrastructures to produce and distribute content, regardless of media format. Unlike Gutenberg, we must also cope with competing standards and formats for digital content and different platforms to access content, each of which has its own unique collection relevant to the college consumer.

Against this historical backdrop, the Internet will likely ultimately be recognized for being as transformational to literature and knowledge as the printing press. E-books in general, and e-textbooks specifically, are still in their infancy. Over the next few pages we will look at the current and future evolution of e-books and e-textbooks from several angles.

A Growing Awareness, and a Growing Market

There has been explosive growth in e-book awareness over the past year, starting perhaps with Oprah Winfrey introducing the Amazon Kindle on her show in October 2008 as her “favorite new gadget.” This broad exposure helped increase sales for all e-reader devices. By the end of 2008, more than one million e-readers were sold, and by the end of 2009, e-reader sales were expected to top three million. E-book sales are growing rapidly, with the most recent statistics from International Digital Publishing Forum (IDPF) showing July 2009 e-book sales at over US$16M for the subset of trade book publishers it follows, up 213% from the same month in 2008. Figure 1 shows annual sales figures for e-books among the U.S. trade book publishers tracked by IDPF. E-book sales among this set grew by nearly 278% in the first two quarters of 2009 compared to the first two quarters of 2008, and over 400% compared to the same two quarters of 2007.
In 2009, multiple sources reported that reading applications for the Apple iPhone and smart phones became extremely popular, resulting in millions of downloads for companies like Barnes & Noble and Amazon. The phenomenon spawned the word app as a common part of campus vocabulary. There are now over a dozen different competing e-reader companies, with more expected in the coming months. In addition to known players like Amazon and Sony, we see new players entering the market, such as Verizon, Barnes & Noble, and Best Buy. At the same time, Apple and Microsoft are both rumored to be nearing release of tablet or netbook devices that will compete directly within the e-reader and e-book space. The presence of many large and retail-savvy companies in the space signals a move toward mainstreaming of e-reader technology and the e-books that will accompany it. It also suggests that Amazon is by no means the certain victor over the longer term.

Speakers at the London Book Fair’s day of digital education reported that in 2008 for the first time the Internet took 23% of market share for book sales and for the first time became the largest portion of channel market share for books. While this data looks at the sale of books, physical or digital, it is important to notice the recent shift to buying books online as the preferred channel. In 2000, online book sales accounted for less than 5% of all book sales and were perceived to never be a threat to traditional bookselling. Nearly a decade later the Internet is the primary channel for buying books and might soon be larger than all other channels combined. It is another example of how things can change quickly even when players in the market downplay current sales. At the same time, it also demonstrates how change still takes time. How we buy content is changing more rapidly than what we buy. This is reflected in student studies by the National Association of College Stores (NACS) and others and in actual content sales. Most students still prefer print to digital (or a combination of print plus digital) even when the digital is made available for free. Thus there is a need to pay attention to providing
more affordable print solutions, while recognizing that what students buy may change as much as how they buy it over the next decade.

Interest in e-textbooks is not only a U.S. phenomenon. We are seeing growing interest in e-textbook initiatives around the globe. Countries such as Norway and Denmark lead the pack, creating an innovative new collaborative organization to facilitate digital course material initiatives for member campuses. In Canada, student associations and college stores came together, inviting faculty and other stakeholders to create the Canadian Roundtable on Academic Materials (CRAM), a group focused on opening dialogue and seeking solutions to issues related to course materials in the country. We have seen interesting studies from the Joint Information Systems Committee (JISC) in the United Kingdom. Korea has an aggressive initiative targeted at converting textbooks at all levels of education to digital format within the next few years. The print-on-demand center at Queensland University in Australia was an early pioneer in shifting from a print-then-distribute to a distribute-then-print model, thanks to a partnership between the university press, the college store, the campus information technology (IT) department, and other groups. Several African nations have also been engaging in or exploring interesting experiments with digital delivery of course materials. The CITE, our blog on digital course materials (http://thecite.blogspot.com), is now followed by readers in over 140 countries.

E-Textbooks: Administrative Dream, or Learning Reality?

At the same time that sales are moving more online, universities across the United States are realizing the potential benefits that e-books and e-readers could have for their campuses. Many pilot initiatives have been implemented as a result. Showing the value of hype, every institution seems to want to conduct an e-book pilot or build a program that utilizes a version of the Amazon Kindle. Others are conducting experiments involving the Sony e-book Reader or other devices, such as iPhones or traditional laptops. The many current pilot programs differ slightly between schools, but they aim to assess the use of e-book technology, identify the positive and negative impacts of e-book technology on teaching and learning, and identify features that could be modified or added to the devices to improve usability.

