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While e-books offer great potential for academic libraries, research has shown that usability issues can prevent readers from reading e-books or from using certain e-book functions. This study presents the results of usability testing on the platforms of three of the largest aggregators of academic e-books: ebrary, MyiLibrary, and Ebook Library. In addition to learning about the usability of these specific platforms, this research provides greater insight into the usability issues that students encounter while reading e-books and a deeper understanding of how e-books can meet the academic needs of students. Five undergraduate and five graduate students participated in testing, completing a series of tasks in each platform. Testing revealed several usability issues. Students want flexible navigational options, including the ability to scroll. Additionally, students enjoy certain e-book features, such as annotation and highlighting tools, but they were not sure that they would use these tools.

#### Headings:

Electronic books/Evaluation

Electronic books

User studies/Electronic books

A USABILITY STUDY OF E-BOOK PLATFORMS

by  
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April 2009

Approved by

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Deborah Barreau

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## **Introduction**

As academic libraries have expanded their offerings of electronic resources in recent years, students have increasingly turned toward these resources. While electronic books have not reached the same level of popularity as other online resources such as e-journals (Anuradha & Usha, 2006; Levine-Clark, 2006; Safley, 2006), there is evidence that students are using e-books to meet their academic needs and that they even prefer e-books over their print equivalents in some situations (Christianson & Aucoin, 2005; Croft & Bedi, 2005; Littman & Connaway, 2004; Safley, 2006). As academic libraries seek to meet the ever-evolving needs of their users, e-books offer conveniences that today's students have grown to expect from their previous experiences finding information online—conveniences such as full-text searching and accessibility from any place at anytime.

While Amazon.com's Kindle reading device has received a great deal of attention, the term e-book encompasses more than just books that are read from a personal device. Academic libraries currently purchase e-books through individual publishers and aggregators of e-books. Offering books from many different publishers under a single contract, each aggregator has a different platform, providing books through its own interface. Students can access their library's e-books online and, as of 2009, they typically read the books from a computer screen.

As academic libraries increase their e-book collections, librarians must consider a variety of issues including prices, licensing options, and the quality of content. Additionally, they must consider which e-book platforms will be easiest to use. Many platforms now offer additional functionality. These added value features take advantage of the electronic environment, allowing readers to annotate text and connect to outside resources. With the addition of such features, librarians must also assess which platforms offer the most valuable functionality for student research and work.

While e-books offer a great deal of potential for academic libraries, surveys of academic library users have found that usability issues can discourage readers from reading e-books (Anuradha & Usha, 2006; Chu, 2003; Croft & Bedi, 2005) or from using certain e-book functions (McFall, 2005). This study will examine the usability of the e-book platforms of three of the largest academic aggregators: ebrary, MyiLibrary, and Ebook Library (EBL). Each of these platforms offers titles covering the full range of academic disciplines. The University of North Carolina at Chapel Hill (UNC-CH) currently subscribes to ebrary and the University Library set up trials with both MyiLibrary and EBL for the duration of this study.

The goal of this research is to identify usability issues that students encounter using these platforms, as well what types of added value features students find to be most valuable. While this research is limited to three platforms, the study aims to serve as more than a review of these particular products. Beyond learning about these specific platforms, the purpose of this study is to gain greater insight into the usability issues that students encounter while reading e-books and to develop a deeper understanding of how e-books can meet the academic needs of students.

## **Literature Review**

In examining the usability of e-books and their future in academic libraries, it is worthwhile to first consider if students will want to use this type of resource. A number of studies have noted that many people prefer reading from the printed page, with readers explaining that they find it difficult to read from the computer screen (see, for example, Abdullah & Gibb, 2008; Chu, 2003; Langston, 2003; Levine-Clark, 2006). Despite this preference for reading from the printed page, several studies indicate that the convenience and accessibility of e-books may outweigh students' dislike for reading from a computer screen. The United Kingdom National E-Books Observatory study offers perhaps the most convincing statistics on e-book use at the university level. With over 20,000 responses from teachers and students to their online survey, the study found that over 60 percent of students were using e-books for their academic work. Nearly half of all students had used one or two e-books in the previous month and another 39 percent had used three or more e-books in that time period (Nicholas et al., 2008). In a study at Royal Roads University in British Columbia, when students were referred to both the electronic and print versions of the books for their classes, students opted for the electronic version over the print version at a rate of three to one (Croft & Bedi, 2005).

By comparing the use of e-books and print books, a number of studies further demonstrate the growing use of e-books at universities. However, the researchers note that there are limitations to comparing the usage statistics of e-books to print books. The



figures for print books do not include in-house use; any books that a person reads in the library would be excluded. While a print book usage would be recorded only when a book is checked out, an electronic book usage occurs each time a person accesses the book. These statistics do not indicate if a single individual used the same e-book ten times or if ten different users individually accessed the book. While such limitations make it difficult to draw conclusions about how resources are used, these studies provide strong evidence that students are turning to e-books for their academic work.

Librarians at the University of Texas found that while print circulation declined in 2005, e-book usage increased substantially (Safley, 2006). Bailey (2006) had similar results in a study comparing electronic and print book usage at Auburn University between 2000 and 2004. Bailey found that print usage declined by almost a third while the use of electronic books increased between three and five fold. Both Bailey and Safley note that since each school's e-book collection was still relatively new during these years, usage would not be likely to continue to rise so dramatically in the future years. However, these numbers clearly demonstrate that students have accepted e-books and that they are turning to these resources for their academic work.

Studies at other universities confirm this growing acceptance and use of e-books. At Duke University, researchers studied the circulation of 7,880 print and e-book equivalents in 2001 and 2002. Despite the fact that e-books were relatively new, e-books received 11% more use than their print equivalents. (Littman & Connaway, 2004). At Louisiana State University, Christianson and Aucoin looked at usage statistics for 2,852 titles that were available in both print and electronic format. They compared usage of print and e-book equivalents for a twelve month period beginning in January 2002. Their

results are less decisive; while 29.27 percent of print books were used over the course of the year, only 19.6 percent of the e-books were. However, of the e-books that were used, these electronic versions were accessed more often than their print equivalents circulated from the library.

In addition to these studies looking at general usage statistics, Grudzien and Casey (2008) investigated the use of e-books by distance education students at Central Michigan University. Since they are often located at some distance from the school's library, this segment of the student population may derive great benefit from the ability to access books online. Central Michigan University's distance education students were surveyed in 2007 and over 40 percent of respondents said that greater access to e-books would be the one change that would most improve their educational experience. From 2004 to 2007, the university saw increasing e-book use among both on-campus students and distance education students, but the percentage of e-book use among distance education students was much higher. Additionally, as the University began to provide access to more e-books, distance education students also began to borrow fewer print materials. E-books clearly meet a need for this student population.

While usage statistics indicate that students are turning toward electronic books for their academic needs, these studies fail to capture the human dimension involved in the reading process. The UK National E-Books Observatory study looks more deeply into this dimension of e-book use, asking survey respondents about their e-book reading behavior. Nicholas et al. (2008) found that individuals read short sections from e-books, rather than the complete text. When asked to think back to the last time they had read an e-book, less than six percent of students had read the entire text. Almost a quarter had

read one or more full chapters, but over half had “dipped in and out of several chapters” (p. 323). Another question asked respondents how long they typically read an e-book from the computer screen in one session. Almost 60 percent estimated that they read for less than twenty minutes in a session (Nicholas et al., 2008). Levine-Clark had similar findings in a survey of students, faculty and staff at the University of Denver. A little over half of respondents (a total of 1,061 individuals) had used e-books. When asked how they typically used e-books, only 7.1 percent read the entire book. Over half (56.5 percent) typically read a section within a book and 36.4 percent spent even less time using e-books, reading a single entry or just a few pages (Levine-Clark, 2006). Rather than deplore this lack of in-depth reading, Nicholas et al. (2008) point out that few people probably read a book from cover to cover in the past either. They suggest that e-books can potentially better serve people's research needs by allowing individuals to search for the precise information that they need.

The UK National E-Books Observatory study also included two open-ended questions in its survey, providing respondents with the opportunity to freely express their thoughts concerning e-books (Jamali, Nichols, & Rowlands, 2009). The first question asked respondents to explain what they viewed as the greatest advantages of e-books over print books. Although the free-response set-up led to thousands of unique answers, several themes emerged from the responses. The most commonly mentioned advantage was accessibility, with users explaining that they enjoy the convenience of being able to access e-books from anywhere at any time. The second most mentioned advantage involved searchability. Despite these advantages, respondents cited a range of problems as well, including difficulties with screen-reading and with printing. Jamali et al. point

out that the most often cited advantages of e-books (accessibility and searchability) suggest that users may be turning to e-books for practical reasons. For example, they may use an e-book to save the time of going to the library. The usage statistics cited earlier may be a reflection of how e-books are filling these practical needs, rather than a reflection of how satisfying and easy e-books are to use.

Additional research has focused on the added value features of e-books by examining if students find these features useful and easy to use. In a survey that focused on use of electronic textbooks, McFall (2005) found that college students had mixed reactions to the e-textbook with such features. The students in several computer science courses each used an electronic textbook on a tablet PC. McFall had hypothesized that a textbook with functions for highlighting and note-taking would promote active reading and enhance student learning. Although McFall does not provide specific data on his results, he reports on general trends. Students rated the highlighting tool as somewhat useful, but they had a difficult time using certain e-textbook features. Perhaps as a result of such difficulties, students did not use many of the e-textbook's features. McFall suggests that students' deeply ingrained study habits may explain why they did not use these features. Regarding student use of e-book annotation tools, Hernon et al. (2007) had similar findings in their research. Of the fifteen students in their study, only two annotated e-book content. Other participants preferred to handwrite notes on pages that they had printed out from an e-book; some students indicated that they might use these tools, but they would have to grow accustomed to them first. While e-book vendors often promote their added value tools, it is not clear that students will want to use tools such as

highlighting and annotation. They may want to continue with the study and work habits they have developed over the course of their academic careers.

McFall found that students had a more positive reaction to the functionality of an e-textbook that he tested several years later (McFall, Dershem, & Davis, 2006). According to the researchers, the technology involved in the e-textbook had improved significantly over the previous study. A great deal of their research involved looking at how the textbook improved student learning, but they also focused on student perceptions of this book. As they point out, “Student reactions to the e-textbook are an important part of its evaluation; a tool students don’t want to use is useless even if it is one of the most effecting learning instruments available” (p. 340). Twelve of the fourteen students rated the textbook as “useful” or “very useful.” When asked if the electronic nature of the textbook had helped them learn less or more than other textbooks, nine students said it helped them learn “a little more.” However, two students responded that they had learned “much less” using this textbook. Usability stands out as an issue here, as these two students both commented on the amount of time required to perform tasks with the e-textbook. When students were asked which features were the most useful, usability issues come up once again. Students named the ability to search, annotate, and bookmark, but some students did not use the annotation tool because it was difficult to use. The researchers found that highlighting and searching were the features that students used most often. However, there was a great range in how much individual students used these features. With highlighting, for example, one student had highlighted 367 times while two students had not highlighted at all. This wide variation may be a reflection of

students' individual reading styles; some students may not have thought that this tool was useful. Another possibility is that they may have encountered difficulty using this tool.

As these studies suggest, students may not always find e-books' added value features useful or user-friendly. Academic librarians should consider such issues when assessing e-book platforms. Additionally, they may need to consider if users must log into a platform in order to use these features. On most e-book platforms, users must set up their own accounts in order to perform tasks such as highlighting and annotating. From their research at Royal Roads University in British Columbia, Croft and Bedi (2004) found that only 35 percent of e-book users had set up accounts. Some mentioned difficulties trying to set up accounts. On a similar note, Morris and Balatsoukas (2006) also found that a log in requirement caused problems for students. In their usability study at Loughborough University in the United Kingdom, sixteen study participants performed the same tasks in two different e-book platforms. One platform required that users log in before performing certain tasks. Participants made significantly more errors when completing a task that involved logging into this platform as they typed incorrect passwords or tried to sign in without first creating an account. While students may be interested in these e-book tools, they may become frustrated when faced with a computer screen asking them to sign in or to set up an account.

In considering added value features, some disagreement exists over how much e-books should resemble the print book. In 1998, usability expert Jakob Nielsen argued that e-books should depart from the model of the print book and its linear lay-out. "Electronic text should be based on interaction, hypertext linking, navigation, search, and connections to online services and continuous updates. These new-media capabilities

allow for much more powerful user experiences than a linear flow of text” (Nielsen, 1998). In their research on the design of electronic textbooks, Wilson, Landoni, and Gibb (2002) found that readers enjoyed interactive and multimedia features. However, Wilson et al. also found that features of the print book increased usability for readers. These features, such as a table of contents and index, gave readers a sense of the e-book’s structure. As for added value features, such as the ability to search, bookmark and annotate, participants appreciated these tools. However, they commented that these features were difficult to use and took a considerable amount of time (Wilson et al., 2002). Wilson, Shortreed, and Landoni (2004) had similar results in a study focusing specifically on e-encyclopedias. They tested the usability of three different e-encyclopedias which varied in their level of added value content and interactive features. Participants liked these additions. Additionally, the added value content and interactivity helped individuals remember the information they had read. However, participants encountered more difficulties trying to find information from encyclopedias that had more of these features. These two studies suggest that users like the idea of added value features which allow functionality beyond the possibilities of the print book. However, this functionality can contribute to usability problems.

