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Faculty Roles in Electronic Textbook Adoption

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There is a lot of buzz these days about electronic books (e-books) and the devices that support them. Within academe, print digitization is revolutionizing the way we interact with scholarly journals and other periodicals; the same trend is emerging with textbooks. This essay provides a brief background on the higher education market for electronic textbooks (e-textbooks), findings of a study conducted at the University of North Carolina at Chapel Hill on faculty roles in e-textbook adoption, a case study on some early experimentation with the electronic textbook as an instructional improvement tool, and the authors' perspective on the future instructional role of the medium.

Jean DeSaix, is a Senior Lecturer in the Biology Department at the University of North Carolina at Chapel Hill. She has won of a number of teaching awards, locally and nationally. Her teaching has included introductory zoology and biology courses as well as working with graduate students who are seeking to develop their own teaching skills. DeSaix's interests are in curriculum development, instructional strategies and educational technology. She received her MS and PhD from UNC and her AB from Catawba College.

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Background

The electronic textbook market is perhaps best described as being in the early stages of an inevitable transition. Devices like the Amazon Kindle have spurred growing interest in e-books, but adoption of electronic textbooks has lagged in higher education (Kolowich, 2010). Why are we not seeing a mass transition to e-textbooks? Many students are not comfortable using a laptop display for the kind of deep reading often required with a textbook, but few of them appear interested in purchasing a separate device dedicated to reading text.

A laptop is still the main productivity tool for most students. However, some industry observers point to Apple's iPad as an early example of a device that could marry the portability and sharp screen of an e-reader with the computing power of a laptop (Young, 2010).

Many faculty members and students do not know enough about electronic textbooks to make informed decisions about their adoption and use



Reading a Kindle on the bus

Market inconsistency is also an issue. Some publishers simply digitize their print books, while others enhance them with embedded media; many textbooks are not even available in electronic format. Finally, many faculty members and students do not know enough about electronic textbooks to make informed decisions about their adoption and use.

E-textbooks and instructor roles

During the fall 2008 semester, twelve instructors and more than 1,200 students participated in an e-textbook pilot study at the University of North Carolina at Chapel Hill. The goals of the project were to identify steps needed to help instructors and students become more informed consumers in the emerging e-book market, and to explore the potential impact of e-books on teaching and learning at the University, especially in light of concern about rising costs of textbooks.

Student adoption rates serve as a broad indicator for the viability of the e-textbook market, but much of that demand is pre-determined by instructors. Not surprisingly, instructors have a great deal of influence over student textbook purchasing decisions. Of students who participated in the UNC pilot, 90% said information the instructor provided on the importance of the textbook was a key factor in their decision to purchase or not. Given many students' unfamiliarity with e-textbooks, instructor endorsement of this format is likely to be a significant factor in their purchasing decisions. Several students who purchased an e-textbook commented on the importance of hearing about them from their instructors:

"The big thing was that it was teacher-endorsed... like if the teacher never said anything I wouldn't have looked at or gotten the e-book"

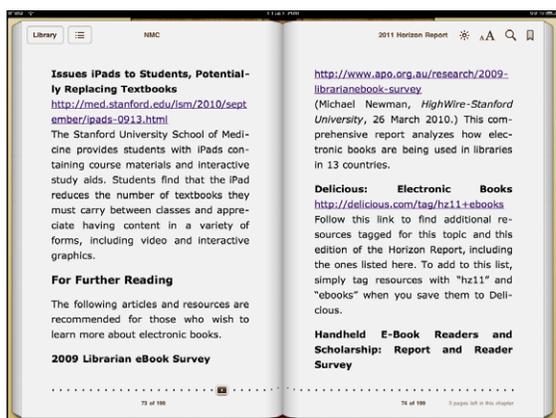
"If the teacher hadn't said anything, you just wouldn't have known if it was okay"

The timing of faculty endorsement of an e-textbook also appears to be important. 53% of students in the pilot were notified about the availability of the e-textbook via email before the semester began, while 47% did not find out about the e-textbook option until the first day of class or later. Students who were notified by their instructors before the semester began were nearly seven times more likely to purchase an e-textbook. They were also more likely to seek additional information about the e-book before making their purchasing decisions.

