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MBooks Usability Reports

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Usability Test – MBooks

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Table of Contents

Overview

This report contains the findings of the usability test conducted for MBooks, also known as the Michigan Digitization Project. This project, associated with Google, provides an online access system to the University of Michigan Library's digitized collections. MBooks utilizes a "page turner" interface allowing users to either search within a text or view a full text depending on the copyright restrictions currently in place for each individual resource.

While a useful tool for being able to quickly locate terms within books, it cannot deliver more than one page at a time with its interface. Because of this fact it allows for screen-viewing but can not be considered a complete surrogate for print resources. If the purpose of MBooks is to deliver resources that are no longer easily accessible in print (or accessible at all), it does not yet serve all the possible needs of a researcher.

Unfortunately, items available through MBooks are not identifiable early in the search process. Also, users cannot currently browse just MBooks resources or filter Mirlyn results for anything other than *all* available types of electronic resources. There are already plans for creating an MBooks portal and those things may change upon its implementation.

To better understand the users of MBooks, we developed a series of tasks which were used to test four subjects to determine their ability to find MBooks through the University of Michigan Library's Mirlyn catalog, their search behaviors when doing so, and their use of MBooks resources. Screen captures and user audio/video from these tests were recorded with TechSmith's Camtasia Studio[1] software.

This report will ultimately make recommendations through a discussion of the methods for the user tests, a summary of the tasks that were given to the users, primary findings resulting from observations of the user tests, and reflections about our user testing process.

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[1] See http://www.techsmith.com/

Methods

Selection of test subjects

Based on our earlier investigations, we made the decision to limit the user selection to our primary target groups of librarians and students within the University of Michigan community (See report, Personas and Scenarios: http://www.lib.umich.edu/usability/-projects/MBooks.html). We recruited four test subjects:

- Assistant reference librarian
- Technology librarian
- Graduate student/librarian
- Undergraduate student

Each subject was told that the test would take no longer than 45 minutes and that they would receive an Amazon.com gift certificate for their participation.

Selection of testing space and equipment

Initially, we planned to test subjects in the Duderstadt Center Usability Lab on North Campus (http://www.dc.umich.edu/dmc/uselab/usability.html). The majority of our group members attended the mandatory orientation session but quickly came to a group consensus on a number of factors which made this environment less desirable for our test subjects:

- The Usability Lab was very difficult to locate and physically small in size, making the experience claustrophobic and uncomfortable
- Our target group of test subjects considered Central Campus to be their "home base", thereby making a journey to North Campus an undue burden on their parts
- The hardware and software provided by the Usability Lab already existed within the personal resources of our working group and were therefore redundant
- Scheduling time for the Usability Lab for when our subjects would be available, but not occupied by other usability testing groups, was difficult.

To give ourselves ultimate flexibility in scheduling with maximum comfort for our test subjects, we made a decision to use our own hardware and software, which included:

- PC laptop
- USB mouse
- Web camera
- Microphone

- Camtasia software

Backup hardware included a Mac laptop, USB full-size keyboard, and a second USB mouse.

As mentioned, we recognized that these four test subjects would be both familiar and comfortable in their regular library environment on Central Campus so we used the Graduate Study Room in the Shapiro Library Building as our testing venue. The space was sparse with few distractions, yet comfortable, easily located, and quiet.

Creation of user tasks

To determine the tasks each test subject would perform, we looked to our previous evaluation reports and chose to include the following aspects of the MBooks experience:

- Finding MBooks resources via Mirlyn

- Determining the users' perception of 'Full Text' vs. 'Search Only' MBooks

- Obtaining feedback about users' understanding of the MBooks link vs. the Google Book Search link within the Mirlyn record

- Users' ability to successfully navigate all aspects of the MBooks interface (i.e. page turner, go to specific page, zoom, save, print)

- Use of the bookmark feature in MBooks

- Users' differentiation between the feedback options, FAQ help menu, and electronic resource assistance

- Users' understanding of the unique functionalities of the image version, the PDF version, and the full-text version

- Users' reaction to an MBook resource, which also includes the new table of contents feature

We approached these tasks in a tri-fold scenario. In the first portion of the test, the users were asked to find MBooks on their own. In the second portion of the test, the users were given a pre-selected 'Search Only' MBook and tasks that could be carried out with this level of functionality. Finally, in the third portion of the test, the users were given a pre-selected 'Full Text' MBook and another set of tasks appropriate to its functionality. We determined that in order to fairly compare each test subject's user experience with 'Search Only' and 'Full Text' resources, they would have to be given the same resources to use. However, it was still an integral part of our user test that our test subjects also be able to show us how they could locate MBooks within the Mirlyn catalog. Thus, the first portion of the user test allowed users to navigate the Mirlyn electronic catalog on their own.

Testing procedures

Each test involved the test subject, facilitator, and one note taker. One group member met the test subject at the reference desk on the third floor of the Shapiro Library. The test subject was then brought to the Graduate Study Room on the fourth floor. The testing environment was set up so that the test subject was not facing any windows and in a position so that the note-taker could sit behind them with their actions on the computer screen visible.