Like the two studies cited above (Wilson et al., 2002; Wilson, et al., 2004), this research will rely on usability testing to evaluate e-book platforms. The usability literature confirms the importance of usability in a range of information technology products and computer programs. One study has found that even experienced computer users waste approximately forty-five percent of their time on computers because of frustrating experiences with confusing menus and functions (Ceaparu, Lazar, Bessiere,

Robinson, Shneiderman, 2004). When using a new product or system, such frustrating experiences have the potential to leave an individual with a negative opinion. As a result, he or she may decide not to use the product or system again in the future. In a study of e-learning services, Chiu, Hsu, Sun, Lin, and Sun (2005) found that usability played a crucial role in students' decision to continue using an e-learning service. Considering this study, one recognizes the importance of usability in the success of e-books as well. If an e-book is not easy and satisfying to use, a student may not choose to read from one in the future.

In addition to demonstrating the value of usability testing, the relevant literature provides guidance for this research. The literature confirms the importance of considering several different aspects of usability. Frokjaer, Hertzum, and Hornbaek (2000) argue that effectiveness, efficiency, and satisfaction should all be considered independent components of usability. They found that there was only a weak correlation between efficiency, effectiveness, and satisfaction. By examining only one or two of these aspects of usability, researchers are in danger of overlooking other important usability issues. In the research of Frokjaer et al., participants solved information retrieval tasks using different retrieval modes. Efficiency, effectiveness, and satisfaction were then considered for each retrieval mode in order to determine its overall usability. To determine efficiency, the researchers measured the time required to complete each task using the different modes. Effectiveness was measured by the quality of each solution that participants produced for each task. Defining satisfaction as “the users' comfort with and positive attitudes towards the use of the system” (p.345), the



researchers measured satisfaction by user's preference for one retrieval mode over another.

The importance of assessing these usability components is reflected in literature regarding the usability of e-books and digital library resources as well. Morris and Balatsoukas (2006) considered efficiency, effectiveness, and satisfaction in their usability testing comparing two different e-book platforms. In a study of the usability of a virtual map, Garoufallou, Siatri, and Balatsoukas (2008) asked participants to perform tasks that reflected the types of procedures for which people would typically use the map. By focusing on study participants' efficiency, effectiveness, and satisfaction, the researchers recommended ways that the map could be made more usable. Toms, Dufour, and Hesemeier (2004) emphasize that, when evaluating digital libraries, it is especially important to consider satisfaction. Users want an efficient and effective way to find information, but they also want to have an enjoyable experience when interacting with a digital library.

While many researchers measure efficiency, effectiveness and satisfaction, other researchers use different terminology to define and explore usability. In *Handbook of Usability Testing* (1994), Rubin discusses usefulness, effectiveness, learnability, and likability as four factors of usability (p. 18-19). In a study of students' decisions to continue using e-learning systems, Chiu et al. (2005) consider usability separately from the user's perceived quality of an e-learning service and from the user's perceived value of the service. These researchers found that, together with usability, the user's perception of quality and value each contribute to the user's decision to continue using a service. While the terminology may differ from one researcher to another, the fundamental

considerations stay the same. In examining the usability of a product, the focus remains on the user's experience and how easy and satisfying the user finds the product.

In considering a product's usability, Dillon (2001) cautions that researchers must look beyond simply quantifying these usability components. While researchers often use error rate as an indicator of effectiveness, it is difficult to quantify the effectiveness of many tasks that are supported by technology. For example, how does one measure the effectiveness of reading when using a particular e-book platform? One cannot assess the reading process through an easily quantified error rate. The measurement of efficiency can be equally problematic. Efficiency is often measured by the time taken to complete a task or by the number of steps taken to finish a task. Dillon points out that users may not always be concerned with these measures of time and steps; the user experience is more complex. The experience actually may be enhanced by a product that takes longer to use. The addition of interactive elements to a product may require more of the user's time, but these features may also make the process more interesting or appealing. Even in measuring satisfaction, Dillon cautions that researchers should be careful to look beyond simple user ratings of like and dislike.

The usability literature provides both context and guidance for this research study. A number of studies have shown that students have accepted e-books and now use them for their academic work, demonstrating the importance of evaluating these resources in academic libraries. However, the literature also indicates a need for improvement in e-book platforms. This research aims to find what features make e-books easier and more satisfying for students to use.

## **Methodology**

### *Participants*

Five undergraduate and five graduate students from the University of North Carolina at Chapel Hill participated in this study. The study was advertised on fliers at UNC-CH's Davis Library and the Undergraduate Library. Interested students emailed the researcher to arrange a time for an appointment to participate in the study. When this recruitment method did not result in enough graduate student participants, the researcher successfully recruited three additional graduate students via email.

With a pool of ten participants, the sample size is small. However, small sample sizes are well-established in the usability literature. While Nielsen confirms that larger sample sizes have greater statistical significance, he writes that with just five participants, a usability test can uncover 80 percent of a product's usability problems. Additionally, these uncovered problems will be the most major (Nielsen, 2000). A sample of this size will uncover trends and patterns in the types of usability issues that students face using e-books.

### *E-book Platforms*

For the testing sessions, each platform was open in a different tab in a browser window. While the three platforms each provide e-books covering a range of academic disciplines, they each display content through different methods.

- Ebrary has two different viewing options: QuickView and ebrary Reader (Figure 1 and 2). With QuickView, a user can immediately view an e-book in his browser window. Ebrary Reader offers greater functionality, but the software needs to be installed on the user's computer. For the purposes of this study, ebrary Reader was installed on the computer used for the testing sessions. The participants in this study used QuickView to read several pages in their chosen books before being asked to open their books in ebrary Reader.
- MyiLibrary displays books in either PDF or HTML format, depending on the file provided by the book's publisher (Figures 3 and 4).
- For reading online, EBL books can be viewed as either a PDF or an image. In this study, participants viewed pages as images because this is the default option (Figure 5). With EBL, a user also has the option to download an e-book to his computer. EBL advises its users to read e-books online if they are working on a computer that they do not have permanent access to, such as a library computer. For this reason, study participants were asked to read EBL books online rather than downloading them as students would be able read the online format from any machine, not just their personal computers.

### *Study Procedure*

At the beginning of each testing session, the researcher asked each participant to read and sign a consent form. After deciding if they wanted to continue with the study, participants answered several demographic questions as well several questions about their experience using e-books (Appendix A).

The researcher explained to the participants that they would be asked to perform a series of tasks with each of the three e-book platforms (Appendix B). Using the literature on e-book usage as a guide, these tasks had been selected because they are typical of the actions that individuals make while using e-books. Additionally, the literature indicates the users often encounter difficulty accomplishing these actions. The tasks were as follows:

1. Search each e-book collection for a term. From the list of search results, choose an e-book and read several pages.
2. Use the e-book platform to take a note.
3. Use the platform's options for accessing online resources.
4. Print several pages from the e-book.

To reduce the impact of a learning effect as participants completed the tasks in each platform, the researcher varied the order in which participants used the platforms. Three participants began with ebrary and then moved on to MyiLibrary and then EBL, while three other participants started with EBL and then worked with MyiLibrary and then ebrary. Four participants went from MyiLibrary to EBL to ebrary.

As participants completed the tasks, the researcher sat next to them to observe and to guide the usability test. Morae usability software was used to record participants' on-screen actions and verbal responses during each of the usability testing sessions. As the participants moved through the tasks, the principal investigator asked them to explain what they liked and did not like about each platform and to compare the usability of the three platforms.

Since students often read selectively from e-books, looking for specific information (Abdullah & Gibb, 2008; Levine-Clark, 2005), the first task asked each participant to choose a term from a list of three suggested search terms. These suggested terms were based on different general areas of academic study, with one term for the social science students, another for science students, and another for humanities students. This task takes advantage of the full-text searching functionality that is considered one of the biggest advantages of e-books. After retrieving a list of search results, participants were asked to choose a book and to read several pages. These same steps were then repeated in each of the platforms.

In both Task 2 and Task 3, participants were asked to use some of the platforms' added value features. While research indicates that users are impressed with such functionality, studies also indicate that users have trouble using these features. In Task 2, participants were asked to use each platform's tools for annotation. Additionally, they were asked to use ebrary's highlighting tool. MyiLibrary and EBL do not have a highlighting tool with which ebrary could be compared, but ebrary's highlighting tool was included in order to examine whether students had a preference for taking notes or for highlighting in the electronic environment.

Task 3 asked participants to use ebrary's and MyiLibrary's options for accessing online resources. (EBL does not have a tool for linking to outside resources.) Ebrary advertises its InfoTools as one of its key features. By selecting a menu item or selecting a word from the page of book, readers can use InfoTools to link to additional resources, such as an online dictionary, encyclopedia, or database. In MyiLibrary, readers can link to a page of "Available Resources," which lists a wide range of freely available online

resources. Participants were asked if they would access online resources using these e-book features or if they would find it easier to use an online search engine if they needed additional information while reading an e-book. Considering Nielsen's argument (1998) that e-books should depart from the linear print book structure in order to provide interactivity and to connect to outside resources, this task served to examine whether students saw value in such connectivity that allowed them to link to outside resources when they wanted further information on a topic.

The last task asked participants to print a page range from an e-book. Several studies have noted that printing problems are a common complaint about e-books (Jamali et al., 2009; Levine-Clark, 2006). Additionally, the library staff at the UNC-CH has observed that students frequently want to print sections from e-books, but they often have trouble doing so. Publishers' printing restrictions are likely the source of students' confusion, but this task served to determine if students found it easier to print in one platform than the others.

After completing all four tasks, the participants filled out a follow-up questionnaire (Appendix C). Each testing session was completed in fewer than forty-five minutes and participants received eight dollars compensation for taking part. The participants' verbal responses were transcribed and analyzed using nVivo software. After an initial reading of responses, the researcher created codes to identify key concepts. The data was then coded to identify patterns and trends in the participants' responses.

A qualitative approach was selected for this study in order to gain a full sense of the user experience. Other research studies measure a system or a product's usability through quantitative measures, such as the time taken to complete a task or the number of

errors committed while completing a task. Building on the ideas of Dillon (2001), this research endeavors to look beyond these quantifiable measures. Through individual testing sessions with each participant, the researcher gains an understanding of the rationale behind participants' actions and responses, as well as an understanding of which features did (or did not) enhance the participants' experiences.

*A Note About How E-book Platforms Were Viewed in this Study*

The computer used in this testing was a Lenovo Thinkpad T500. With a 15.4 inch widescreen display and 1680x1050 resolution, e-books may appear slightly differently on this computer than they would on computer screens with different dimensions.



## **Results**

### *Questionnaire on Demographics and E-book Experience*

Half of the study participants were graduate students, while the other half were undergraduate students. Of the undergraduates, there were three juniors, one sophomore and one first-year student. The participants ranged in age from 18 to 27 years old. A variety of academic disciplines was represented and several students listed more than one area of study. The participants' majors or courses of study are listed below.

- Anthropology
- Economics
- Environmental Studies
- Environmental Science
- Germanic Language and Literature
- History
- Library Science
- Linguistics
- Management and Society
- Mathematics
- Public Health
- Russian Language and Culture

Eight of the students had used e-books before. Five of these students had experience using an e-textbook. When asked how they had found e-books, three said they had found e-books using the UNC-CH library catalog. Three others had found e-books by searching Google and one student had found e-books by searching both the

library catalog and Google. One participant with e-book experience had never actually searched for an e-book herself; she had used an e-textbook assigned for a class.

### *Usability Test*

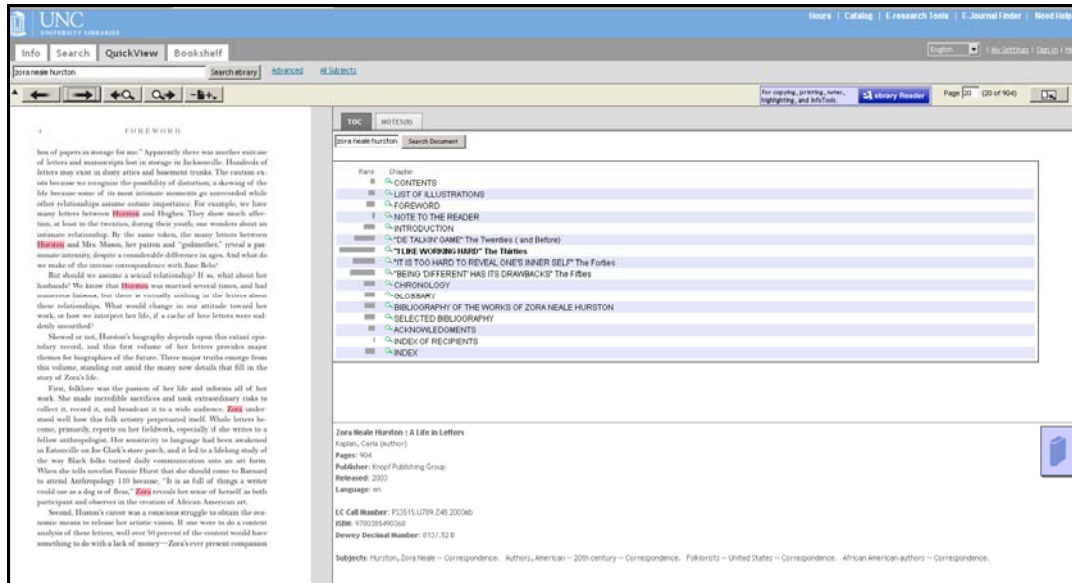
#### *Task 1: Finding and reading e-books*

##### Ebrary

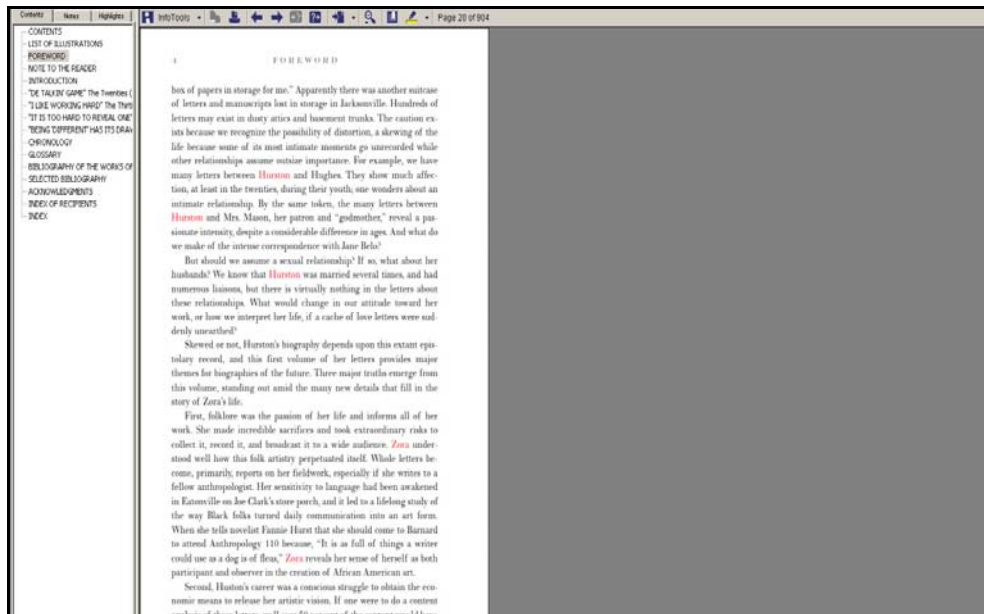
Participants did not encounter difficulty finding e-books in ebrary, but three participants responded negatively to the QuickView lay-out. The image of the book's page is displayed on the left hand side of the computer screen (Figure 1). "That looks very weird," one participant commented. Two others asked if they could change the display so that the book's pages weren't limited to less than half of the screen. One asked, "Is there any way to move it over so that the page is not scrunched up on the left?" One of these participants went so far as to describe QuickView as "awful."