The method the instructor used to tell students about the e-textbook was an important factor in student awareness. Instructors reported notifying students through one or more of these channels: an email before the semester began, an in-class announcement, or in the course syllabus. Students informed via all three methods were most likely to be aware of the e-textbook option. Students who said they were unaware of the e-textbook were most likely to have been informed only through an in-class announcement. The study did not account for late enrollment in the class, a factor that was likely responsible for some percentage of student unawareness.

At UNC-Chapel Hill, the instructor must approve the use of the electronic version of a text before it can be made available to students enrolled in the course. For the fall 2008 semester, e-book titles were available for 139 UNC courses and 46 instructors approved this option for students. In spring 2009, 132 courses used textbooks which had an electronic version, but only 15 instructors included the e-book in the approved list for their use. The percentage

of instructors approving e-textbooks has increased over the past two years, but many faculty members continue to have reservations about using them. Our bookstore does not formally collect information from instructors about the rationale behind their decisions, but anecdotal feedback suggests that many instructors either do not know enough about e-textbooks to make an informed decision or are concerned that e-textbooks will encourage the use of laptops in the classroom. Laptops as distractions have become an issue for some instructors, although it is not clear that prohibiting laptops in the classroom should preclude student use of an e-textbook outside of it.



Reading on an iPad with “iBooks”

In summary, instructors who are interested in providing students with a choice of textbook formats should openly communicate this option as early as possible, before students begin making purchase decisions.

E-textbooks as instructional tools

Many comparisons between print textbooks and electronic textbooks have focused on the personal preferences of the end-user, but there are also clear differences in functionality. Full-text searching, copying and pasting are among the features that distinguish e-books from their print-based counterparts. Instructors at UNC and other institutions are also beginning to explore some of the pedagogical opportunities unique to digital formats.

One of the authors of this essay is Jean DeSaix, a biology professor who participated in the 2008 pilot. She has continued to gather data from her students about their textbook purchasing habits and has begun actively exploring the potential instructional benefits of emerging e-textbook products. The remainder of this essay is written from her perspective.

Approach

I began using an electronic textbook as an option in my honors course during the spring 2009 semester. In support of this pilot application, Pearson Education provided e-books at no cost for the title *Biology 8e* by Campbell and Reece with the online product “Mastering Biology”. E-reader software allowed me to highlight text, incorporate notes, and then share both with students through the online version of the text. Students logging into their e-textbooks could see my notes within each chapter. I used this feature to insert annotations within the online text that my students referenced during their readings. Notations included pointing out particularly important facts, emphasizing certain figures, and indicating parts of chapters that could be omitted. In the system that I used, a push-pin icon alerts students to a note. When they click on the pin, they see a window as indicated in Figure 1. In this case, I have used the highlight function to indicate particular parts of the module that they should focus on.