The facilitator worked from a script that included welcoming remarks, signing of the agreement form, user tasks for testing, debriefing and questionnaire, and concluding remarks. One of the facilitator's primary goals was to encourage the test subject to think aloud. An additional challenge for the facilitator was to determine at what point the test subject would need prompting if the test subject was unable to be successful in completing the task on his or her own. These types of issues were covered in pre-testing discussions as well as reminders on the script; group consensus helped determine how much time would be allowed to pass before hints and prompts were given during any unsuccessful tasks.

The test subjects were recorded using Camtasia, allowing us to capture both their on-screen actions as well as their spoken words and visual image. Additionally, the note taker was able to view the test subjects' actions and could take notes on times and tasks when the test subjects would become frustrated or confused. Test subjects were encouraged to explore the MBooks resource as well as to make mistakes, as their actions would help to further the development of this resource.

Upon completion of the test, the facilitator thanked each of the test subjects and notified the subjects that they would be receiving an Amazon.com gift certificate via email.

Post testing procedures

To avoid overwhelming the test subjects, we agreed as a group that no more than two group members would be present in the testing room with each subject during each test. As detailed above, these two individuals played the roles of test facilitator and note taker. Obviously, this put other group members at a disadvantage if they were not participating in the test when it happened live. The Camtasia screen, video, and audio captures were all converted to an easily viewed format and put online in a secure space for each group member to view and reference during the post-testing analysis. Each note taker also provided detailed notes, which were posted on our group's secure online group work environment (see Appendix B). Both of these resources were integral to each of our group members' ability to view and fully understand each user testing experience.

Key Findings

Search process in Mirlyn

The evaluation of MBooks expands beyond evaluating just the MBooks interface. Before opening an actual MBook, every user must go through the process of finding that resource within Mirlyn, the University Library catalog. The first of our usability tasks was constructed to evaluate how well users were able to find an MBook within the Mirlyn catalog. The reason for this is that finding a path to an MBook through Mirlyn had been identified early in our evaluations as being a critical point in the search process of users. Our goal was to determine the importance in the labeling of MBooks (i.e., the ease of identifying specific resources) in the users' experience and not simply the automatic generation of general search results. We asked our users to complete several tasks to test the clarity of some of the labels present within the catalog interface, including: 'Google Books', 'MBooks', 'Search Only', and 'Full Text'.

Due to a delay in user feedback[2] on the different resource types available (MBooks vs. Electronic resources) users must spend a significant amount of time locating an MBook on a provided topic. When our users were asked to search within Mirlyn, they demonstrated different levels of proficiency with the Mirlyn interface. We expected that librarians would be able to find resources faster and assumed that they were more acquainted with Mirlyn's interface and functionality than students. However, both librarians *and* students spent a considerable amount of time finding an MBook, even though our librarian test subjects used the advanced search feature within Mirlyn. The long search-time experienced by our users can be explained by the confusing labeling system and use of icons within Mirlyn.

While searching the library catalog, each test subject had to open individual records within the search results to check if that record had an MBooks logo associated with it. Within the general search results list, MBooks are labeled with the symbol of a lightning bolt (figure 1). This is the general label used to indicate all electronic resources, including journal articles and the products of many other digital initiatives. Because our users were forced to open every record with a lightning bolt symbol, their success in locating an MBook resource was significantly delayed.

Figure 1. Lightening Bolt. General Electronic Resource icon impedes location of MBooks resources.

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[2] Ten Usability Heuristics by Jacob Nielsen
(http://www.useit.com/papers/heuristic/heuristic_list.html)

Users demonstrated a poor understanding of the difference between the Google and MBooks links. Each test subject expressed confusion at encountering two different links (Google books and MBooks) listed on the book record (figure 2). Users were not able to say how these two resource links were different until they opened each link individually. The confusion seemed largely motivated by the presence of the Google link, perhaps because many people associate Google with the commercial search engine and are not expecting to see a link to it in the library catalog.
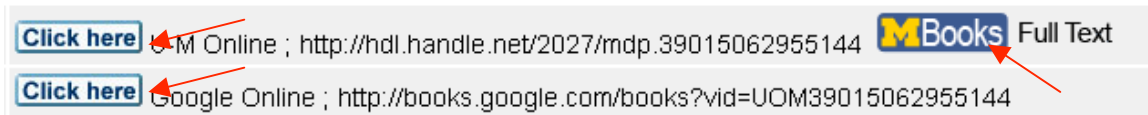

Figure 2. Resource record locations confuse users with multiple links and redundant buttons.

Users were frustrated that the MBooks logo is not a link. The MBooks logo, as seen in figure 2, has the look and feel of a 'clickable' page element, meaning that it appears to represent a button or link that leads to the individual MBooks resource. However this logo is not a link to the actual MBook page-turner interface. To open an MBook, the user has to click the "click here" button. The presence of such a button is confusing, creating the illusion of redundancy as users have come to recognize logos as buttons in many contexts on the World Wide Web.