When they were shown how to open the books in ebrary Reader (ebrary's other viewing option), participants liked this display more than the QuickView display (Figure 2). For the individual who described QuickView as awful, ebrary Reader was "much, much better." Once they had opened a particular title, two participants commented that they liked using ebrary's hyperlinked Table of Contents to immediately move to a chosen chapter within the book. While participants did not encounter any usability issues reading from ebrary, three participants said that they wished they were able to scroll from one page to the next. Instead, they had to use either the arrows on ebrary's toolbar or the arrow keys on their keyboard. One participant explained that if she wanted to quickly

move back and forth between pages, it would become “annoying” to have to select a menu option from the tool bar.



**Figure 1:** A page from a book displayed in ebrary's QuickView. Several participants did not like the page lay-out, with the e-book's current page limited to less than half of the left hand side of the screen. To get to ebrary Reader, the user selects the blue rectangular box in the upper right part of the screen.



**Figure 2:** A page from an e-book displayed in ebrary Reader. Using ebrary Reader (ebrary's other viewing option), participants liked that they could select a title from the Table of Contents and immediately access that chapter. However, they felt that it was inconvenient to move from one page to the next using the arrows on the toolbar or arrows on the keyboard.

### MyiLibrary

Participants did not encounter usability issues searching for and finding books in MyiLibrary. As explained earlier, MyiLibrary books are displayed in either PDF or HTML format, depending on the file provided by the book's publisher. Nine of the participants opened books displayed as PDF documents; the other student happened to choose a book displayed in HTML format. From the start, those students reading PDF's were confused by the fact that MyiLibrary had two toolbars (Figure 3). The main toolbar was for the e-book platform itself; below that was a PDF toolbar, resembling the type of toolbar students are accustomed to seeing in Adobe PDF documents. Since they were familiar with this Adobe PDF toolbar, participants tried to move from one page to another by using this toolbar's arrows. However, they found that those arrows were inactive. Upon closer examination, they found that this toolbar referred only to the current page of the book. For the page number, the toolbar read "1/1" as if the book was only one page. Instead of using the PDF toolbar to turn the page, participants found that they had to go to the MyiLibrary toolbar and select "Next." Participants commented that they are accustomed to the PDF toolbar and they expected it to allow them to perform the same functions that one would expect when reading a PDF. Participants did not like this set-up. After seeing how these toolbars worked, one individual responded, "Oh, that's weird.... I don't like that much."

Several participants felt that MyiLibrary should improve their toolbars to be more user-friendly. One participant suggested that MyiLibrary "could better organize this window so that they didn't have two separate toolbars." Once they learned that they needed to use the "Next" option in the MyiLibrary toolbar to turn pages, two participants

commented that the toolbar's "Next" option was too small. They would have found it more easily if this option had been larger. The same two individuals also felt that an arrow symbol would be more intuitive than looking for the word "Next" in the MyiLibrary toolbar. MyiLibrary's navigability could be further improved by allowing readers to scroll; as in ebrary, several participants commented on the fact they could not scroll from one page to the next.

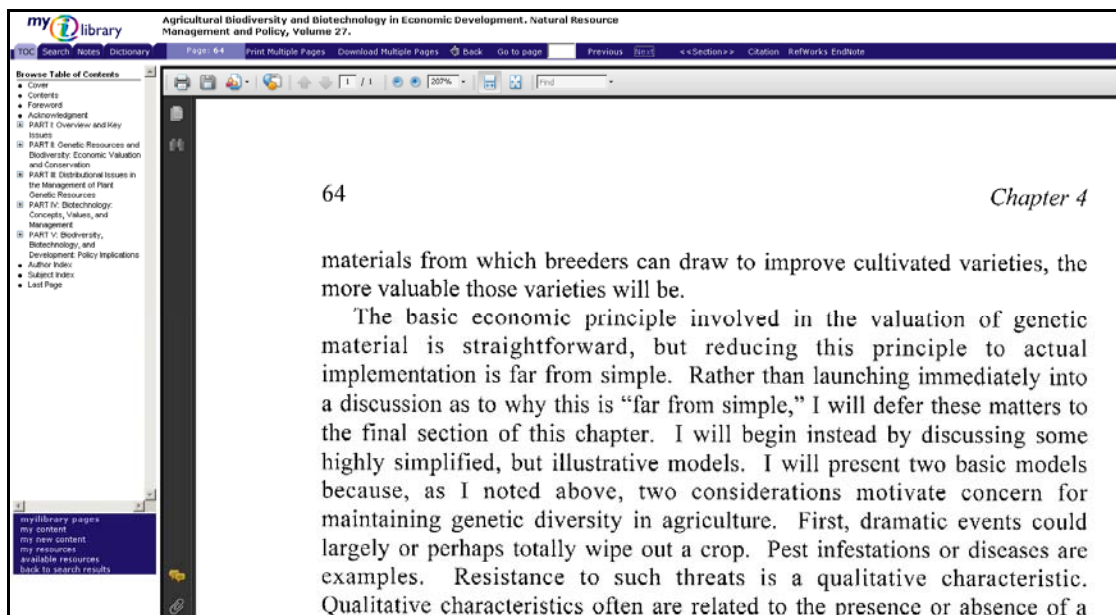
Even without the PDF toolbar causing confusion, the participant who read from a book in HTML format made similar comments about navigability within MyiLibrary (Figure 4). In the HTML format, there is an arrow at the end of each page from the e-book. In order to turn pages, readers can use this arrow or the "Next" option on the MyiLibrary toolbar. The participant reading in HTML format commented that it would be more convenient to be able to scroll, rather than having to select the arrow icon or "Next" option.

Three participants also responded negatively to the size of the pages in MyiLibrary. When they opened an e-book in the PDF format, the pages were displayed at a magnification varying between 153 and 207 percent. Finding this size awkward to read, three participants tried reducing the magnification while they read. However, they found that when they turned to the next page, the magnification had returned back to the higher percentage again. After reading through several pages, one participant commented, "I'm really tired of having to size down every time." Later on, the same

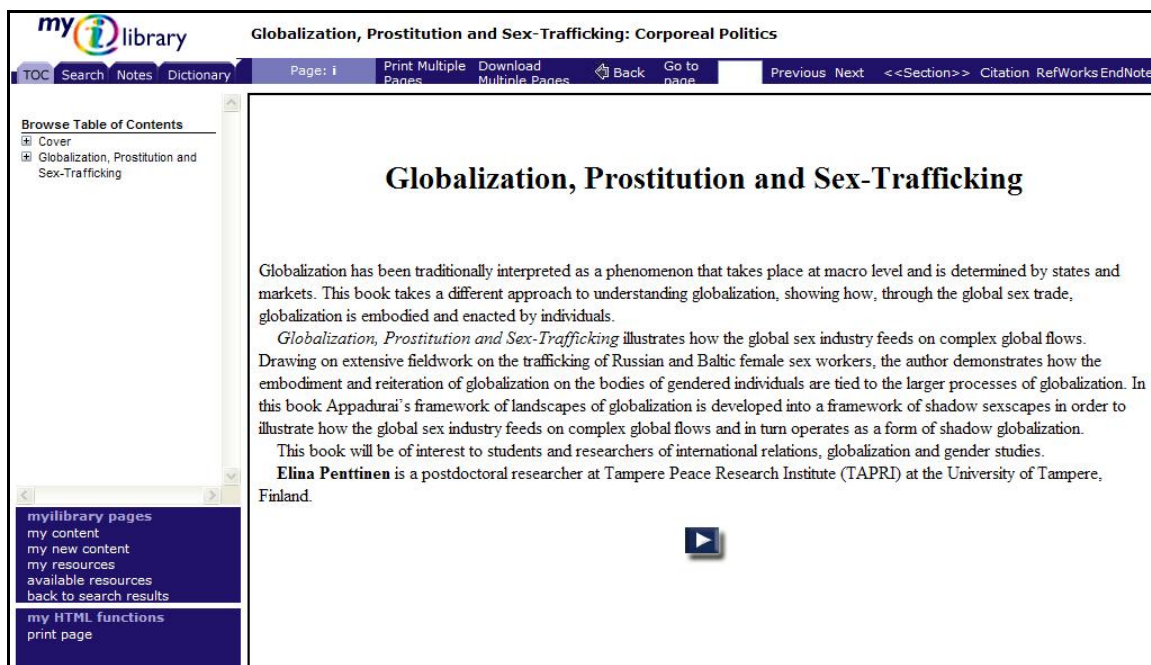
student expressed her annoyance with this magnification issue, “Every time I go to the next page, it jumps back up to 207 percent. It’s driving me nuts.”<sup>1</sup>

---

<sup>1</sup> After seeing how negatively participants responded to MyiLibrary’s toolbars and magnification,, the researcher experimented with the account settings. The “my settings page” allows users to set PDF magnification at a desired percent and to have the PDF toolbar hidden. However, when the researcher selected to have the toolbar hidden to have the magnification set at 100 percent, there was no change in how MyiLibrary displayed e-books on the screen. The PDF toolbar still appeared and the magnification remained at much higher percentage. This problem may need to be addressed at the installation level.



**Figure 3:** A book from MyLibrary, displayed in PDF format. MyLibrary's two toolbars caused confusion for participants. Additionally, participants found the magnification too large.



**Figure 4:** A book from MyLibrary, displayed in HTML format. The participants who read a book in this format commented that it would be more convenient to scroll, rather than using the arrow at the end of the page or the "Next" toolbar option.



## EBL

When using EBL, participants had trouble getting to the full-text of an e-book from their search results. Nine participants began by selecting the hyperlinked book title from their search results (Figure 5). Rather than bringing them into the text of the book, this brought them to a page for the book's "Full Record" (Figure 6). While this page contains potentially useful information, these nine participants struggled to access the full text of the book. The informational page contained a table of contents; seven participants tried clicking on items within the table of contents, expecting these items to be hyperlinked to the text. In order to access the full-text, they had to select "EBL ReadOnline" button from the menu on the left, but they did not see this option. After the researcher pointed out this button, one participant said that this button should be bigger. Another said that he had not realized the purpose of the button, explaining that it "almost looks like the name of it...EBL ReadOnline."

After this initial problem getting to the full-text of books, participants were generally pleased with EBL. They especially appreciated the ability to scroll through pages, using the mouse or the scroll bar (Figure 7). Seven participants commented that they found it more convenient to scroll from one page to the next, rather than having to continuously go to the toolbar to select an arrow icon or the word "next." One participant explained his preference for scrolling, "if you were looking to skim through a text, the [next] button could get tiring."

**Ebook Library** Search Results

Search: globalization Title Go

Full Text Search | Category | Publisher | EBI Category | Advanced Search

364 results found | Now showing page 1 of 37 | 1 2 3 4 > Jump to page: Go Display 10 results

Sort Results by: Title | Author | Publisher | Publication Date | PPN13 | ISBN13 | LSH | LCC | Edition | Volume | Owned by Library | Rank Order | Language | EBI Category

**21st Century Dissent: Anarchism, Anti-Globalization and Environmentalism**

Author: Curran, G.  
 Publisher: Palgrave Macmillan  
 Date Published: 31 October 2006  
 ISBN (eISBN): 9781402094816 / 9780230000947  
 Subject: Dissenters.  
 Language: English  
 EBI Category: Political Science

Summary: 21st Century Dissent contends that anarchism has considerably influenced the modern political landscape. Curran explores the contemporary face of anarchism as expressed via environmental protests and the anti-globalization movement.