In addition to the much-hyped Kindle pilots, other campuses are leading their own e-textbook initiatives. The University of Wisconsin–Madison recently initiated a Kindle DX pilot so that they could compile their own data on the use of e-readers in the classroom. At Northwest Missouri State University, students tested e-books on Sony Readers and laptops. The university aims to expand its program to eliminate all printed textbooks, and it is targeting a three-year timeframe. The Board of Regents for Montana recently announced plans to investigate and potentially implement a program to digitize course materials and allow faculty to create custom digital textbooks that include multiple media formats from multiple publishers. The list of such initiatives goes on. Higher education appears prepared to invest heavily in these and other digital-content delivery technologies, though, which suggests both opportunity and challenges for the industry given that the technology itself is still an emerging one.
Student reactions to digital reading have been mixed. For students to be interested in e-readers, the devices must be closer to paper textbooks in some aspects of functionality and quality. From market research we can discern that for e-textbooks to be successful, students want a device or application that includes a color screen that does not strain the eyes, the ability to highlight and easily flip pages, and comprehensive note-taking capabilities. In terms of content, students only want to pay for the material that they use, and they want content to be cheaper. Students might be willing to buy a dedicated e-reader device if they are convinced that they will save money over time on the content.

The dominant advantage of e-books found by the JISC study was not cost (which ranked a distant third), but online access. In the most recent Project Tomorrow data, nearly half of students in grades 6–12 identified online textbooks as a characteristic of the ultimate school. In addition to online textbooks, digital content, online classes, laptops, and other digital technologies all were identified by more than 40% of students. In the same study, just over 30% of teachers selected online textbooks as a desired characteristic of the ultimate school—a percentage lower than that for either higher education faculty or administrators. While there is no data available on this at the higher education level, it does pose an interesting question, especially since the college store and publishing industries have strong sources of historical data suggesting that faculty have the greatest influence over whether students purchase course materials, and more recent data suggest that this influence extends to the format of the materials.

Many believe that digital textbooks are the solution to textbook affordability and accessibility on college campuses. Research by the Student Public Interest Research Groups (Student PIRGs) suggests that many digital textbooks do not currently provide lower-cost alternatives to traditional print books when total cost of ownership is calculated. Digital editions can be as costly and sometimes more costly to produce than traditional print editions, particularly as the content moves toward more interactive or "born digital" editions. As digital editions become more interactive, the learning value might increase, but accessibility to individuals with various disabilities can be affected. Accessibility issues can create legal and educational challenges for institutions. For many institutions, there is a financial return that comes from course materials sales. That revenue most often goes to financial aid and tuition sustainability, student activities, or capital projects. The loss of revenue in a time of shrinking budgets, particularly revenue to support financial aid, could result in improved textbook affordability at the cost of overall educational affordability.

There are interesting opportunities on the horizon to help reduce textbook costs with digital solutions. Several institutions have found print-on-demand to be an effective way to improve affordability. Some of the open access textbook initiatives also show great promise for improving affordability, and this is an area getting much attention at state and federal levels, as well as among private investors. Most students still prefer print, however, and will often choose to pay for a print edition rather than take a digital version for free. While we expect this trend to change, universities could combine these two areas of opportunity, adding value for students while reducing textbook costs and maintaining campus financial returns.
What It Means to Higher Education

Industries and organizations that are mature and have been around for a long time have a habit of believing that they will always exist. We used to give the example of what happened to the music industry in its shift to digital as “the example” of how not to manage the transition. However, look now at the current throes of the newspaper industry to see an even more compelling story. In 2008, the Internet surpassed print newspaper as the preferred source for national and international news.\(^{21}\) We are seeing major newspapers across the country move to digital-only editions or only producing print editions a few times per week. This blog quote captures the atmosphere:

> And so it is today. When someone demands to know how we are going to replace newspapers, they are really demanding to be told that we are not living through a revolution. They are demanding to be told that old systems won’t break before new systems are in place. They are demanding to be told that ancient social bargains aren’t in peril, that core institutions will be spared, that new methods of spreading information will improve previous practice rather than upending it. They are demanding to be lied to. There are fewer and fewer people who can convincingly tell such a lie.\(^{22}\)

The changes coming to course materials in higher education are probably not unlike those facing the U.S. newspaper industry today. In his provocative article “What Colleges Should Learn from Newspapers’ Decline,” Kevin Carey observed that if higher education decides to hold on to the past like the newspaper industry did, “then someday, sooner than we think, we’re going to be reading about the demise of once-great universities—not in the newspaper, but in whatever comes next.”\(^{23}\)