Users could not explain what type of resource the 'Search Only' option provides. We asked our users to pay specific attention to the 'Search Only' icon (figure 3) associated with a significant portion of MBooks resources. We were particularly interested in the users' perception of this icon and asked them to interpret what they thought the 'Search Only' label actually meant. The answers we received from our users varied. Some users were not able to define what the icon meant. Some users *guessed* that 'Search Only' meant that the full-text version of the resource was not available. None of our users seemed particularly confident about what they thought the label meant resulting in all of them having to click on the resource to understand that these resources were protected by copyright and the text could not be displayed.
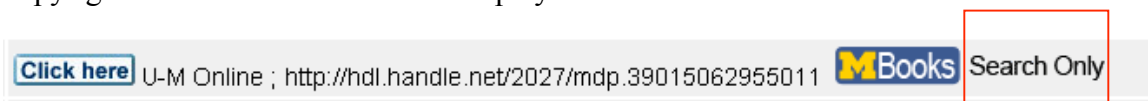
Figure 3. 'Search Only' MBooks label is ambiguous and causes confusion.

MBooks Interface Functionality

Blank pages

Users typically seemed frustrated, albeit somewhat mildly, with the number of blank pages they were presented with at the beginning of a text. Subjects nearly always began browsing a book as soon as it loaded, and in their search for the first page they often found that there were many of these blank images. One subject was particularly frustrated

with the poor scanning on these pages, with body parts and equipment visible at times. Fortunately, this may already have been addressed by the addition of the table of contents feature, which allows users to jump directly to a section which they assume has some content. An interesting effect of these pages is that users would begin to play around with the different views, perhaps to see if something was wrong. They would then be confronted with the rather harsh message given when no OCR text is available. The addition of page thumbnails, to help provide a user with context for skipping a few pages ahead or back if needed, could help to solve the frustration this causes and would also have other benefits for future versions.

Sequence vs. Page numbers

The use of the term 'sequence' rather than 'page' on some MBooks caused confusion and occasional annoyance for participants. When we asked participants to go to a 'page' they all immediately entered that number into the 'jump' box. Many had to be guided toward realizing that the two concepts were not, in fact, the same. This has been addressed on newer additions to the MBooks collection; however the inconsistency between current MBooks and older ones might cause confusion. Users did eventually adjust to this discrepancy, but generally did not like to have to calculate the actual page number (figure 4). It should be noted that the consistency of the terms 'sequence' and 'page' (only used when searching newer scans) did serve to keep users aware of a difference, even if the distinction caused annoyance. However, some (perhaps all) of the newer MBooks do not provide the numbers of pages containing a search term in the results list. Currently, the list displays 'unnumbered page'.
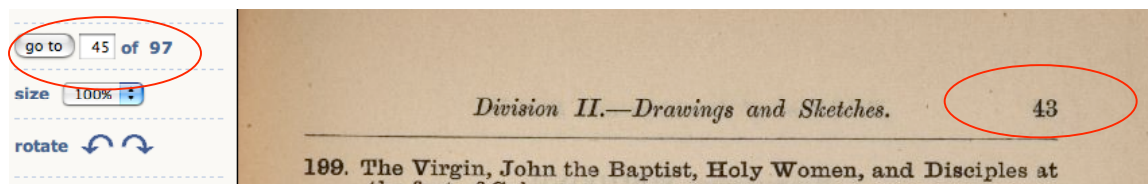

Figure 4. Discrepancies between sequence (system generated) and page (original book) numbers.

Visual Search Within Text

Users indicated that highlighting search terms within the text of the book would be very useful. Searching text in the MBooks interface presented us with some interesting behaviors and comments. One of our participants attempted to use the browser's search function to search the page for text, which would only have been effective in text view (the default view is image). Another user was thwarted by the size of the window in which the MBook opened; its width was not enough for the search box to be entirely visible. However, when users were asked to search the text for a specific term, they were typically able to do so with no trouble. They also had no problems linking to a page that contained their search term. The particular trouble that arose here is that most of our subjects were annoyed that they still had to scan the whole page visually with their eyes, or switch to text view and search with the browser, to find the term again. At the advice

of one subject, some form of highlighting may need to be considered to spare the user a number of cumbersome steps. The presence of highlighting in the search results page caused one subject to assume that this would be repeated when he linked to a page that contained his term.

Table of Contents

Users had no major difficulties using the table of contents. Of the newer features, the table of contents (TOC), seemed to work very well for users with a few exceptions. One did not immediately see the feature when using a newer MBook and instead searched the book's text for the chapter title she was given. Another user was not immediately aware that the table of contents might have more than one page (we asked them to go to a chapter listed on the second page) and was delayed as he searched the page visually. One user believed that the particular book we selected for this task had more structure represented in the book's TOC than the linkable TOC. Additionally there was slight hesitation as users made a connection between the terms "section" and "chapter" when using the link to jump to our requested chapter. This did not prove particularly difficult, however. Our participants did seem rather pleased that 'page' numbers in these versions were synched to the actual page numbers of the books (even pages marked Roman numerals were accessible by their actual labeling) and most noticed the difference from the older MBooks they were shown.