[Read Online](#) | [View the Full Details](#)

**The Accidental American: Immigration and Citizenship in the Age of Globalization**

Author: Sen, Rinku  
 Publisher: Mandariv, Pkblak  
 Date Published: 28 September 2007  
 ISBN (eISBN): 9781576794302 / 9781576798602  
 Subject: Mandariv, Pkblak  
 Language: English  
 EBI Category: Political Science

Summary: The Accidental American vividly illustrates the challenges and contradictions of U. S. immigration policy, and argues that, just as there is a free flow of capital in the world economy, there should be a free flow of labor. Author Rinku Sen alternates chapters telling the story of one "accident" ... [more]

[Read Online](#) | [View the Full Details](#)

**Achieving Economic Development in the Era of Globalization**

Author: Sharma, Shailesh D.  
 Publisher: Taylor & Francis  
 Date Published: 28 September 2007  
 ISBN (eISBN): 9780415771801 / 9780230337815  
 Subject: Economic development.  
 Language: English  
 EBI Category: Economics

Summary: Challenging assumptions about the benefits of specific development practices, this book provides readers with overview of how competing frameworks have developed and the ways that specific development practices reflect specific understandings of the main debates, as well as offering a comprehensive ... [more]

[Read Online](#) | [View the Full Details](#)

**Figure 5: A list of search results in EBL.** Nine participants selected the hyperlinked book title from their search results and found that this brought them to the book's "Full Record" page, rather than to the text of the book.

**Ebook Library** Full Record

Search: globalization Title Go

Full Text Search | Category | Publisher | EBI Category | Advanced Search

Title: 21st Century Dissent: Anarchism, Anti-Globalization and Environmentalism

Author: Curran, G.  
 Publisher: Palgrave Macmillan  
 ISBN: 9781402094816  
 Dewey: 303.494  
 LCCN: Dissenters.  
 Series Title: International Political Economy

Pub. Date: 31 October 2006  
 eBook ISBN: 9781402094816  
 Print ISBN: 9781402094816  
 eBook ISBN: 0230000947  
 Print ISBN: 0230000947  
 Product ID: 709617  
 Language: English  
 URL: /books/264  
 # of pages: 264

Summary: 21st Century Dissent contends that anarchism has considerably influenced the modern political landscape. Curran explores the contemporary face of anarchism as expressed via environmental protests and the anti-globalization movement.

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This ebook can be read online or downloaded to a PC/laptop.

**READ ONLINE**

You should always select Read Online when using public computers within your library.

OR Download eBook

How long would you like to download the ebook for?

3 days  
 7 days

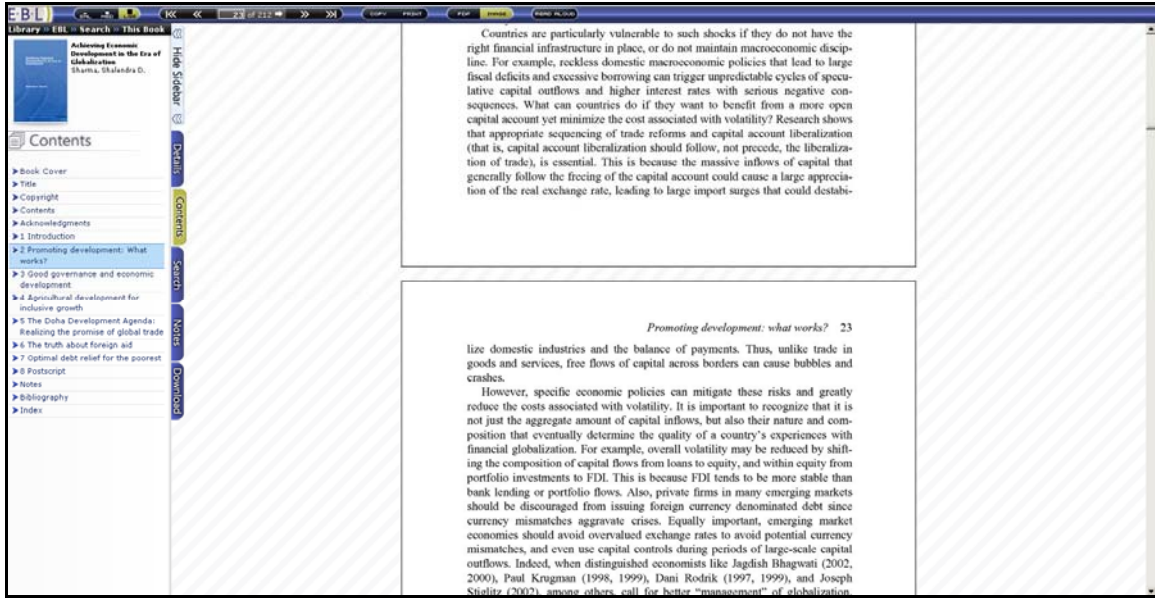
[Click here to download](#)

No fee eBook

The book is available for purchase here.

Notes: You will need to have the latest version of Adobe Reader and the EBI plugin if you are a Mac user you need to have at least version 7.0 of Adobe Reader. Click here for information on Adobe Reader 8 and Adobe Digital Editions or to download the software.

**Figure 6: A "Full Record" page in EBL.** On the "Full Record" page, participants struggled to get into the text of the book. Seven participants tried clicking on items in the Table of Contents, expecting the chapter titles to be hyperlinked to the text of those chapters. Several participants commented that the "EBL ReadOnline" icon (located on the left hand side of the screen) should be more prominent.



**Figure 7: Moving from page to the next in EBL.** Participants commented that they liked the convenience of scrolling in EBL.

## *Task 2: Annotating and highlighting*

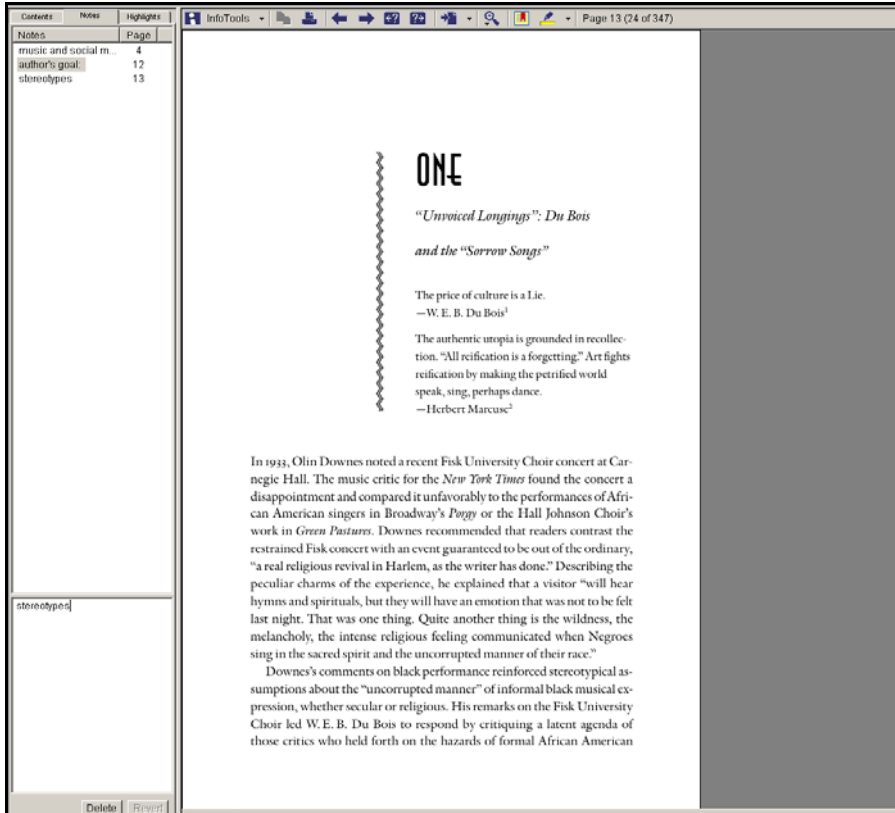
### Ebrary

Participants did not have difficulty annotating or highlighting in ebrary. Two participants felt that it was easier to annotate with ebrary than with the other platforms because they could immediately begin typing notes in the bottom part of the “Notes” tab (Figure 8). A running tally for all of a book’s notes appears in the top part of the tab. By contrast, MyiLibrary and EBL each involve an extra step in the note-taking process. In these platforms, readers must select a menu option before a window appears where they can then type notes. Like the tool for annotation, ebrary’s highlighting tool elicited positive responses from participants, who described it in terms such as “awesome,” “fun,” “intuitive,” “nifty,” and “helpful” (Figure 9).

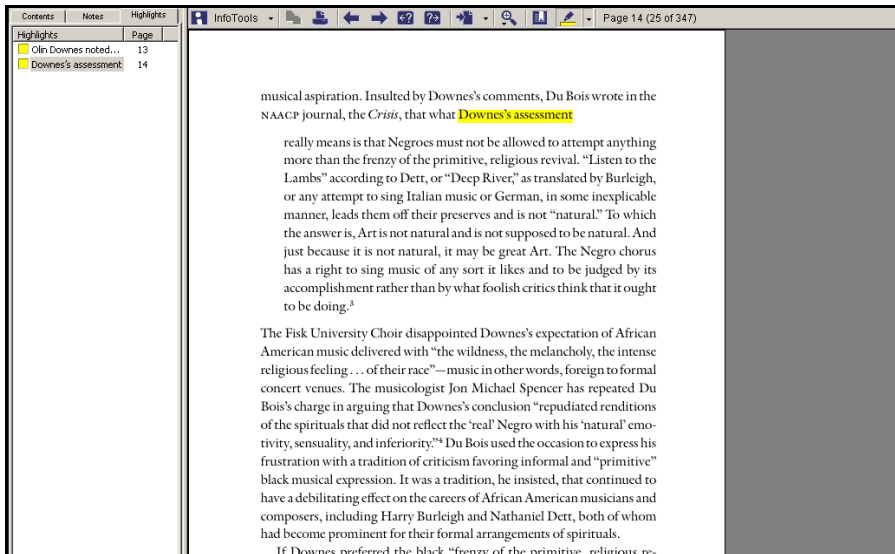
When participants were asked if they thought they would use the annotation or highlighting tool in their schoolwork, their comments reflected the varying studying habits of students. Four participants noted that they would be more likely to highlight than annotate an e-book. One explained that highlighting was less disruptive to the reading process. A graduate student explained that she would prefer to take notes by hand, but she felt that the highlighting would be valuable if she needed to return to a text in several years when she begins her thesis. For two other students, a highlighting tool did not seem to fit well with their work habits. One explained that he could see how a highlighting tool would be valuable for other students, but he would be unlikely to use it himself as he rarely highlights any type of book. “I think it could be useful, but not for me.” Another participant explained that she learns better from note-taking than from

highlighting. This particular participant described the highlighting as “great,” but she went on to explain, “Highlighting is just sort of mindless for me; it doesn’t really stay in my brain. So I probably wouldn’t use it, but that is just because of my way of learning; that’s all.” No matter how user-friendly a feature is, some students may decide not to use it.

Two participants also expressed a desire for a greater connection between ebrary’s annotation and highlighting tools. After trying the highlighting function, one participant commented, “That’s nice. I just wish that I could make some sort of comment... I never remember why I highlight something... [I’d want] a note to go with it.” The highlights and notes are listed in separate tabs on the left hand side of the ebrary screen. These participants felt that if they could see a particular note along with the highlighted text, they would have a better reminder of the significance of this portion of text.



**Figure 8: Annotating in ebrary.** In the notes tab is on the left side of the screen, readers can take notes in the bottom part of the tab and a running tally of all notes appears above.

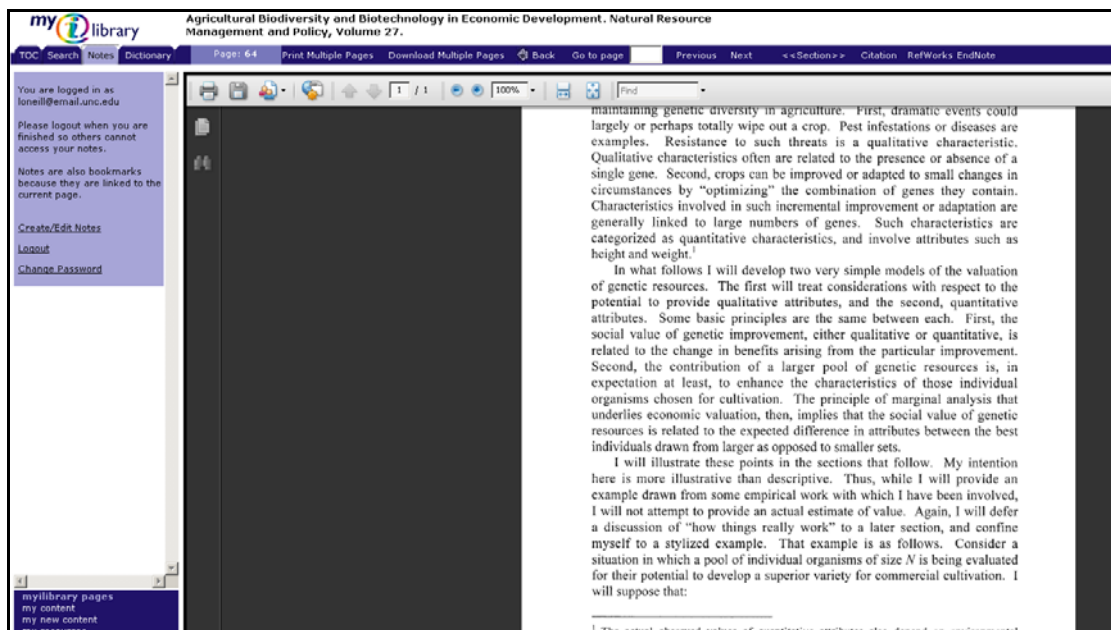


**Figure 9: Highlighting in ebrary.** This tool elicited positive responses from participants, but several commented that they wished for greater connectivity between their annotations and highlights.

