Usability Test of LibraryThing

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Executive Summary

This report covers the design, findings and recommendations of the usability test of LibraryThing, an online book cataloguing site. The study was conducted in November 2006 at Odegaard Library at the University of Washington. The test administrators were Tim King, Betsy Rolland and Kathleen Walsh.

Purpose
The purpose of this study was to explore several possible usability issues on the website application LibraryThing. Specifically, we studied the following areas:
- Account Creation and Login
- Adding Books to a Library
- Sorting/Viewing Books
- Making Social Connections

We focused on an audience of library and information science students whom we felt would be probable users of LibraryThing, but never had their own account on LibraryThing. We chose participants who collected books around a personal interest to provide better context for our tasks. To test the social connections features, we recruited participants who were familiar with other popular social software sites such as Flickr and del.icio.us. Our participant criteria were:
- Never had an account on LibraryThing (though may have heard about it, seen others use it or even seen a demo of it)
- Had a specific topic of interest around which he collects books
- Creates content on a social software site (Flickr, del.icio.us) at least one time per month

Key Findings
Users are reasonably successful accomplishing tasks on LibraryThing. However, the site frequently does not provide information about where users are while trying to complete tasks and this results in frustration and confusion. Terminology and data-entry syntax can be an issue for users as there is little in the way of instructions on the site. While some features are intuitive and effortless to use, some do not match the user's expectations or mental model. Users were slow to find certain features.

Key Recommendations
To resolve these usability issues we recommend the following changes to the design of LibraryThing:
- Make steps to attach an email address to an account more apparent during account creation
- Provide better search instruction for users searching for books
- Provide more intuitive functionality and better feedback when adding books to the library
- Move Groups tab to the left side of the top navigation bar with other frequently used tabs
- Provide tagging information like existing tags and other users' tags for users when tagging
- Redesign View and Display options with more descriptive names to make feature more intuitive
- Provide more explicit terminology on fields like date and author names

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Introduction

This report represents the main findings and recommendations resulting from our usability test of LibraryThing. LibraryThing is a web application that allows users to catalog their book collections, generate recommendations and connect with other LibraryThing users. This study was conducted during the month of November 2006 at the University of Washington Odegaard Library. The test administrators were Tim King, Betsy Rolland and Kathleen Walsh.

Research Problem

The focus of this study was to evaluate the usability of LibraryThing for users who want to catalog their books and make connections with others around book interests .Based on a heuristic evaluation of the site and application, the team divided the LibraryThing experience into four critical areas, each of which was exercised through user-task scenarios. These areas are:

- Creating and logging in to a LibraryThing account
- Adding books and editing book information
- Viewing and sorting an online library
- Making social connections through the LibraryThing social interface

The complete test kit is available in Appendix B.

Participant Profile and Recruiting

We generated a recruiting profile designed to identify participants who would be likely users of LibraryThing. Because the site attracts users with its social and group functions, it was important to recruit users who had experience with these features elsewhere on the World Wide Web.

We focused on an audience of library and information science students whom we felt would be probable users of LibraryThing, but had never had their own account on LibraryThing. Recruitment efforts occurred in the Library and Information Sciences department of the University of Washington. To test the social connections features, we recruited participants who were familiar with other popular social software sites such as Flickr and del.icio.us. We selected two users who met the following profile:

- Never had an account on LibraryThing (though may have heard about it, seen others use it or even seen a demo of it)
- Had a specific topic of interest around which she collects books
- Creates content on a social software site (Flickr, del.icio.us) at least one time per month

Participants were screened during recruitment and again immediately before conducting the test. The screening questionnaire can be reviewed in Appendix B.