Saving and Printing

The inability to save an entire MBooks resource induced overall frustration across our user tests. One user, in particular, complained that if saving or printing the entire book was not possible, then these options should not be made available at all. Also, when searching for only portions of a text it is not possible to highlight just that section of the image file. Although the option for the text version exists, there are numerous problems with the OCR version and the text is often unreadable.

In general, users were not automatically aware of the particularities of the three views offered (image, text, .pdf) (figure 5). When we asked users to save pages for later printing, they did not immediately switch to .pdf view which offers the easiest way to save or print. An additional complication of this task, whether they saved images or .pdf files, were the cumbersome file names that automatically populated the "save" dialog. An inability to copy and paste directly from the page image also frustrated users even though this would have been quite easy in text view. One user was also frustrated by the fact that he couldn't use his browser's search feature to find particular words on a page. As an advanced internet user and information searcher he expected to be able to use the same keyboard shortcuts he has become familiar with, but the use of static images as the default for MBooks texts prevents him from searching in the ways he is most comfortable. Again, this would have been quite easy using text view. It is quite possible this indicates a lack of knowledge or 'instruction' about how certain page views connect to specific research needs. Perhaps this could be visually represented with icons, or more use of 'alternative' tags for images could provide brief informational statements when users hover over a link. It might also be preferable to alter the terminology used a bit, as

"Full Text" is used in Mirlyn to denote a book that has readable text but means plain text in the MBooks interface.

Figure 5. Various viewing options available within the MBooks interface.

Bookmarking

The ability to share resources with other users is potentially very important to librarians and other information searchers. Therefore, it was surprising to notice the myriad ways our users tried to record an MBook's location. It is important to note that *none of our test subjects* utilized, let alone noticed, the 'bookmark' icon/link in the MBook interface (figure 6). One user, when asked how he might share the resource with a friend, traversed backward to the Mirlyn interface to copy and paste the URL for the resource record. He did not even notice the bookmark feature on the MBooks interface. Also, he expressed confusion as to whether his friends would even be able to access the MBooks resources. It is never explicitly stated whether the full text resources within MBooks are available to the general public or are limited to only those with library access.

Figure 6. Bookmark feature in MBooks interface.

Help and Feedback

Although the feedback option is clearly labeled in the header of the MBooks interface, some users expressed confusion as to what the feature actually involved. In fact, when prompted to click on the option, users were additionally confused by where the link took them on the page. Traditional online culture presumes that when a link is clicked by a user the browser will react and redirect the user to a separate page or resource. When the 'Feedback Options' link (figure 7) is clicked within the MBooks interface the page merely shifts to the page's footer and displays, in non-descript font: "Problems or comments about this page? Please tell us." Because the page simply shifts and the user is not redirected to a separate feedback page, they were not sure what information is available to them at the bottom of the page, and two users failed to even notice the small prompt to expand the feedback display.

Figure 7. Feedback link in header redirects user to the page's footer with an additional link.

Our test subjects, all library users and familiar with Mirlyn, struggled with the concept of where to go for help. None of the users actually took advantage of the MBooks FAQ page, mostly because they did not associate the 'About MBooks' description (figure 8) as a possible source of help. One user pointed out the existence of the "Ask Us" feature. As a reference librarian she was familiar with this service and admitted that often she is on the receiving end of the 'Ask Us' reference chats. She was concerned with the fact that the MBooks interface pointed its users toward the reference chat, especially since she knew that she would not be able to help if she were working at the reference desk when someone submitted a question about MBooks. Most users seemed to imply that if they had problems or questions about the MBooks system they would seek out a librarian or other library professional for help. However, none seemed to recognize that if they were off campus or working after regular business hours they would have to find electronic means of help.

Figure 8. Help options available within MBooks interface.

Summary

Throughout our four usability tests, we mainly focused on the basic functions of the MBooks interface and those aspects that we were unclear about after our own heuristic evaluation. As a result of our tests, we've acquired plenty of valuable findings on the functionality, usability and aesthetics of the whole MBooks project.

Functionality

Most subjects were stunned that the MBooks project actually involves scanning the entire books (covers included) and making them available online. Users are happy to see that for some of the resources there is table of contents to aid navigation through the book. All four subjects agreed that it is extremely hard to find an MBook in the Mirlyn catalog, because they are unable to tell the difference among different electronic resources in the search results page. We found that our users were unable to locate their precise location within a book when they encountered blank images in the first few pages of some books. They also encountered problems when trying to save the page image due to the odd default naming given in save dialogs. In order to make the saved files more recognizable, all the users had to actively spend a good deal of time renaming them. In addition, our subjects never used the "About MBooks" feature, even if they had a question related to MBooks. It is obvious that the MBooks project is making progress on making sequence numbers and page numbers consistent. However, there are still some books that have discrepancies when it comes to sequence and page numbers, causing a high number of user errors. The bookmark function is seldom used; most subjects either use the permanent URL or copy the URL in the browser directly.