Rethinking the Book in Textbook

One of the challenges for educators is to think about the textbook as a device. As I. A. Richards noted back in 1924, “A book is a machine to think with.”\(^{24}\) The emphasis here is on the book as a device, and, as a device, it has certain pros and cons. An e-textbook is also a device. As a device, it too has pros and cons. We must get out of the mindset of thinking of books as the only or best option for learning content or course materials. The traditional textbook is just a device. Candles can light up a room, and so can lightbulbs. Both have pros and cons, but how many people would give up lightbulbs today for candles?

As we look at technological and social forces in our environment, the way individuals read, particularly young individuals, is changing. Reading is becoming more of a social experience. As Bob Stein commented, “Our great-grandchildren will think of reading as a social experience.”\(^{25}\) We must think of textbooks more as devices and then compare them, as devices, more directly with their digital counterparts with respect to pros and cons relative to the changing environment. That does not mean that the current approaches to e-textbooks will dominate, only that we should consider them as potential substitute technologies. Reading is changing, students are changing, and so education must change as well.
In a recent study that NACS conducted among college stores, one of the greatest barriers stores identified to delivering digital course materials was that students do not want or are not asking for digital. Much like the quote from Henry Ford that opens this bulletin, people rarely clamor for technologies they do not yet know, but years later they find they are technologies they can no longer live without. People in the 1980s were not crying out for the Internet, yet look at the number of people who use it today. Or consider the prior example of the printing press, which was initially a commercial failure yet later became one of the most profound inventions of the last millennium. The fact is that digital forms of reading are growing in popularity. As a device, an e-book or e-textbook does have certain advantages over the traditional printed book. As more users adopt, it will continually evolve to a better user experience, just as cars evolved into a better travel experience over time.

**Implications for Campus Stakeholder Groups**

Never have on-campus partnerships been as important as they are today. A recent cover story in the *College Store Magazine* led off with the following observation:

> The college store, campus library, and IT department fulfill complementary roles in the academic mission of their institution. At the same time, all three face tightening budgets and a huge impact from academic materials shifting from print to digital formats. In terms of individual strengths and shared challenges, the three are natural partners.\(^{26}\)

Partnership between these groups is not always easy, as we have stereotypes and competing values related to how each of us manage content. While grossly oversimplified, these stereotypes and value positions can be characterized by the following three statements:

- Libraries: give everything away for free to anyone
- IT departments: control access to everything
- College stores: charge for everything

In many instances we find misperceptions about the motives of our colleagues on campus. That was a message that came across clearly in March 2007, when EDUCAUSE, the Association of College and Research Libraries (ACRL), and NACS jointly convened a forum on the future of information delivery on our campuses.\(^{27}\) By the end, the forum identified several opportunities for further collaboration between these groups, and several interesting campus and national initiatives resulted from that meeting.

Campus stores and libraries in particular have much to gain through collaboration. For example, at the University of Kansas, Lawrence (KU), a “digital content collaboration” committee was formed that included representatives from campus IT, the library, the campus bookstore, faculty, the KU Center for Teaching Excellence, instructional services, and students. An early effort focused on the duplication of content and effort that occurs between the library and the college store, a common situation on many
campuses. Investigation and collaboration led to a decision to transition e-reserves from the library to the bookstore. The success of that project has led to other initiatives that have further reduced costs and provided increased returns to the university.

In the past two years, many areas of campus have undertaken initiatives to evaluate the growing interest in e-books and e-textbooks. Similarly, many campuses have initiated textbook affordability committees to look at how digital solutions might reduce the cost of textbooks. The best of these initiatives get broad-based participation from stakeholders in many different campus departments in addition to faculty and students.

**Deciding When to Jump Into a New Technology**

Deciding when to invest in a new technology is a difficult challenge for individuals in any industry. It is made more difficult when that new technology is emerging rapidly and seems to be changing daily. The average time it takes for new technologies to be adopted today is orders of magnitude shorter than just a few decades ago.

The first tool for administrators looking at an emerging technology is a process for scanning the environment. This involves looking at various forces that could influence the success or failure of a new technology. These forces could include competitive, regulatory, economic, technological, or social factors. Understanding what is happening with a technology in each of these domains can provide administrators with a more realistic view of what the technology can and cannot do at the present time.