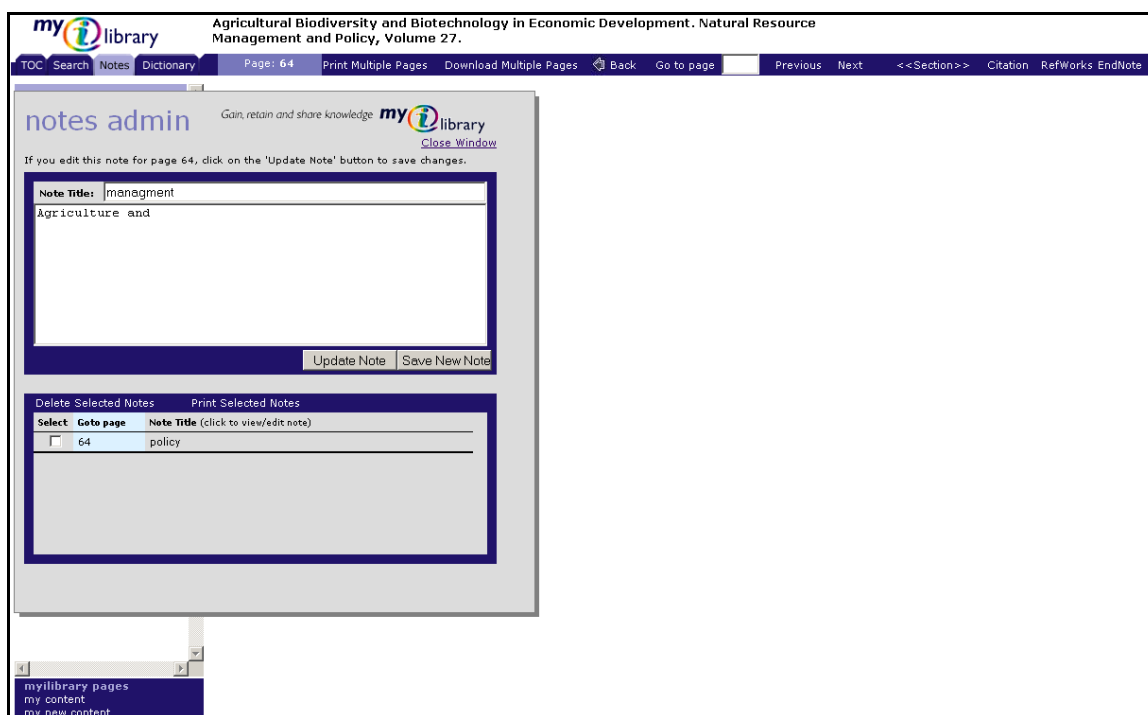
## MyiLibrary

Across the board, participants responded negatively to MyiLibrary's system for note-taking. To annotate a particular page in MyiLibrary, the reader goes to the "Notes" tab and selects "Create/Edit Notes." The reader is then taken away from the text of the book to a new window for typing notes (Figures 10 and 11). Participants felt that it would be more convenient to be able to refer back to the text of the book while taking notes. One individual explained that this step interrupted the reading process. Participants did not find it easy to move back to the text once they were in MyiLibrary's window for note-taking. To move back to the book from the notes window, the reader must select a link that says, "close window." This link is not very large, however, and four participants did not see it.

Two participants also pointed out that it would be beneficial if MyiLibrary left an indication of which pages had been annotated. If they were to return to the book and re-read a section later on, they would not have any reminder showing them that they had previously annotated a particular page. As one explained, "If I'm reading along in this book, there is no indication that I have noted something on page 30. I'd have to go to my notes to remember that I'd noted something on this page. It'd be nice to have a flag or maybe have a color or something like that."



**Figure 10: MyLibrary's Notes tab.** To take notes for a particular page in MyLibrary, the reader goes to the "Notes" tab and selects "Create/Edit Notes." The reader is then taken away from the text of the book to notes window.

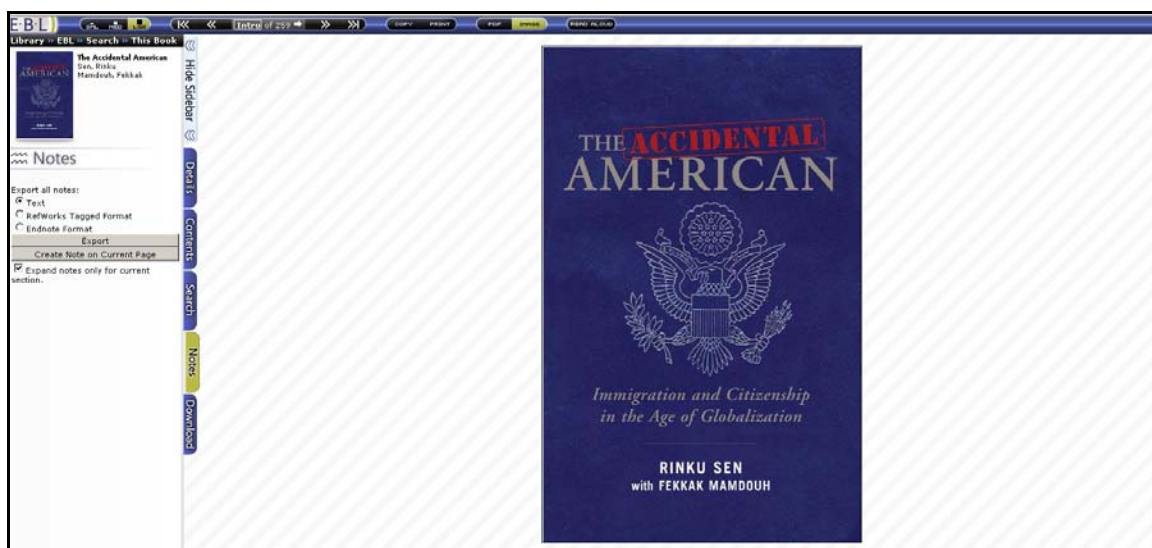


**Figure 11: The notes window in MyLibrary.** Participants commented that they would like to be able to see the text of the book while typing notes.

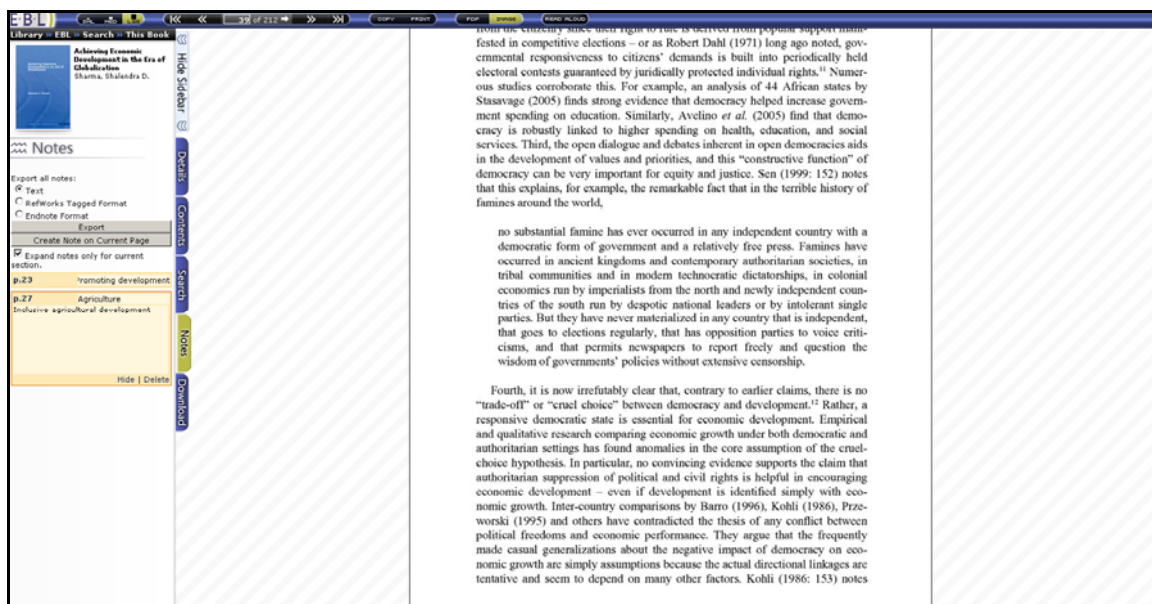


## EBL

As with ebrary, participants did not find it difficult to make notes in the EBL platform (Figures 12 and 13), but several comments reflected a desire for more control over how they could take notes. One subject explained, "I would probably use my own notes [taken by-hand on paper], because I feel like I could be more specific." Another participant pointed out that since the notes appear in a column to the left of the text, there is not a way to specify the part of the page that the note refers to. She explained, "I think I would like it if there was something on the page to show me, 'Hey, you marked something.' There's no way to say like...the first two sentences on this page are what I am really interested in." Additionally, two students commented that they would like EBL to have a highlighting tool like ebrary's and, as mentioned earlier, two participants had commented on the fact that ebrary had fewer steps in the annotation process. Before taking notes in EBL, the reader must first go to the "Notes" tab and select "Create Note on Current Page."



**Figure 12: EBL's Notes tab.** To take notes, the reader goes to the "Notes" tab and selects "Create Note on Current Page."



**Figure 13: Annotating in EBL.** After selecting "Create Note on Current Page," readers can then type notes in the orange space on the left side of the EBL screen.

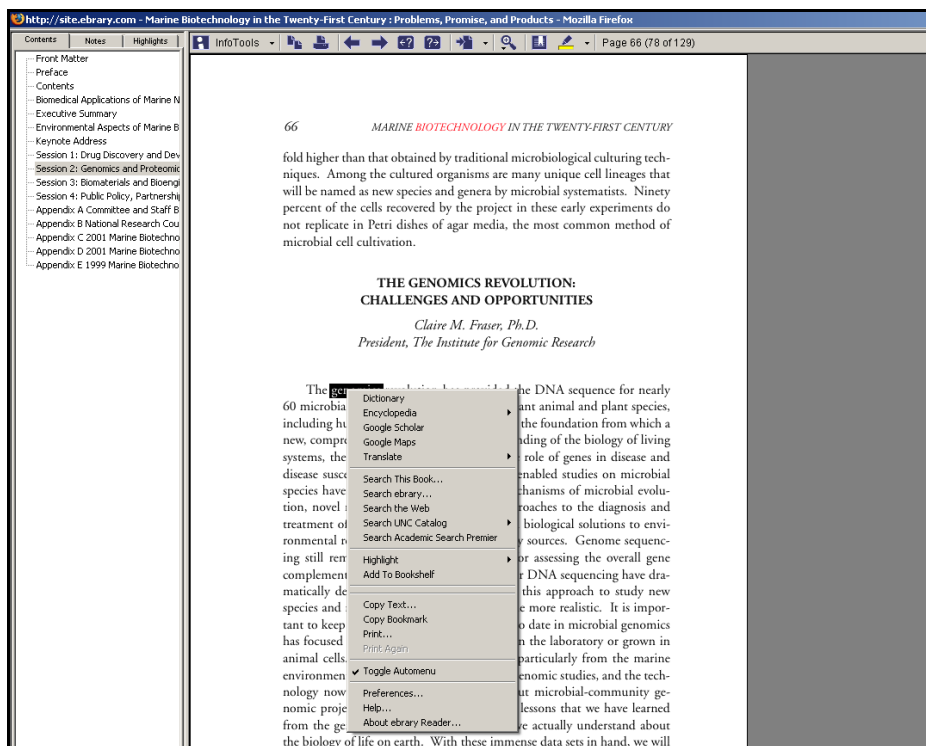
*Task 3: Using an e-book platform to link to other online resources*

Ebrary

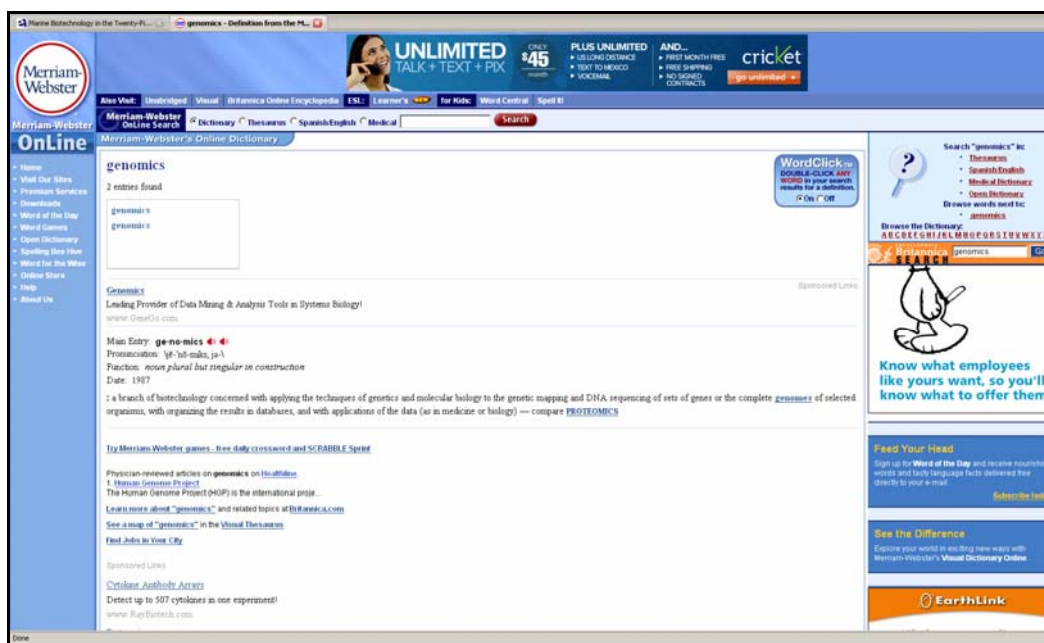
Participants had mixed reactions to ebrary's InfoTools (Figures 14 and 15). One participant described this functionality as "very helpful." Since she is not a native English speaker, she often looks for the definitions of words online. For her, using InfoTools to link to an online dictionary would be faster than having to go to one herself. Another participant thought that this feature would be particularly useful when reading books with many technical terms; with InfoTools, a student could quickly look up unfamiliar terms he came across. While half of the students saw InfoTools' direct linking to online resources as a way to save some time, others did not think that this functionality offered a significant advantage over going to a search engine or online resource in a different browser window. One participant, for example, described InfoTools as "very neat." However, he went on to say that he did not think the tool was especially important since other options exist for finding information. Two students explained that they would not use InfoTools often because they have their own favored online resources for looking up information. "I'm such a creature of habit," one remarked.