Usability

The 'Search Only' icon was extremely confusing for our users. The users either didn't know what it meant, or thought that they could search the entire text without realizing that the full text is not available to them. Users were even more confused with the two links provided separately by MBooks and Google, which are presented together within the book's catalog record page. Also, within the individual record pages there is a 'click here' button, a non-hyperlinked URL, an MBooks icon and a 'Search Only' or 'Full Text' label (which resembles the 'click here' button). Most subjects move to the URL or the MBooks icon first, thinking that they are clickable and hyperlinked. We also found out that they never use the 'back to Mirlyn' function, worrying that they would be led to the Mirlyn search page and lose their current book record, as this is the way Mirlyn typically functions with other types of records. The feedback function is perplexing as well, redirecting the user to the bottom of the page instead of directly to the page with the comments function. In our user tests our subjects mentioned that it would be better if the keyword they searched for could be highlighted not only in the search results page, but also in the actual pages of the text that have instances of that keyword.

Aesthetics

Most subjects found it surprising and amusing when they saw scanned books with human finger shadows on the pages. Most users recognized the tedious work associated with the scanning aspect of the MBooks project, however they still felt there were improvements that could be made for greater readability. Along with random finger scans some books also have ink smudges on the edge of pages while in the image view option. Although the poor scans may be more of a reflection of the condition of the tangible book the debris and stains on some pages not only make the books difficult to read but also affect the full text version rendered by the scanner.

Recommendations

Mirlyn, the University library catalog:
- Replace lightning bolt symbol with something that more readily identifies an MBooks resource
- Find way to make the MBooks logo in book record appear less like a link, perhaps remove altogether once an MBooks portal exists
- Consider changing 'Search Only' and 'Full Text' to other labels, conveying more clearly that no full-text is available for the particular MBook; perhaps use icons (i.e. magnifying glass and a page with text along with their crossed-out counterparts)

MBooks interface:
- Add page thumbnails for determining immediate context
- Replace the term "sequence" with the term "page" (already done on new versions), and provide a better warning about this discrepancy on older MBooks
- Highlight the user's search terms on the MBooks page
- Find ways to convey advantages and drawbacks of the different view modes (image, text. pdf) to the user; consistency of terms used (i.e. "full-text")
- Make "Bookmark" more visible within the MBooks interface or more clearly label with respect to function
- Make the "Feedback Options" link at the top of the page lead directly to a feedback form, not to another link at the bottom of the page
- Consider renaming the "About MBooks" link to "FAQ"

Reflections

Our group benefited from getting an early start to our user testing process. Making the collective decision to use our personal hardware and software resources while keeping the testing in a more familiar and comfortable testing environment for our test subjects also benefited us greatly. If time and resources had permitted us, we would have liked to test more than four subjects. A slightly greater pool of test subjects would also have been helpful in tracking patterns within our target user groups as well as to compare our target users to fringe users.

The tasks we chose also proved to be very beneficial, with our previous observations and analysis of MBooks features helping to guide us in the most pertinent tasks to be tested. Our continuing discussions with Suzanne Chapman of MBooks was integral in helping us to determine what our project's client felt were the top priorities to be addressed in user testing. As was expected, our conclusions were much the same as Ms. Chapman's; this further supported our previous conclusions and gave us confidence in the tasks that we had chosen.

During the test, we learned to prompt subjects to think out loud so that we were able to keep track of what the subjects were doing. Giving hints to subjects when they seem to be stuck at one point for too long a time is another important thing learned in the process. As a facilitator, it is also critical to put subjects at ease when they make mistake, saying something like "I made the same mistake at first" or to simply use words of encouragement to explore the product. Another finding we had was that we should not only prepare the script for ourselves, but for the subject as well. By doing so, we were able to direct the user to the written task instead of repeating things verbally, requiring a different level of concentration from the test subjects.

Appendix A

User Task List

Task description	Purpose/what we are testing	Time it takes to complete a task	Source
1. warm up task: Please find the call number of "Abilities and education". Explain your understanding for the "search only" icon for MBooks	Warm-up; See if subject can tell the meaning of "search only".	30 sec.	Browser
2. You are working online and off-campus; you need to write a paper on Michigan mining. Your professor requires at least 1 monograph/book citation. Your task is to find a full-text MBook. (hint: advanced search, prior to 1910, electronic resource)	To test Mirlyn search for MBook; can user tell "full-text" from "search only"	If user cannot find the record for more than 1 minute, point him/her at advanced search option. 2 min. to find full-text	Browser
3. Search the book about teaching and homemaking. Ask subject to talk about their thoughts on Google link and MBook link on the record page.	See if subject will be confused by these two similar links.	1 min	Browser
4. Go to Book 1. Save pages # 34-38, and print them out. (hint: pay attention to subject's frustration when they find out that they can't save these all at once)	MBook interface: Page turner, go to page, save, print.	2 min.	Book 1. URL: http://hdl.handle.net/2027/mdp.390150629 54857 Shortcut provided on the desktop
5. Copy sentence about Idaian Herakles on page 45 to MS Word	Page turner/go-to; full-text format	1 min	Book 1
6. Read a sentence in the middle of the page, try to turn page in either direction	Can user turn page from all readable points	30 sec. – 1 min	Book 1
7. Send a link for this book to your friend (note for facilitator: not a dynamic link)	Bookmark/ Permanent URL	2 min	Book 1
8. Provide page numbers that contain the word "Alexandria"	Search the text	1 min	Book 1
9. Go to the last page of the book	End arrow/ go to;	1 min	Book 1
10. You've found jumbled text on page 68; report this to the library	Feedback options/comments	2 min	Book 1
11.Look for help in the MBook interface	Ask us	2 min	Book 1
12. Open Book 2. Where this book was published? (answer: http://hdl.handle.net/2027/mdp.3901505969 5430)	Title – more, back to Mirlyn (book record)	2 min	Book 2: http://hdl.handle.net/2027/mdp.390150596 95430. Shortcut provided on the desktop
14. Open Book 3. Find Chapter called "Physical Education in the College"	Will user flip page to continue reading	1	Book 3 http://hdl.handle.net/2027/mdp.390150036 47222 Shortcut provided on