Issues

Severity Levels
We defined the following severity levels for our results:

- Severity 1 - Prevents the user from accomplishing a task or results in data loss. Example: product crash
- Severity 2 - Significantly interferes with performance and task completion. Example: poor navigation or terminology
- Severity 3 - Small or recoverable problems, aesthetic concerns. Example: misspellings

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User Problems
We categorized the user problems as follows:

- *Feedback:* Problems caused by a lack of information given after a user has executed an action
- *Functionality:* Problems caused by the expected vs. actual function of the product
- *Instruction:* Problems caused by a lack of instruction or direction onscreen
- *Navigation:* Problems caused by unexpected route taken through the user interface
- *Terminology:* Problems caused by onscreen terminology

Issue 1: Can the User Create and Login to an Account

User Problem
- *Instruction:* **Users did not understand the need to attach an email address to their account**

Severity
- *Level 1*

Recommendations:
- Make steps to attach an email address to an account more apparent, even if these steps remain optional

Discussion
If the user forgets the username or password to her account and has not edited her profile to attach an email address to the account, there is no way to access the account without intervention from the site administrators at LibraryThing. There are no instructions near the sign-in box or during account creation that advise the user to add her email address. The account creation/login box explicitly states that "this is the only step" to account creation. While this is technically true, it does not warn users that it is in their best interest to add an email to avoid losing the account and all its data. The "*lost password*?" link beneath the sign-in box contains information about how entering an email address could alleviate the problem but since users who have not lost their passwords would not click on this link until having already lost their passwords, this link is of little use.

Figure 1:

Figure 2:

Severity Discussion

This is a Level 1 severity issue. It is possible for a user to lose an account and all associated data because of a forgotten username or password.

User Problem

- *Instruction:* **Users were unsure when an account had been created**

Severity

- *Level 3*

Recommendations

- Add explicit feedback for a user when her account has been created

Discussion

Upon creation of a new account, users are taken to the "Add Books" tab of the application without confirmation of whether or not account creation was successful. In the top right-hand corner of the screen, the account name is displayed in tiny, gray font (Figure 3). Both of our participants were confused by this lack of feedback and neither noticed their username displayed.

> Participant 1: "The absence of an error meant I'd succeeded."
> Participant 2: "Taking me to a screen where I can add a book, so it looks like I was successful."

Figure 3:

Severity Discussion

This issue is considered Severity 3. The risk is small because both participants eventually determined the account had been created but it did cause initial confusion. Once a participant learned how the functionality worked, there was no further confusion. Also, creating an account only happens once.

Issue 2: Can the User Add Books to the Library

User Problem
- *Instruction:* **Users do not understand the details of entering books**

Severity
- *Level 2*

Recommendations
- Provide sample search syntax for various types of searches, including author, subject and title
- Change the functionality of the link in the match list to meet user expectations
- Make the functionality to add a book more obvious

Discussion

Participants really liked the simplicity of the search box (Figure 4) but were unsure of the syntax of entering an author. Either way (straight or inverted) worked but the ambiguity was disconcerting.

> Participant 2: "I don't know if I have to put the author in first, last or… I'm going to go ahead and put it in straight rather than inverted."

Figure 4:

After users enter a term in the search box, LibraryThing returns list of matches (Figure 5). This list, by default, contains results from Amazon, including an obvious hyperlink. Both of the users

clicked on this link thinking it would take them to a more detailed description of that book. Instead, this link adds the book to the user's library.

> Participant 2: "There's a hyperlink there, so I'm going to go ahead and click on it to make sure the description matches."

Figure 5:
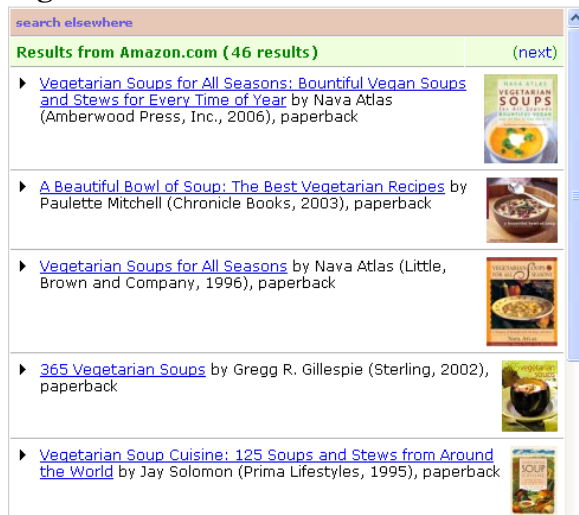
Severity Discussion
This issue is considered Severity 2. The functionality can cause significant confusion and delays for users.