Three graduate students also questioned the quality of some of the tools that InfoTools linked to. InfoTools' translating option links to Babel Fish, Yahoo!'s website for translating words in different languages. "I would definitely not do Babel Fish," one participant remarked. Another participant saw a need for a better translator tool, "It's pointless to have the option and then to have it link to Babel Fish which never tells you

anything. If they actually had a proprietary translator tool, it would be really cool to have free access to that.”



**Figure 14: Ebrary's InfoTools menu.** Readers can access this menu by choosing InfoTools from the toolbar or by selecting a word from the page of a book.



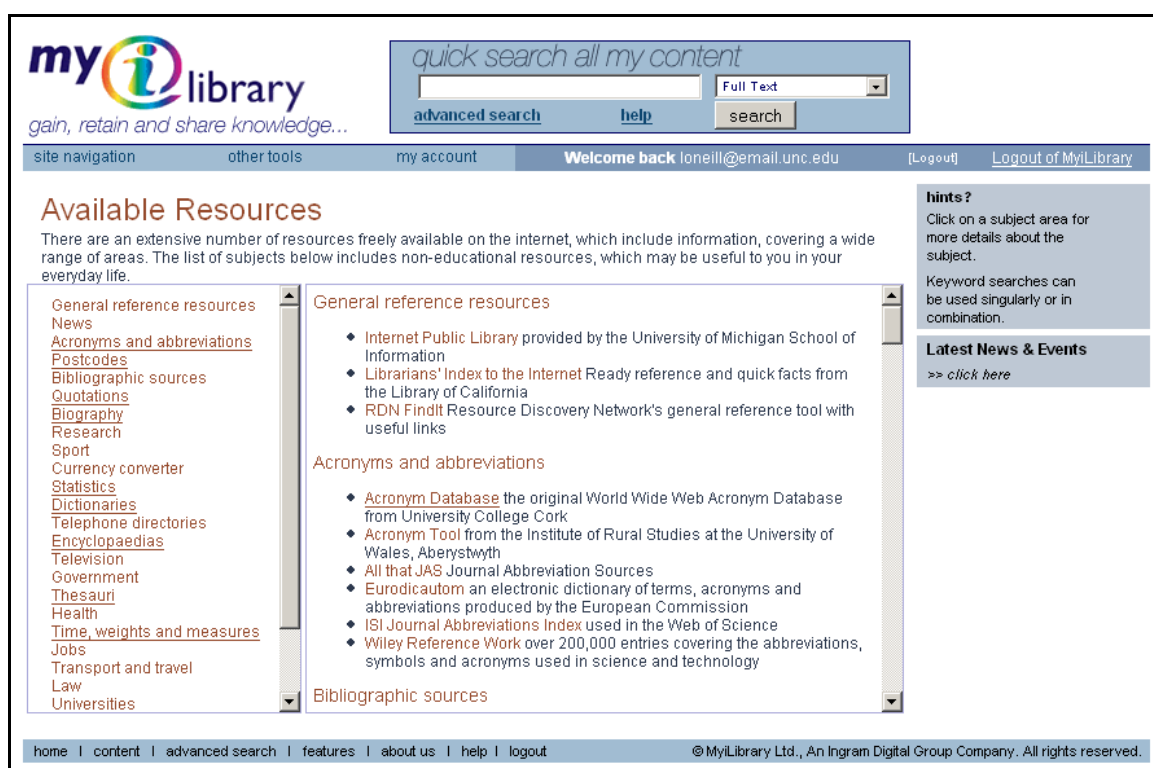
**Figure 15:** An online resource, linked to from ebrary's InfoTools. When a reader chooses an option from InfoTools, that resource will open in a second tab. In this example, the reader used InfoTools to look up the word "genomics" in an online dictionary.

## MyiLibrary

Reaction to MyiLibrary's Available Resources was mixed (Figure 16). Three participants saw these resources as potentially useful. One student explained, "They are kind of neat...it lists a bunch of resources all in one place which could be good for finding things I wouldn't ordinarily expect to find." However, others did not think these resources looked particularly useful. Looking over the list of resources, one student remarked, "There are few things on here that I'm just like...post codes? Really? Why is that on there?"

As with note-taking, MyiLibrary takes the reader away from the text of the book when he looks at the Available Resources list. Participants did not respond well to this

set-up; one individual pointed out how problematic it could be to use resources from MyiLibrary's list, "You've gone away from your book now and if you ended up looking at a bunch of different resources, you'd have to navigate back through a lot of pages to get back." Rather than using MyiLibrary's list, several participants commented that they could easily look up information in a different browser window. "Generally, I have references that I know about so I don't think this adds anything," one individual explained. "I think I would open a new tab and I have the Google search bar in my browser, so I would just search there." Six participants said that they preferred ebrary's mechanism for directly linking from a word in a book out to another online resource.



**myi library**  
gain, retain and share knowledge...

quick search all my content  
Full Text  
advanced search help search

site navigation other tools my account Welcome back loneill@email.unc.edu [Logout] Logout of MyiLibrary

### Available Resources

There are an extensive number of resources freely available on the internet, which include information, covering a wide range of areas. The list of subjects below includes non-educational resources, which may be useful to you in your everyday life.

**General reference resources**

- Internet Public Library provided by the University of Michigan School of Information
- Librarians' Index to the Internet Ready reference and quick facts from the Library of California
- RDN FindIt Resource Discovery Network's general reference tool with useful links

**Acronyms and abbreviations**

- Acronym Database the original World Wide Web Acronym Database from University College Cork
- Acronym Tool from the Institute of Rural Studies at the University of Wales, Aberystwyth
- All that JAS Journal Abbreviation Sources
- Eurodicautom an electronic dictionary of terms, acronyms and abbreviations produced by the European Commission
- ISI Journal Abbreviations Index used in the Web of Science
- Wiley Reference Work over 200,000 entries covering the abbreviations, symbols and acronyms used in science and technology

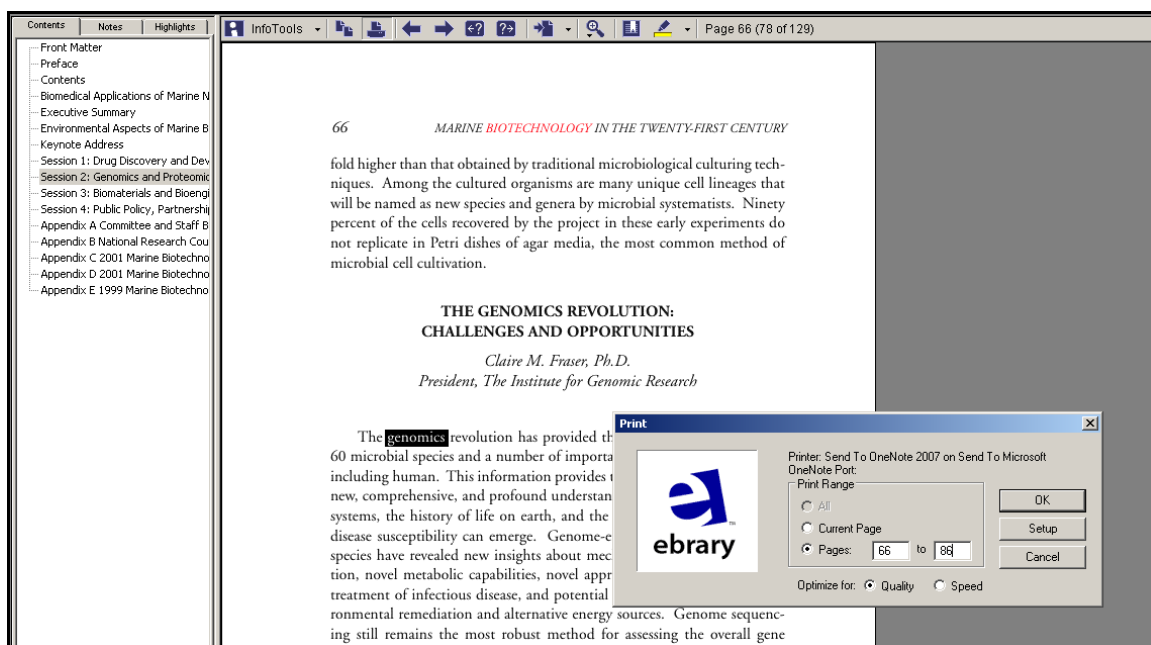
**Bibliographic sources**

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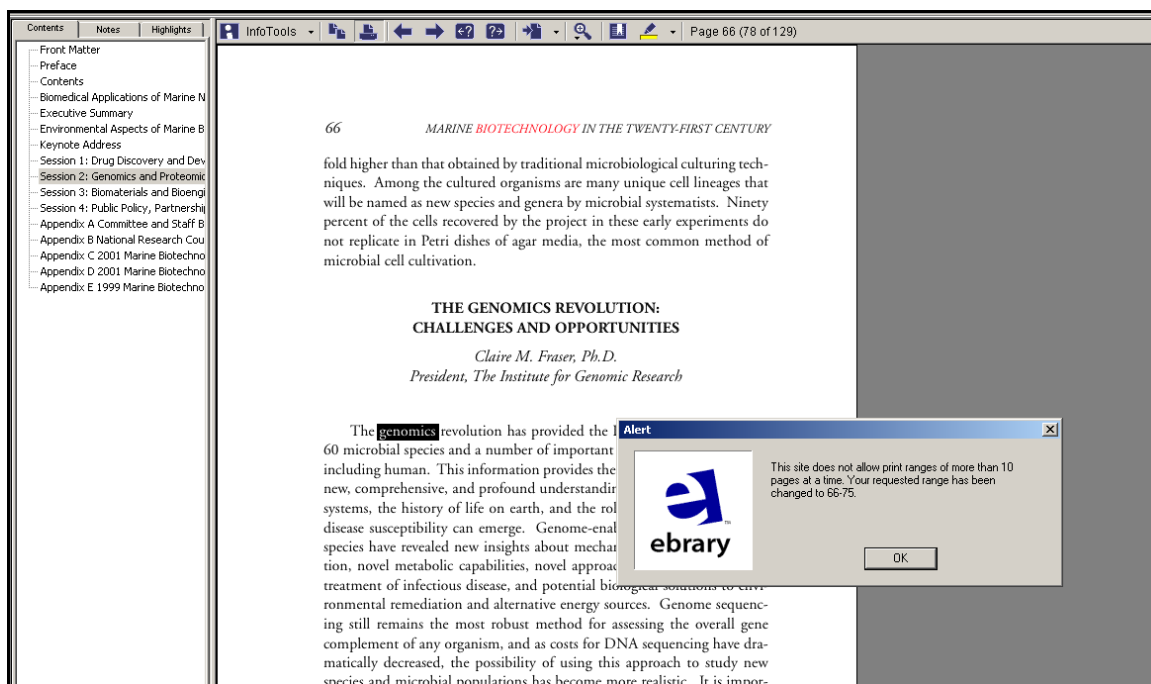
**Figure 16: MyiLibrary's page of Available Resources.** Participants did not like being taken away from the text of the book to view this list of resources.

*Task 4: Printing*ebrary

None of the participants had difficulty figuring out how to print with ebrary, but several participants felt that ebrary should convey its printing limitations more clearly (Figures 17 and 18). Ebrary does not allow users to print more than ten pages at a time, but this limit is not conveyed to the user until after he or she has submitted a page range to print. One participant pointed out how this set-up could potentially cause problems for users, “They don’t tell you how many pages you can print so I do think that that could be bad if the all of a sudden they just say stop and it was a page that you really needed. That could be bad.” When one participant tried to print from pages 21 to 68 of a book, she received a message explaining that the “requested range has been changed to 21-30.” This participant cited from personal experience how frustrating it can be to receive a message like this. Another participant wished that ebrary had options other than selecting a page range to print. “I’d probably want to print a whole chapter and it doesn’t give me that option.” If a student wants to print a chapter from ebrary, he or she would have to figure out what pages the chapter started and ended on.



**Figure 17: Ebrary's Print Window.** To print in ebrary, the reader selects the printer icon from the toolbar and then enters the desired page range in a print window that appears.



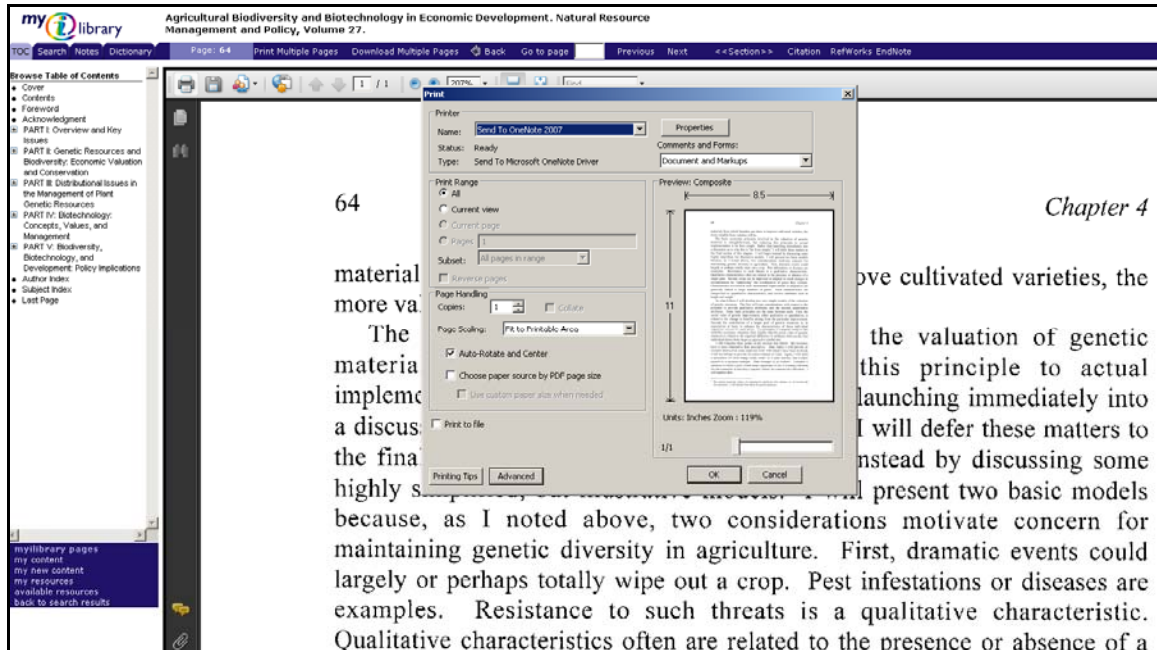
**Figure 18: Ebrary's message about printing restrictions.** Ebrary does not allow users to print more than ten pages at a time, but this limit is not conveyed to the user until after he or she has submitted a page range to print.