			desktop.
15. Go to this chapter	Does user click on "section" in TOC menu or will they enter a page number	1	Book 3

Appendix B

User Testing Notes

User #1

1. Search Only:
   User: "I am not really aware of what MBooks search only is"
   Facilitator: If you would have to guess, what would you say?
   I guess online available MBooks
2. Mirlyn issues: user had hard time searching for specific book, e. g. user is provided title and author.
   User was prompted to add author as additional criteria, then to search by author alone
   Task was dropped
3. Saving a page: User confuses saving and bookmarking a page (has nothing to do with the system). User was prompted to go to pdf, try to use save as function of browser.
4. Finding the date of publication. User fails to notice "back to Mirlyn" function and opens new window to pull book record.
5. Save options. When prompted user states that they would like to save several pages simultaneously without going from page to page manually.

User # 2

User was extremely relaxed during the test. User is very confident when using Mirlyn and would be considered an advanced searcher (information) as well as an advanced user (program and hardware). The User employed advanced combinations of search strategies and terms and was comfortable navigating the technology while searching for the information. The User was also very quick with all of the tasks and the user's decision making process was very efficient. The user used their previous library knowledge to guide their searches and any points of confusion usually came when intuitive knowledge was disrupted by lack of continuity in the products and/or process.

1. Tried to click the MBooks logo/icon and showed confusion when it wasn't a button. The user obviously expected it to be a button (shaped similarly to the "click here" button).
2. Off-campus resources: said is not likely to use Mirlyn, but rather Search Tools or other online journal sources (*note—I think this might have been confusing b/c the question was presented in the context of searching for journals, serials, etc. The point of searching for a monograph or book was not made totally explicit.)
3. Search for "Michigan Mining" – had to continually refine searches and continually found non-MBooks. Had temporary confusion because a lot of the

electronic resources were not MBooks ("are there any of them here?"); wondered aloud if there was a way to limit the search to MBooks only.

4. Google Book Record: confused about why there were 2 links and not sure of the Google link's purpose; The user actually read the URL and got confused (service is from handle.net) and so the user explored this route to satisfy curiosity b/c it made the user wonder if the University was using a commercial vendor for some odd reason.

5. In Google Book search: commented on the very different interface (surprised, not confused); frustrated that when they did a keyword search within the text , they didn't get the whole sentence but just a visual square-ish clip of where the word appeared on the page (wanted to be able to read the whole sentence); had confusion trying to figure out the relationship between Google and UM while in Google interface (aside from small mention about book being scanned at UM, there was no other connection).

6. Printing task: big confusion when they realized the difference between sequence number and page number (for this particular task and MBook, the difference in numbers was large); additional frustration when they discovered that in the MBooks interface they could only print one page at a time.

7. Go to page # task: used advanced shortcuts (F12) to call upon the hardware and operating system to search for what they were looking for and then discovered that the MBooks page image was not searchable in this way; confusion when they had to estimate the page number due to difference with sequence number; encountered frustration because they didn't want to use the search term box, knew this would yield all instances of the word in the book instead of the one instance that they needed.

8. Go to the last page task: even though the user had seen the bottom page navigation, they still scrolled back to the top of the page; also discovered that the last sequence number is not equivalent to the last page number of the actual book and seemed slightly frustrated by that.

9. Send this page to your friend: went back to Mirlyn with the logic that they would simply copy the URL and paste it into an email to a friend, then it occurred to ask "do you have to be a UM student to use this?"; completely missed the bookmark function and didn't even ask about it (given the user's interactive nature and vocalization, I think they would had asked about it if they had noticed it).

10. 'Alexandria' search: frustration when the term search took the user to the page then they still had to hunt around on the page for where the word showed up (i.e. it wasn't obvious).

11. Get help: User #2, already knew what "Ask Us" would lead to (thinks the "Ask Us" page is confusing all on its own); said that if they didn't know the Ask Us service already, they would assume that help was under "About MBooks."

12. Look for publisher info: lots of annoyance and frustration at the blank pages and poorly scanned pages preceding publisher information.