User Problem
- *Navigation:* **Users were unable to see more details about a book in the match list before adding it to their collection**

Severity
- *Level 2*

Recommendations
- Add functionality to allow a user to see a description of a book before adding it to the catalog

Discussion
In addition to the unexpected functionality of the match list link discussed above, participants expressed disappointment at not being able to see more information about a book before adding it to their collection. We repeatedly observed participants squinting at the screen to get more details from the book cover. It appears that there is no way to view more detailed information about a book in the match list without adding it to the catalog, then selecting edit mode.

> Participant 2: "I'm going to go ahead and select it and go back when I have more time later."

Severity Discussion
This issue is a Level 2 severity. The problems caused delays and confusion for participants as they tried to select an edition of a book to add to their catalogs.

User Problem
- *Instruction:* **Users were unsure if their books had been added**

Severity
- *Level 3*

Recommendations
- Add a more obvious message confirming book has been added

Discussion
After adding a book to the library, the user does not receive a message confirming this action. This is compounded by the unexpected functionality of the link in the match list, as discussed above. Currently, when a book is added to the user's library, the book appears in a list that replaces the match list and is highlighted in a pale yellow for about 2 seconds (Figure 6), and then the highlighting disappears (Figure 7). As participants were expecting the link to take them to a description page, they did not notice this subtle message that a book had been added. One of users went to the "My Library" tab to check to see if the book had been added. Once users understood how to add a book, there was no further confusion.

> Participant 2: "Have I already added it? I'm not really sure."

Figure 6:
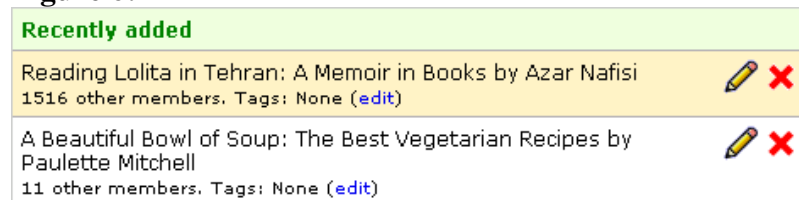
Figure 7:

Severity Discussion
This issue is considered Severity 3. While the user eventually figures out the books have been added, it is confusing and caused further browsing of the library to be certain books had been added. Once a user realized how the functionality worked, there was no further confusion.

User Problem
- *Instruction:* **Users do not understand the tagging syntax**

Severity
- *Level 2*

Recommendations
- Provide tagging syntax instruction on the Edit Books screen

Discussion
Tagging syntax instructions appear on the Add Books screen but not on the Edit Books screen. Users were confused and did not know what syntax to use when editing tags.

> Participant 2: "I'm going to put in a comma. I'm assuming that will accept that kind of syntax."

Adding the tagging syntax instructions from the Add Book screen (Figure 8) to the Edit Book screen (Figure 9) would clarify to users the tagging syntax.

Figure 8:

Tags to add (optional)

Separate with commas, like "history, military history, Shiloh" (what are tags?)

Figure 9:

Tags

Severity Discussion
This issue is considered Severity 2. It may prevent users from using the tagging feature correctly.

Issue 3: Can the User Understand and Utilize the Different Display Options

User Problems
- *Functionality:* **Users did not understand the purpose of** *Display Styles*
- *Terminology:* **The label terms on the** *Display Style* **buttons were not descriptive**
- *Instruction:* **Rollover text for** *Display Styles* **provides no additional information**
- *Instruction:* **Users do not understand relationship between** *View* **and** *Display* **buttons**

Severity
- *Level 2*

Recommendations:
- Redesign the *Display Style* buttons
- Make *Display Style* names descriptive
- Provide mouse rollover text to further describe *Display Style*
- Move the *Display style* buttons next to the *List View* and create a group box around them

Discussion

The top of the *Your Library* window has confusing view and display options (Figure 10). Users did not understand their function, the relationship between the buttons, or whether they were grouped.

Figure 10:

The *Display Styles (ABCDE)* are not useful because the styles provide much of the same functionality and the names are not descriptive. Redesigning them to appeal to facets of LibraryThing will improve user experience, make the buttons useful and promote LibraryThing features. For instance, replace *Display Style* A with a display style called *Book Basics*. Clicking on the display would show your books with just title, author and tags fields. Replace *Display Style B* with a display called *Books Being Social*. This display will show you your books with title, author, tags, comments, reviews, rating and an icon to click to members who share this book and groups where this book might be discussed. Making the *Display Style* names more descriptive will aid users when scanning the styles. Adding additional mouse rollover text to the *Display Styles* will help the user if he is looking for more information.