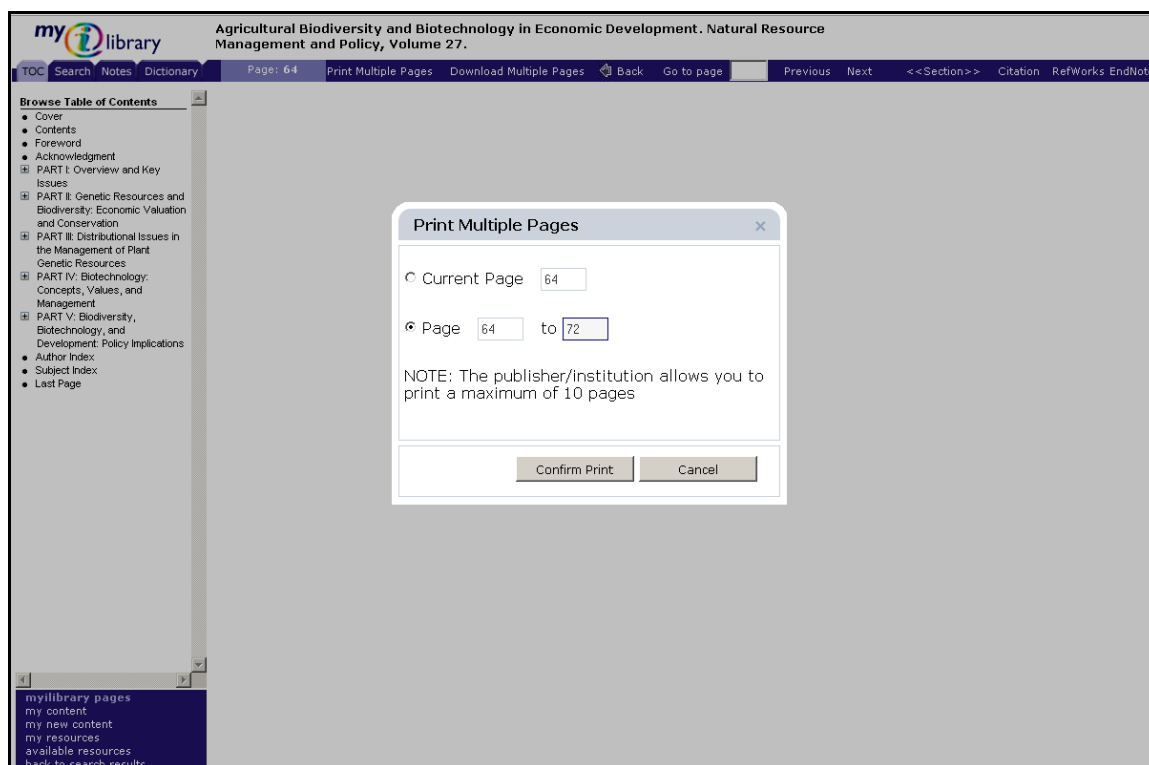
## MyiLibrary

Several participants did have difficulty determining how to print a range of pages from this platform. As was discussed earlier, MyiLibrary's two toolbars caused confusion for participants when they tried turning pages in books that were displayed in PDF format. The presence of two toolbars was a source of confusion when participants tried to print as well. Of the nine participants who viewed books in PDF format, five went to the printer icon on the Adobe toolbar. They found that this print option only allowed them to print their current page (Figure 19). In order to print a range of pages, they had to select "Print Multiple Pages" from the MyiLibrary toolbar (Figure 20). One participant felt that printing would be easier if the "Print Multiple Pages" option was the standard printer icon, since people automatically go to this icon when they need to print. This participant also pointed out that the menu option "Print Multiple Pages" was small, making it easy to overlook.

On a more positive note, participants appreciated that MyiLibrary was more upfront than ebrary about how much a user may print. When users try to print with MyiLibrary, the printing pop-up menu contains a sentence explaining that they cannot print more than 10 pages (Figure 21). Two participants pointed out that this information was helpful.



**Figure 19: MyLibrary's Adobe Toolbar printer option.** When participants went to the printer icon on the Adobe toolbar, they found that this menu option only allowed them to print their current page.



**Figure 20: Printing multiple pages from MyiLibrary.** *To print a page range, participants found that they had to select “Print Multiple Pages” from the MyiLibrary toolbar.*

### EBL

As they figured out how to print in EBL, three participants commented on ways that EBL could make the process easier. One felt that the print option should be larger. Two others thought that EBL should use the standard print icon rather than the word “print.” “I think I am more used to the little image of a printer, so it took me a second longer to see [how to print].” Like MyiLibrary, EBL presents the reader with more information about how many pages he or she is permitted to print from a book. When an individual tries to print in the EBL platform, he is brought to a screen that provides three options: print the current page, print a page range, or select chapters to print from the table of contents (Figure 21). Four study participants commented that they liked having

these options. They appreciated that they could select specific chapters to print, rather than having to figure out which page numbers they needed.

EBL's printing screen also provides the user with a summary that explains how many pages he has printed so far and how many pages he can print in all. However, this summary is small and the study participants did not initially notice it. When the researcher pointed out this summary information, six participants commented that this information would be useful. Although she had not initially noticed the printing information, one participant commented, "Now that I know it's very easy to see. It's also good for students who are counting pages that they are printing....so I think it's a really important feature." She went on to describe this feature as "fantastic. That's very user-friendly." Another participant commented on this print summary, "I think that's nice, because it helps you plan." She added, "I like that they are upfront about how much I can print." Considering that participants appreciated this printing summary, this information should have a larger, more prominent position on the page.

**Print Pages**  
Select the pages you wish to print using one of the three methods below. [Back to Reader](#)

**Summary**  
You have printed **0 pages** so far.  
You can print another **42 pages**.  
You have selected a total of **9 pages**.

**Single Page**  
Print the page you were just viewing.  
[Print Current Page](#)

**Print Range**  
Manually enter one or more page ranges to print.  
Example: 1,2,5-10,20-50,60  
[Print Selected Pages](#)

**Full Chapters**  
Select multiple chapters for the list to print at once.  
[Print Selected Pages](#)

Pages	Chapter Name
<input type="checkbox"/>	7 Book Cover
<input type="checkbox"/>	1 Title
<input type="checkbox"/>	1 Copyright
<input type="checkbox"/>	1 Contents
<input checked="" type="checkbox"/>	3 Acknowledgments
<input checked="" type="checkbox"/>	6 1 Introduction
<input type="checkbox"/>	27 2 Promoting development: What works?
<input type="checkbox"/>	21 3 Good governance and economic development
<input type="checkbox"/>	18 4 Agricultural development for inclusive growth
<input type="checkbox"/>	29 5 The Doha Development Agenda: Realizing the promise of global trade
<input type="checkbox"/>	17 6 The truth about foreign aid
<input type="checkbox"/>	21 7 Optimal debt relief for the poorest

**Notes**  
Export all notes:  
 Text  
 RefWorks Tagged Format  
 Endnote Format  
[Export](#)  
[Create Note on Current Page](#)  
 Expand notes only for current section.  
p.23 Promoting development  
p.27 Agriculture  
Inclusive agricultural development  
[Hide](#) | [Delete](#)

**Figure 21: EBL's page of printing options.** Participants appreciated that they could print their current page, selected pages, or chapters. They also appreciated the summary detailing how many pages they had printed and how many more pages they were permitted print. However, study participants did not initially notice this summary, indicating that it should be made more prominent.

### *Follow-up Questionnaire*

At the end of the testing session, each participant was asked to fill out the follow-up test questionnaire by hand. The first question was meant to gain an overall assessment of which platform was easiest for participants to use. While responses varied here, MyiLibrary was the clear third-place choice. In distinguishing between ebrary and EBL, it is more difficult to determine an overall pick for the easiest platform. Five participants selected EBL. Three other participants selected ebrary and two students felt that ebrary and EBL were equally easy to use. The most common reasons for choosing EBL included the ability to navigate by scrolling and the straightforward printing options.

The second question asked participants if they would be less likely to use certain e-book functions if they had needed to log in with a username and password. Because of time constraints, the researcher had logged participants into each platform before the start of each testing session. However, the researcher wanted to determine if a log in would have discouraged students from using these tools. Despite the fact that participants had been unsure if they would actually use these tools in their academic work, they did not see a log in as a deterrent. Nine participants said that a login would not make them less likely to annotate or highlight. The other participant said that he probably would not use these tools anyway, regardless of the log in.

The next question asked, "If you wanted to search for an e-book, what type of search would you prefer?" Participants could then choose a catalog search that finds both print books and e-books; separate search of the individual e-book collection; or other,

providing their own response. Seven participants selected a catalog search that finds both print and electronic books. These results suggest that the majority of participants do not approach their research with a particular format in mind; they want to view the available resources and then make their decisions about which resources to read.

When asked what would make them more likely and less likely to use e-books in the future, participants commented on a number of usability issues. Among the factors that would increase their e-book use were “straightforward navigation,” “simple sites with easy printing, and note-taking,” and “easier, more intuitive platforms.”

Corresponding with these responses, participants listed the following factors that would make them less likely to use e-book in the future: “if they are a pain to use,” “confusing, distracting lay-out,” “complications,” “hard to navigate,” and “complicated platforms.”

Two participants also wrote about the need to be able to access e-books easily from any computer. In addition to usability issues, two participants addressed e-book content; they would be more likely to use e-books if the content was relevant to their academic work.

One participant brought up practical considerations, explaining that he would be more likely to use an e-book if there were no print version available; he would be less likely to read e-books if he had to pay for them.

The last part of this questionnaire was meant to look into the potential for using handheld devices for reading e-books. The first question here asked, “Do you use a handheld device for your academic work?” Examples of handheld devices were listed, including cell phones and personal digital assistants (PDA). The next question asked, “If yes, would you like to be able to access e-books through this handheld device?” All but

one participant answered “no” to the first question, indicating that there is not currently widespread use of these devices for academic work. Even the participant who answered “yes” did not frequently use her personal digital assistant (PDA) for schoolwork. She explained, “Sometimes I use my PDA phone to look up something if I am not near a computer.” Since so many participants did not currently use devices in this way, most of the respondents did not reply to the second question. Thus, it is difficult to come to any conclusions about how much interest students have in accessing e-books through these devices. One participant still answered yes to this question, even though she did not currently do school work on a handheld device. From the participant who sometimes used her PDA to look up information, there was more emphasis to her response, as she answered, “definitely” to this question.



## **Discussion**

While participants' comments reflected individual preferences about each of the platforms, a number of trends emerge, providing insight into the usability issues that students encounter while reading e-books. Navigability stood out as an important issue for all of the study participants. Students clearly value the ability to scroll through a text, rather than having to select a next option from a toolbar. For quickly finding relevant information and for determining the relevance of a book, it is imperative that e-books make navigation as effortless as possible.

Just as individuals expected to be able to scroll while reading in the electronic environment, they also expected to be able to access the text of a book as easily as possible. After selecting a title from their search results, participants experienced difficulty getting to the full-text of an e-book using EBL. In providing her impressions of EBL, one participant explained, "Once I get into the book, I am happy, but it took me a little while to find where I need to go for the book." This process could be simplified by placing the "ReadOnline" button in a more prominent place on the page of search results. Participants found that selecting the hyperlinked title of an e-book in their search results brought them to the "Full Record" page of the book. From here, they expected to be able to access the full-text of the book by clicking on words in the Table of Contents. EBL could make its "Full Record" page more user-friendly by creating hyperlinks to chapters

from the Table of Contents. This change, along with a more prominent “ReadOnline” button, would make it easier for users to access the full-text.

As evidenced from participants’ reactions to MyiLibrary, readers do not want to be taken away from the text of their book in order to use added value functions. When taking notes or linking to outside resources, participants wanted to be able to refer back to the text of their books. With the exception of this complaint about MyiLibrary, students generally found annotation tools easy to use, but there was no overwhelming response from participants that they would likely use these tools. One participant saw a clear benefit to using an e-book’s annotation tools, explaining “The notes that I take on regular paper tend to get lost.” However, seven participants did not think they would use an annotation tool. Their comments about note-taking tools reflected individual preferences and study habits. Two participants explained that they rarely take notes while they read; three others explained that they preferred to take notes by hand. Perhaps students will become more accustomed to taking notes in the electronic environment in future years as more academic work moves online. For the time being, however, these note-taking tools do not appear to be a vital feature for e-book platforms to offer. The same can be said for platforms that provide links to outside resources—there was not a clear indication that students found these links to offer much greater functionality over going to other online resources themselves in a separate browser window. On a practical note, librarians may want to consider a long-term study of user behavior to determine if students are more likely to use these features after they have grown more familiar with them. If demand for these features does not increase, librarians should consider less expensive platforms with fewer added value features.