13. Find the chapter "Physical Ed." – confusion on the user's part b/c they felt this book had "more structure" and didn't understand why there was such a difference; when the user estimated the sequence #s, the pages and sequences actually matched up which the user was happy about but frustrated compared to the previous tasks.

User #3

User #3 was very relaxed and curious about the test. The user was good at verbalizing their thought processes and steps they were taking in the searches. The user asked a lot of questions and was easily guided by facilitator prompts, which was very good—it helped the test to flow rather seamlessly and the user didn't appear to be personally upset if something didn't work the way they expected. User #3 is a moderately advanced searcher (information) and intermediate user (technology). They didn't need any prompting for the search process, but the facilitator did have to give suggestions to make use of the technology easier (i.e. maximizing the screen, finding the Notepad program, etc.). Search time was moderate—not particularly quick, but not slow either. User #3 is a regular user of Mirlyn and clearly has a set pattern for search processes; the user showed overall confusion that there might be aspects about the catalog they use for school and work which they didn't realize existed and showed overall frustration that maybe they have been missing something.

1. MBooks 'search only': Confusion about 'search only', at first the user thinks they know and then verbalizes that they don't really understand its purpose; Notices the Google link and doesn't understand why Google is in the Mirlyn catalog. "What is it?"

2. MBooks link vs. Google link: Confused over the difference; again, "why is Google in the Mirlyn catalog?"

3. MBooks search only task

4. Google search (self-initiated exploration):

   For both 3 & 4: big confusion, didn't understand why the book was "search only" and didn't make attempts to find out why/find an explanation in MBooks; in MBooks read the notice about copyright restriction and thought it was "crappy"; in Google, didn't like their message either and said they wanted to read the book then and there, not buy or simply search it.

5. Mining in Michigan: The user got confused when the search results list didn't show the MBooks logo, kept refining the search in an attempt to find the logo; verbalized confusion about the difference in MBooks and general electronic resources; frustration that couldn't just search for an MBook, specifically; thought aloud that they think electronic resources don't yield MBooks (that they are not the same); again (multiple times), cannot search for MBoks collection, specifically.

6. Received help for Mining in Michigan task: The user was led to an MBook resource and was so surprise at what the MBook looked like; didn't realize the scan was of the actual book (assumed it was just text); went to the Google link also and didn't get the book through Google (dubbed it "lame").

7. Book 1/ print: Confusion and frustration when couldn't print the selected page numbers from the printer dialogue box; further confusion and frustration when they realized the page numbers were different from sequence number; complained about the slow loading time ("time consuming") and could not quickly click through the pages.

8. Book 1/save to print: frustrated when realized they had to save each page one at a time and then would have to print each individual page; complained that MBooks shouldn't give a print option if you can't "actually use it."

9. Book 1/go to page 45: confusion at having to estimate and do math to locate the correct page number.

10. Book 1/copy the text: tried a right mouse click copy/paste action and it wouldn't work. Was prompted for full text and then was able to complete the copy/paste.

11. Book 1/go to the last page: The user typed in the sequence number that was listed last and then got a scan of the back cover and was confused until they remembered the difference between sequence and page number.

12. Report mistakes/errors: The user turned away from the computer at this point and simply started talking to the facilitator. They did not attempt to try an electronic solution and the verbal discussion indicated that they would probably ask a live person before looking at electronic sources of help; after prompting to find an online source, The user found the feedback options and seemed rather neutral about it.

13. Help menu: The user already knows the Ask Us service and recognized what that would mean when they saw the link; The user said they did not think to go to "About MBooks" for FAQ, but gravitated towards the word "ask".

14. Book 2/ publisher info: Lots of blank pages at the beginning caused confusion; after prompt, used the "Back to Mirlyn" button and was surprised because they didn't think the Mirlyn link would be linked to the current MBook (explained that in regular Mirlyn searches, they lose their current source if they go back to Mirlyn and didn't click on the "Back to Mirlyn" link when they saw it b/c they were afraid of losing their current MBook).

15. Book 3/Phys. Ed. Chapter: More frustration over slow loading time when the user tried "search this text"; confused by the results on the page (41 pages in the book with the user's search term); had to be prompted to go back and look for a table of contents and the user showed confusion that maybe the T of C was in the book or was it in the resource?