The *Display styles* only appear when *List View* is selected. They disappear when *Cover View* is selected. Users did not notice this and were confused by what they thought were three separate functions. Even after playing with the different views, they did not understand the functionality.

> Facilitator: "Do you understand the difference between view and display now that you've looked at it?"
> Participant 1: "Nope."

Moving the *Display styles* buttons next to the *List View* button and creating a group box around them (Figure 11) will tell users that they are related to each other and distinct from the separate functionality of *Cover View*.

Figure 11:
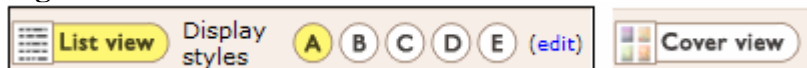
Severity Discussion

All four of these issues are considered Severity 2. Because of these problems, users were unable to effectively use the view and display options; both participants chose simply to stick with the default view.

User Problem

- *Terminology:* **Wording is not always explicit or consistent**

Severity
- *Level 3*

Recommendations
- Change *Date* field to *Publishing Date*
- Add *'author name'* to *'first last'* field in display style edit

Discussion
The *Your Library* viewing page includes numerous date fields. Most are explicit about what date to which the field refers. For example, participants understood the *date acquired, date started and date read* fields. There is also a *date* field with no qualifier. Participants were confused about this field.

> Participant 1: "What does 'date' mean?"

Changing *date* to *date published* would make it explicit, consistent and more descriptive to the user.

When editing the display styles, users can choose from a number of fields. Two of the field options are: *last first* and *first last*. If the user understands the context, he may determine that it is referring to the author name order in the 'Your Library' window but that is not evident. Changing the field to *'author: last first'* and *'author: first last'* will make it explicit.

Severity Discussion
This issue is considered Severity 3. Users were confused by the terminology but it did not slow them down or prevent them from using any functionality.

Issue 4: Can the User Find and Use the Social Connection Features Like Discussion Groups, reading interest lists and shared books that are relevant to Her Topic of Interest

User Problem
- *Functionality*: **Users do not understand the tagging model**

Severity
- *Level 2*

Recommendations
- Display users' existing tags when editing tagging information
- Suggest tags used by other LibraryThing members

Discussion
The LibraryThing tagging model does not match model used by the most popular social software sites, Flickr and del.icio.us. Both Flickr and del.icio.us show a user's existing tags and allow the

user to see other members' tags while adding and editing tags. LibraryThing allows a user to see his own tags and other members' tags, but not while adding or editing tags.

> Participant 2: "I'm going to use the tag 'academic' here and hope
> that I remember that when tagging the rest of my books."

Displaying existing tags during the tag field edit would help users use consistent tagging. Suggesting tags that other members used for the same books would increase the social aspect of tagging on LibraryThing, thus connecting more members with other members with the same books.

While the tagging task fell under the "Can the User Add a Book" issue, we believe that the problem that emerged was not simply a problem with the functionality of adding books and tags but instead illustrated a greater problem with the tagging model. Because this larger tagging model issue relates closely to "social" features, the discussion appears in Issue 4.

Severity Discussion
This issue is considered Severity 2 because it may prevent users from using the tagging feature effectively and may result in users unknowingly using inconsistent tags. It also may prevent users from fully utilizing the social features of the application.

User Problem
- *Navigation:* **Users spent significant time finding 'Groups' tab**

Severity
- *Level 2*

Recommendations
- Move the Groups tab to the left hand side of the page, along with the other tabs

Discussion
When asked to investigate groups, users understood the group concept and even recognized that they had seen information about groups while adding books to their library and browsing in other member libraries. But when asked to find Group information, users did not look for the *Groups* tab in the top right corner of the window. They frequently looked for and found action information (add book, edit book information, view social information) on the right navigation bar and found other tabs (Your Library, Add Books) on the top left. They never looked to the top right for the *Groups* tab. Users were frustrated when they could not find the information.

> Participant 2: "This seems complicated. I seem to remember
> something about groups on that first page."