A second tool for administrators is to understand the adoption cycle. Technology is first tried by innovators and early adopters. It is then adopted by the early majority, the late majority, and eventually, if ever, by laggards. Nearly all technologies go through a standard adoption cycle.

There are many new technologies, however, that fail to receive widespread adoption beyond the innovators and early adopters. Many prior e-book initiatives fall within this category. While it may be a technology many of us believe should be successful, it has repeatedly failed to be picked up by the early majority. We describe this phenomenon as the adoption chasm. Understanding why a technology failed to be adopted in the past can give administrators key insights into forces to monitor in the environment. As conditions that alter the factors resulting in past failure change, administrators can make better-educated investment decisions.

A third tool is the concept of a hype cycle, developed by Gartner. The hype cycle is now nearly 15 years old and has itself emerged as a useful approach to making decisions about when to invest in an emerging technology. The model captures the unfolding relationship between our expectations and the maturity of a technology over time. Interestingly, most technologies follow a similar path, experiencing high expectations in response to some technology “trigger,” followed by a period of disillusionment, followed by gradual acceptance and adoption. As the technology matures, we observe the roles that advertising, best practices, and experience play as administrators determine whether the technology is mature enough to adopt.
By using environmental scanning in conjunction with the adoption curve/chasm and the hype cycle, administrators can build a priority matrix that plots the potential impact on the institution against the likely timeframe until mainstream adoption by their student population. Doing so can help the institution understand how some benefits might be leveraged to reduce or manage the risks, and this knowledge can help determine the right time for the institution to make the jump.

Conclusions

The hype cycle suggests that organizations “should not invest in a technology just because it is being hyped, nor should they ignore a technology just because it is not living up to early over-expectations.”29 This is the point we are at with e-textbooks and related technologies. A September 2009 Chronicle of Higher Education headline proclaimed “This Could Be the Year of e-Textbooks,” citing trends in growing awareness of e-textbook options and greater title availability.30 With headlines like this appearing more often, and a growing push from companies desperate to sell a confusing array of devices and digital content options directly to students, it is difficult to sort out the hype from the reality, or for administrators to make the decision regarding whether now is the time to invest heavily in e-textbook solutions.

Our recommendation is for institutions to continue to pilot and experiment with these new technologies. All campuses should be getting some experience with digital delivery of course materials on their campuses to be better prepared for the eventual reality. We have much to learn yet about the full institutional and educational impact of e-textbooks. Like the early days of the printed book, there are many innovations yet to arrive that will change the e-textbook landscape. There are still many unknowns regarding accessibility and affordability implications. Institutions should continue to share and leverage information from pilot projects on different campuses and push for solutions that are truly designed with students in mind. Diverse campus groups representing the many stakeholders involved should work together to define a coherent strategy for moving forward that matches the institution’s comfort levels with risk, while helping prepare the campus for a change that is on the horizon.

And if you are just that kid on the car ride, waiting impatiently for the answer to “Are we there yet?” the answer for now continues to be “No, but we are almost there.” Of course, if you have a great program on your campus, or have learned something new about e-textbooks on your campus, both EDUCAUSE and NACS would love to hear about it. Seeing the mile markers along the way may help us all better determine how close we are to the destination.

Key Questions to Ask

- How does your campus keep pace with developments related to how e-textbooks and digital resources can be used for instruction? Has a group been established that brings together stakeholders from the library, IT, college store, faculty, instructional design, and the student body?
- How are students using course materials on campus? Are students using print course materials and digital course materials differently? Why and when do students at your campus purchase or select one format over the other?

- Are you scanning the environment for competitive, regulatory, economic, technological, and social forces that could influence e-textbook decisions at your institution? What is your strategy, or what tools do you use to decide when, if, and how it is appropriate for your institution to jump into an emerging technology?

Where to Learn More


Endnotes

1. Admittedly, we sometimes find ourselves in this camp. It is difficult to get people to do the things they need to do now to prepare for an event that might be a decade away if they think they can wait until 9 years and 11 months have passed before they do something.


6. U.S. industry statistics on trade e-book sales are reported quarterly by the International Digital Publishing Forum (IDPF) at http://www.idpf.org/doc_library/industrystats.htm. Note that this data includes only a subset of trade publishers and reportedly does not include some large trade book publishers who have experienced greater e-book sales. These numbers should be seen as underestimates of the current market.


24. I. A. Richards, Principles of Literary Criticism, 1924. This book has since been revised, and there are several more recent editions.


27. A copy of the report from this forum is available from any of the participating associations. The report is titled “Stepping Through the Open Door: Forum on New Modes of Information Delivery.”


29. Ibid., 4.


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