User #4

Tasks	Notes	Issues
1 – warm up: find MBook	• Said there was no 'disclaimer' on google link; assumed more functionality, not just searching, and wanted to click first • Understood that 'Search Only' meant searcing the text but not readable • Clicks on the "why?" to find out why he can't read	• Tried to click MBooks logo in record; many times • Considered logo a disclaimer of sorts • Window was not wide enough when it opened automatically (from last user/session?) and he could not locate search bar
2 – find full text MBook	• Used browser's text searching feature to search within first page of results • Does not try electronic format in advanced search initially	• Very hesitant to use advanced search, used browser search on *first page* of results for a minute • Searches again in advances and *does not use* electronic resource filter • Eventually sees electronic format on 3rd search (2nd advanced)
3 – Jump to and save pages	• Saved page *image* to print later. • Renamed images • Printed from windows preview • Eventually found 'text' to copy to notebook • Calculated an 8 page discrepancy	• Went to section 34 and began to try to print before realizing the page discrepancy • Renamed images because of ".100 extensions" after file name which kept windows from recognizing as .jpgs • FAQ section 2.1 bookmark link broken?
4 – copy sentence		
5 – read page; turner accessibility and use; bookmark	• No problems using page turner and remember how to get to page controls • Copied the address bar link and said he would prefer to send	• *Completely* missed the 'Bookmark' link • Had to search for a while and eventually found the expanding info pane with the static link in it • Didn't like that it was a static URL to the first page •
6 – search for/locate text	• No problems with this task	• Didn't like that there was no highlighting of search terms
7 – last page	• Used the 'go to end' button with no delay	
8 - feedback	•	• Goes to "ask us" first; looks

		around for less than 30 seconds • Moves on to main page and finds feedback options • No problems locating second link to expand feedback
9 – ask librarian	• Goes to "ask us" immediately	
10- when published and return to Mirlyn	• Gets back to Mirlyn with no problems; notices it's that items record	• Types in 'published' to search • Flips pages for many pages • Eventually opens the expanding information window
11 – what is on emblem	• Uses all of the imaging functions with no problem	
12 – copy picture	• Copies image not .pdf, but accomplishes goal	
13 – go to TOC	• No problems locating this	•
14 - find chapter		• Doesn't immediately realize that TOC has more than one page
15 – go to chapter	• Notices 'section' nine • Realizes that page numbers are synched with page	

Task description	User 1		User 2		User 3		User 4	
	Task completion status, (completeddropped, not offered)	Task completion duration, (# of prompts)	Status	Duration, # of prompts	Status	Duration	Status	Duration
1. warm up task: Please find the call number of "Abilities and education".	Completed	0	Completed	0	Completed	0	Completed	0
2. You are working online and off-campus; you need to write a paper on Michigan mining. Your professor requires at least 1 monograph/book citation. Your task is to find a full-text MBook.	Completed	0	Completed	1	Completed	2	Completed	2
3. Search the book about teaching and homemaking. Ask subject to talk about their thoughts on Google link and Mbook link on the record page.	Dropped	3	Completed	0	Not offered	-	Not offered	-
4. Go to Book 1. Sve pages # 34-38, and print them out.	Completed	4	Completed	1	Completed	0	Completed	1
5. Copy sentence about Idaian Herakles on page 45 to MS Word	Completed	1	Completed	0	Completed	2	Completed	0
6. Read a sentence in the middle of the page, try to turn page in either direction	Completed	0	Completed	0	Completed	0	Completed	0
7. Send a link for this book to your friend	Completed	0	Completed	0	Not offered	-	Completed	0
8. Provide page numbers that contain the word "Alexandria"	Completed	0	Completed	0	Not offered	-	Completed	0
9. Go to the last page of the book	Completed	0	Completed	0	Completed	0	Completed	0
10. You've found jumbled text on page 68; report this to the library	Completed	1	Completed	0	Completed	1	Completed	0
11.Look for help in the Mbook interface	Completed	1	Completed	0	Completed	1	Completed	0
12. Open Book 2.	Completed	2	Completed	0	Completed	1	Completed	1

Task								
Where this book was published?								
14. Open Book 3. Find Chapter called "Physical Education in the College"	Completed	1	Completed	0	Completed	1	Completed	0
15. Go to this chapter	Dropped*		Completed	0	Completed	0	Completed	0

Legend

Not offered	Completed with 0 prompts	Completed with 1 prompt	Completed with 2 prompts	Completed with 3 promps	Completed with 4 prompts

*Task was dropped due to wireless network failure

Task completion analysis.

This table provides data on task completion status (e.g. failure or success in task completion, and whether particular task was or was not offered to the user) and duration of the task completion. Task was considered completed, if the user has utilized a function from the MBooks interface. Details on how tasks were completed with several functions along will be discussed in Key findings section Kuniavsky (2003, p. 294) constructing tables to "summarize the whole user group's experience" (Kuniavsky, 2003, p. 295).   He also suggests that time of completing the task should not be represented in exact numbers (as measured) by stopwatch, because performance of the small sample of user testing participants is not reflecting performance of larger number of possible users. (Kuniavsky, 2003, p. 295). We might add, that duration of task completion also varies depending on wireless network connectivity, and other factors (user's distraction, user's willingness to discuss his/her experience etc.) Considering all above mentioned, we suggest measuring duration with number of prompts (either leading questions or suggestions) that facilitator had to come up with to help user to complete his/her task. The larger number of prompts, the longer it took the user to complete the task.

We can also use outcomes to visualize how successful user experience was within MBooks collection. We can see that about half of tasks were completed successfully without assistance from the facilitator; however, considerable amount of tasks were completed with 1 or 2 prompts from the facilitator. We can state that tasks 2, 4, 5, 10, 11, 12, 14 caused some difficulties to our users. We have examined user perception of functions that support these tasks in the key findings section.

Appendix C

Table of Figures