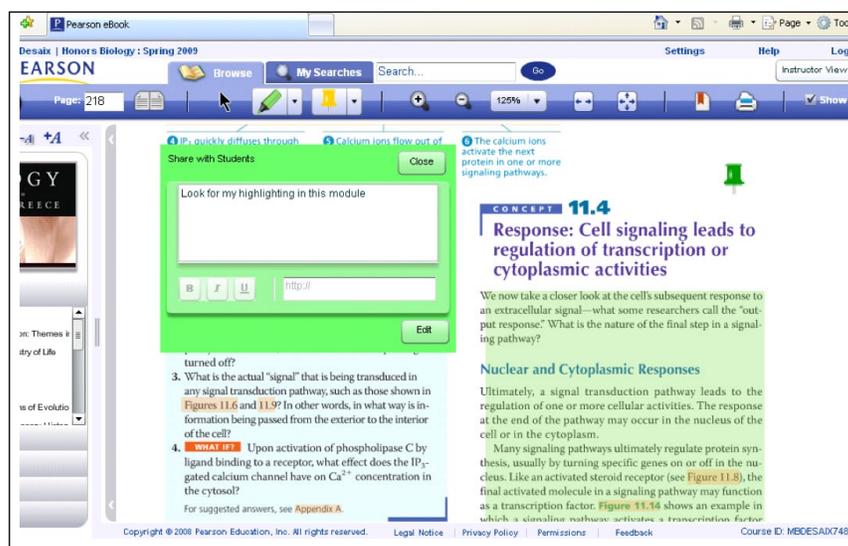


Figure 1

In my honors course during the spring 2010 semester, I made the electronic version of the textbook and the associated on-line learning system a requirement for students; the print version was optional. In this case, Mastering Biology was used not only as a rich source of additional learning through animations and tutorials, but also as a site for daily homework that was completed before each class. This decision was driven by my conviction that students benefit from access to instructor annotations as well as having continuous formative evaluation with all their learning materials available through one portal. Students using e-textbooks could access

an animation about the process or structure they just read about through one click of the mouse. They could test their understanding of course concepts through formative assessment activities that were part of the publisher-developed on-line learning system. The book enhanced the homework and the homework enhanced the book. My colleagues and I hope the auto-graded, twice weekly homework will help students with time management and promote better in-class interactions among students who are now well-versed in the basic content.

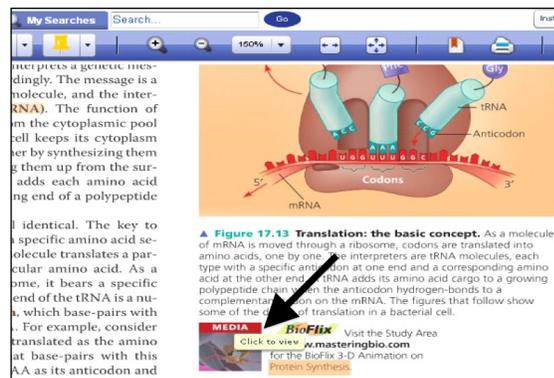


Figure 2

When students are reading the text, they can click on static figures to see an animation of the process. See Figure 2 for the location on the page where the animation is referenced and Figure 3 to see the animation menu revealed by a click. Students can then use the animation in any of the modes listed.

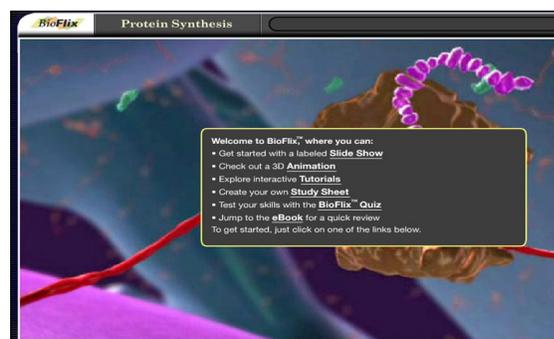


Figure 3

Results

In the Spring 2009 honors course, embedded annotations helped students to choose concepts on which to focus in preparation for in-class discussions. This process also allowed me to reference relevant sources including such timely events as a lecture by a campus researcher working on the mechanisms covered in the chapter. I realized my goals to help students – especially first-year students – manage the large volume of content, to help them make more efficient use of time spent on assigned readings, and to allow face-to-face class time to be used more effectively.

During class, students often use the e-book search function to find additional examples or explanations from the book that they might add to the class discussion. This not only made them look good by having pertinent facts at their finger-tips, it made the class discussion richer and deeper and added new material through a voice other than my own.

I noted that during class students were quickly able to check their facts and understanding with the e-textbook. In a sense, I was at their side when they were reading the textbook, and the textbook was at their side when they were engaged in class discussion. This tool isn't going to revolutionize the way I teach the course, but I found myself having higher expectations for my students as far as the level of class discussion. Building on this simple example, it not hard to imagine how such a tool could also be used to support peer learning and formative assessment techniques. (Rayner, 2008).

In the 2010 honors course, students reported that they understood concepts better because of the illustrations and animations – enhancements that digital delivery made possible. Having automatically-graded homework before each class seemed to make the students better prepared for class material. Data should be available to support this impression within the year.

A similar Pearson e-textbook and homework package is now being piloted in the multi-section general biology course at UNC-Chapel Hill. A homework product combined with the e-textbook will be a requirement for Biology 101 students next year.