As for printing limitations, study participants understood that they would be restricted from printing an entire e-book or a substantial portion of an e-book. However, they appreciated when a platform was upfront about how many pages they were allowed to print. Rather than receiving a message explaining that their print job had been cut off after ten pages, students would prefer to have information about their printing allotment displayed on the screen while they are selecting which pages to print. Some students will inevitably be frustrated by printing restrictions, but libraries can prevent some of this dissatisfaction by considering which platforms convey these limitations most clearly.

This research also demonstrates the importance of one-on-one usability testing. In addition to revealing which specific features participants found useful, this type of testing revealed the reasoning behind participants' actions and perceptions. For example, when several participants encountered difficulty trying to print, they were able to explain to the researcher that they were accustomed to going to a standard printer icon for their printing needs. In another example of the benefits of this type of testing, the researcher was able to learn from seven participants that they were not sure that they would use an e-book's annotation tools, citing a variety of reasons. These types of comments would not have been uncovered in a test focusing on quantifiable measures such as error rate or satisfaction ranking. By using qualitative data gathered in individual testing sessions, the researcher was able to examine other dimensions of the user experience, such as which features did or did not enhance the reading process.

*Limitations of this study*

As a non-random sample, the responses of these subjects may not be representative of the general student body. All of the undergraduate participants and two graduate student participants had responded to the fliers advertising the study; the other three graduate students were recruited by the researcher via email. Considering those students who responded to fliers, it is possible that they have a greater interest in e-books and more experience using e-books than the average student.

It should also be considered that participants may behave differently in a testing environment than they would if they were reading an electronic book for class. While this study involved performing tasks assigned by a researcher, students may respond and react differently if they were using e-books for their own academic needs. An additional limitation of this study is that the testing sessions were limited to forty-five minutes. As Dillon (2001) points out, usability testing often overlooks the dynamic nature of the user experience. Students' opinions about an e-book platform and its features may evolve over time. While one platform may have initially seemed difficult to use, a student may grow to like this platform over time, learning to appreciate the features that originally caused confusion for him. The testing time also limited participants to reading just a few pages from each e-book. As they read, many participants commented that it was more convenient to move from one page to the next by scrolling rather than by using a toolbar. However, students may have different preferences when they are reading for longer periods of time.

Time limitations also prevented participants from being able to explore all of the aspects of the platforms. For example, participants were not able to look at MyiLibrary

books in both HTML and PDF, nor was there time to view EBL books as PDFs rather than images. The limited time frame also meant that participants were not able to try certain tools, such as bookmarking pages within e-books or creating their own personal workspaces for storing their e-books and notes for future reference. It is possible that students would have found some of these tools particularly useful, thus swaying their overall thoughts about the platforms.

A final limitation involves the screen size of the computer used in this research study. The pages of e-books will display differently depending on the size of the computer screen. For example, if one views an e-book with ebrary's QuickView, the pages of the book take up a greater portion of the screen when using a computer with a smaller screen. These display differences may affect readers' perceptions of e-book platforms.

## **Conclusion**

Librarians must consider a host of important issues when choosing an e-book platform, including the quality of content offered, licensing agreements, the number of simultaneous users allowed, and pricing options. Usability should serve as a significant factor in this decision making process as well. In order for libraries to provide students with resources that successfully meet their research needs, they must provide access to e-books which are both easy and satisfying to use.

This research study has identified usability issues that students encounter using the ebrary, MyiLibrary, and EBL platforms. While the focus is on these three platforms, the study aims to serve as more than just a product review. As a further reaching objective, this study endeavors to provide information that librarians may want to consider when evaluating an e-book platform. From usability testing, several issues stand out. Students want flexible navigational options, including the ability to scroll. They also want platforms to clearly convey information through prominent menu options and icons. Students responded negatively to being taken away from the text of their books to a new screen; they want the text of the book to remain in their browser window while using other platform functions. Additionally, this study has determined that while students enjoy different types of e-book features, such as annotation and highlighting tools, there was no overwhelming response from students that they would actually use these tools. These responses demonstrate the importance of usability in the adoption of

new technology. Students will not use these technologies in their academic work unless they find that these technologies are user-friendly and that they present value to their work.

The results gathered in this research raise questions about how students use print and electronic resources in their academic work. For example, how do they navigate and annotate their reading materials? The electronic environment provides an array of tools for students to use in their academic work, but how do they apply this technology in their research and assignments? These issues merit further investigation as students conduct more and more academic work electronically. Future research in this area should focus on usability as it plays an important role in how students perceive and interact with new technology, ranging from e-books to hand-held devices.

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**Appendix A****Initial Questions**

*Please write your answers to the following questions:*

1. Age:
2. What year are you in school?  
Freshman \_\_\_\_\_  
Sophomore \_\_\_\_\_  
Junior \_\_\_\_\_  
Senior \_\_\_\_\_  
Graduate Student \_\_\_\_\_
3. What is your major or course of study?
4. Have you ever used e-books before?

If yes, how did you find the e-books? (For example, did you find the e-books through a Google search? Did you find the e-books through the UNC Library catalog?)

5. Have you ever used an e-textbook?

The usability testing will now begin. Three different e-book platforms are open in different tabs in your browser window. These platforms come from three different e-book aggregators: ebrary, Ebook Library (EBL), and MyiLibrary. You will be asked to perform a series of tasks with each of the three e-book platforms. These tasks are printed on the following pages of this packet. Several questions follow each task. You will answer these questions out loud as you complete the tasks.

## Appendix B

### Part 1: Finding and Reading e-books

*You will begin by searching for a term in each of the three e-book platforms.*

*Your search term will depend on your major or subject discipline.*

- *If you study a science, you will search for **biotechnology**.*
- *If you study a social science, you will search for **globalization**.*
- *If you study the humanities, you will search for **Zora Neale Hurston**.*

#### **Ebrary**

1. Search the collection for your search term.
2. Select an item from the results list.
3. Read several pages from anywhere in the book.
  - What are your impressions of the ebrary layout?
  - What do you like about the layout?
  - What do you dislike?

#### **MyiLibrary**

1. Search the collection for your search term
2. Select an item from the results list.
3. Read several pages from anywhere in the book.
  - What are your impressions of the MyiLibrary layout?
  - What do you like about the layout?
  - What do you dislike?

**EBL**

1. Search the collection for your search term.
2. Select an item from the results list.
3. Read several pages from anywhere in the book.
  - What are your impressions of the EBL layout?
  - What do you like about the layout?
  - What do you dislike?

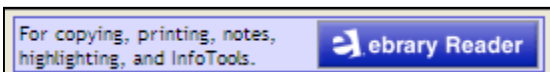
**Comparing the three e-book platforms**

After looking at books in each of the three platforms, do you find one platform easier to use than the others? Explain.

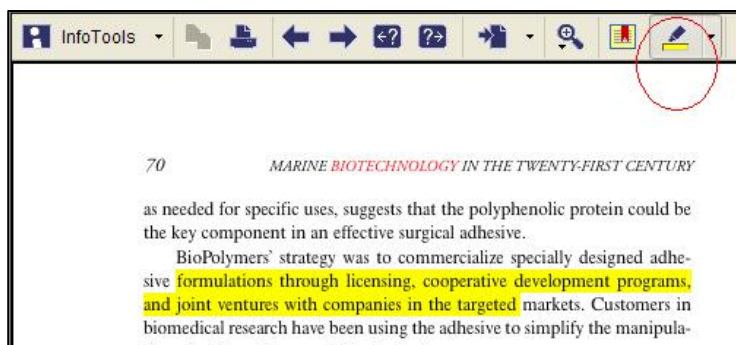
## Part 2: Highlighting and Taking Notes

### Ebrary

1. Open ebrary Reader by select the blue box for ebrary Reader.



2. Choose the highlight button on the toolbar.
3. Select some text to highlight.



4. To make a note, click on the “Notes” tab.
5. Type your notes.
  - What do you think of the ebrary’s options for highlighting?
  - What do you think about the note taking options?
  - If you reading an e-book for class, would you use this highlighting option?
  - Why or why not?
  - Would you use the note-taking option?
  - Why or why not?

## MiLibrary

1. Select “Notes” from the MyiLibrary tabs in the upper left. Choose “Create/Edit Notes.”

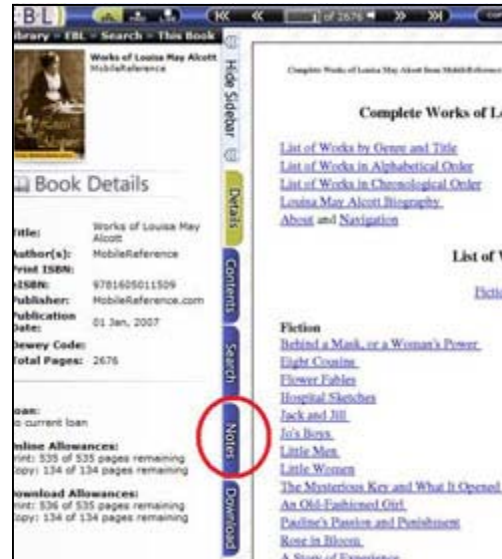


2. Type your notes into the notes text box.
  - What do you think of MyiLibrary’s note-taking option?
  - Would you use the take notes on MyiLibrary if you were reading an e-book for classwork?
  - Why or why not?

## EBL

To highlight text, you will need to download your book.

1. To make a note, click on the “Notes” tab.



2. Choose “Create Note on Current Page.”

3. Type your notes.

- What do you think of EBL's note-taking option?
- Would you use the take notes on EBL's if you were reading an e-book for classwork?
- Why or why not?

### Comparing the three e-book platforms

- Compare the note-taking functions in the three platforms. Do you find one platform easier to take notes with than the others? Explain.

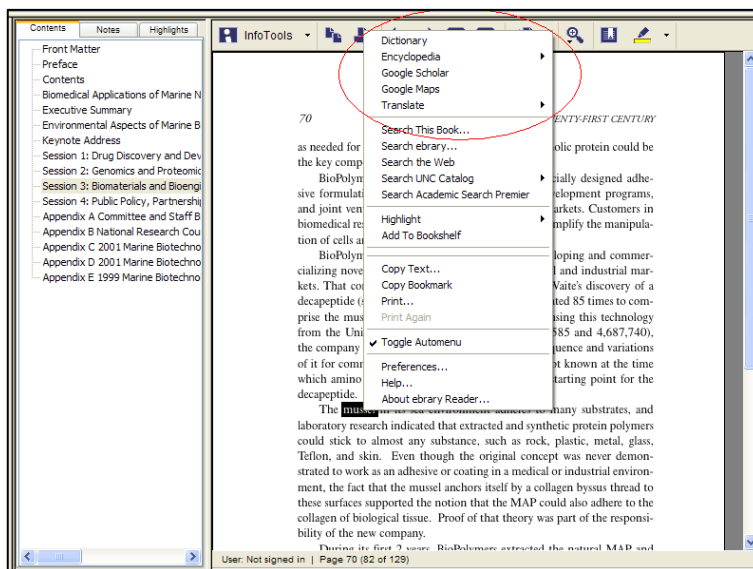


### Part 3: Using an e-book platform to link to other online resources

#### Ebrary

*Ebrary's InfoTools links to additional resources so that you can expand your research. For example, you can search a dictionary or an encyclopedia.*

1. Move to the ebrary Reader window .
2. Try using InfoTools by selecting a word on the page. The InfoTools menu will come up when you do this.
3. Try one of the options on the InfoTools menu.



- What are your impressions of InfoTools?
- Would you use InfoTools if you were reading an e-book for school?
- If you wanted to find out more about a term in an e-book, would you use InfoTools or would you rather use another online resource, such as a search engine like Google?

## MiLibrary

*MyiLibrary provides a list of resources that are freely available online.*

1. Select “available resources” from the menu on the left.



2. Try one of the options from the list of “Available Resources.”
  - What are your impressions of MyiLibrary’s Internet Resources?
  - Would you use any of these resources if you were reading an e-book for school?
  - If you wanted to find out more about a term in an e-book, would you use these resources or would you rather use another online resource, such as a search en-

## EBL

*EBL does not have a comparable option for accessing Internet resources.*

### Comparing the e-book platforms

- Compare ebrary and MyiLibrary’s options for accessing Internet resources.
- Which is easier to use? Explain.
- Which platform’s resources would be most useful for class assignments?

## Part 4: Printing

### **Ebrary**

- Try printing several pages.
- What are your impressions of ebrary's printing options?

### **MyiLibrary**

- Try printing several pages.
- What are your impressions of MyiLibrary's printing options?

### **EBL**

- Try printing several pages.
- What are your impressions of EBL's printing options?

### **Comparing the three e-book platforms**

- Which platform makes it easiest to print? Explain.

## Appendix C

### Wrap-up Questions

1. Keeping in mind all of the tasks you have completed with each platform, was one of the e-book platforms easier to use than the others?

If yes, please explain what made this e-book platform easier to use.

2. In order to use functions such as highlighting and annotating, readers must login to the e-book platforms with a username and password. Would a login requirement make you less likely to use those functions?

3. If you wanted to search for an e-book, what type of search would you prefer? (Choose one.)

- a catalog search that finds both print books and e-books
- a separate search of the individual e-book collection
- other \_\_\_\_\_

4. What would make you more likely to use e-books in the future?

5. What would make you less likely to use e-books in the future?

6. Do you use a handheld device for your academic work? (Examples of handheld devices: iPhone, iTouch, iPod, other cell phone, or PDA)

If yes, would you like to be able to access e-books through this handheld device?