Recommendations

Major factors driving interest in electronic textbooks are improved quality of homework assignments, rich feedback for formative assessment, simulations, study plans, and other online learning activities made available by publishers and through open source initiatives. These packages, often referred to as courseware, are commonly viewed as supplements to the print textbook. Their full integration with electronic textbooks, however, allows for a more seamless and potentially powerful package of learning tools (Warren, 2009).

Within the next 5-10 years, we believe that these tools will become part of a unified suite of content and academic services providing students with personalized learning experiences across a variety of disciplines. The readability enhancements mentioned earlier will likely go hand-in-hand with learning management systems, personal diagnostics, data visualization tools, artificial intelligence-based tutoring services, and easy access to online communities of interest as well as other external learning resources. Drawing on available libraries of perspectives and materials, instructors will also have more options for producing their own custom courseware products.

By 2020 we may see lectures integrated into online courseware along with the textbook and common companion products such as problem books, solutions manuals, and study guides. A potentially significant cultural transition for higher education institutions will be helping instructors to re-envision their roles in courses where technology-mediated learning is a key component. Even today, courseware includes the option to link formative evaluation to learning goals, to choose questions using Bloom's taxonomy as a criterion, and to diagnose major misconceptions. This courseware can enhance instructor awareness of important pedagogical issues as it helps them understand how to develop learning goals, how to implement Bloom's taxonomy in expectations of their students, and how to recognize common misconceptions. Not only are these products educational for students, but they represent professional development for instructors.

One promising recent development is the growth of the Open Educational Resources (OER) movement. OERs are materials offered freely and openly for educators and learners to use and reuse. Among other initiatives, nonprofit foundations and governmental agencies are beginning to fund the creation of high quality electronic textbooks.

The number of students opting for electronic textbooks will certainly increase as the market matures and more suitable devices proliferate. Meanwhile, it appears that some faculty members will drive adoption by recommending or requiring electronic texts based on the added instructional value they provide. We believe that these new learning products will continue to yield effective instructional activities that simply cannot be replicated with a print textbook.

This tool isn't going to revolutionize the way I teach the course, but I found myself having higher expectations for my students as far as the level of class discussion



Reading an electronic textbook online

(Author bios, continued from page 1)

Bob Henshaw is an educational technology consultant at the University of North Carolina at Chapel Hill and serves as staff liaison between the Center for Faculty Excellence and Information Technology Services. He coordinates instructional innovation projects across a wide range of areas including learning spaces, emerging technologies, and course redesign. Henshaw holds a masters degree from the UNC-Chapel Hill, and has taught courses for the University's School of Information and Library Science.

References and Resources

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Image credits

Page 2: “Kindle” by arecknor, <http://www.flickr.com/photos/arecknor/2544199097/>

Figures 1,2, and 3 are taken from Campbell, N. and Jane B. Reece (2008). *Biology with Mastering Biology*, 8/E. San Francisco: Pearson Benjamin Cummings.

Web Resources

- 7 Things You Should Know About E-Readers (Educause) <http://www.educause.edu/Resource/s/7ThingsYouShouldKnowAboutERead/200539>
- Electronic Books (2011 Horizon Report) <http://wp.nmc.org/horizon2011/sections/electronic-books/>
- The Future of the Book (video by IDEO) <http://vimeo.com/15142335>
- OER Commons (Open Educational Resources) <http://www.oercommons.org/>

Earlier titles in this collection

1. [In-Class Polling: Less Teaching, More Learning?](#) [Brian Levey, Notre Dame]
2. [Digital Video Reflection](#) [Ann Cunningham, Wake Forest]
3. [Vision and Revision: Using Wikis](#) [Christopher Penna, Delaware]

The Learning Technology Consortium

The LTC began in 1998 as a partnership of institutions with similar instructional goals, strong technology and faculty support programs, and an interest in collaboration around teaching and learning with technology. The members are:

- University of Delaware
- University of Florida
- University of Georgia
- University of Maryland
- University of North Carolina at Chapel Hill
- University of Notre Dame
- University of Pittsburgh
- Virginia Tech
- Wake Forest University

Representatives meet semiannually at one of the institutions, where members tour specialized facilities and discuss the selection and use of learning technologies, benchmarking, and collaboration.

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