> Participant 1: "Ahh, finally I see a tab for *Groups* in the right-hand
> corner."

Moving the *Groups* tab to top left side of the window with other tabs would make it more visible to the user and place it in an area where they are already looking for and finding information.

Once the participants found the *Groups* information, they were easily able to find other members with the same books, find interesting groups to join and post messages to their new groups. The feature itself is very intuitive with its current design but needs more visibility.

Severity Discussion
This issue is considered Severity 2. While users eventually found the group information, both took a significant amount of time (more than 2 minutes) to find the group information. Less persistent users (or users not participating in a usability test) might have abandoned the task.

Summary of Recommendations

The following recommendations are a result of the LibraryThing usability test. Recommendations are listed in order of severity and in importance for improving usability on the site.

Severity	Issue	Recommendation
1	Account Creation and Login	1) Make steps to attach an email address to an account more apparent, even if these steps remain optional
2	Adding Books to a Library	1) Provide sample search syntax for various types of searches, including author, subject and title 2) Change the functionality of the link in the match list to meet user expectations 3) Make the functionality to add a book more obvious 4) Provide tagging syntax instruction on the Edit Books screen
2	Sorting/Viewing Books	1) Redesign the *Display Style* buttons 2) Make *Display Style* names descriptive 3) Provide mouse rollover text to further describe *Display Style* 4) Move the *Display style* buttons next to the *List View* and create a group box around them 5) Change *Date* field to *Publishing Date* 6) Add *'author name'* to *'first last'* field in display style edit
2	Making Social Connection	1) Display users' existing tags when editing tagging information 2) Suggest tags used by other LibraryThing members 3) Move the Groups tab to the left hand side of the page, along with the other tabs
2	Adding Books to a Library	1) Add functionality to allow a user to see a description of a book before adding it to the catalog
3	Account Creation and Login	1) Add explicit feedback for a user when his account has been created
3	Adding Books to a Library	1) Add more obvious message confirming book has been added

Evaluation of Test Process

Overall, the major components of the test ran as designed and we were satisfied with the findings and recommendations. Nonetheless, over the course of the pilot test we identified a number of issues we would recommend addressing for future LibraryThing usability tests.

Test Design

We approached the LibraryThing team with the idea for this test. While the team was open to the idea of someone doing a usability study, they did not buy-in to the value of it so were not willing to provide any information to us. As a result, we were unable to get answers about areas of the product on which it might be valuable to focus or information about target users.

Access to LibraryThing market research or other user data could have assisted in the development of more well defined tasks for specific user types. At the very least, site usage data could have helped the usability team direct tasks and scenarios to areas of the LibraryThing where the largest payoff could occur. Knowing which areas of LibraryThing generate the most support issues or what parts of the site have grown most rapidly would have helped research issues and task design.

One of the most interesting results from our test is that our users did not uncover any issues not already identified by our heuristic evaluation. We identified several explanations for this result. First and foremost, we designed the test to highlight the issues we had already identified. Second, our tasks were of fairly basic functionality of the application. In either case, we found it interesting that the results of our evaluation matched the experience of our users so closely.

Recruiting

We were fairly successful in recruiting our participants. We succeeded in scheduling two participants who fit our profile within just a few days of our request for volunteers. One adjustment we would make in future studies is to develop a more detailed question about the user's use of social software sites. While both of our participants met the criteria of creating content on a social software site at least one time per month, greater awareness of the philosophy behind tagging would have been useful. One of our participants was very familiar with the standard tagging model while the other was less so. While we were satisfied with our ability to mirror the behaviors of LibraryThing users, more specific recruitment questions on the social software experiences would have been beneficial. We took it as a good sign that both participants said they were planning to use LibraryThing following the test.

Tasks

Overall, we were satisfied with the tasks we designed for our stated research issues. We identified clear issues and had a distributed number of tasks for each issue. The findings we identified and recommendations we made fit clearly into these issue areas.

The biggest challenge we faced in test design was developing a task around an account creation problem we identified. When users create an account without adding an email address to their profile, there is serious risk of losing data. We could not design a task without the risk of tricking

the participants into losing their account. We felt this task design was unfair to a participant and had the potential of creating an adversarial relationship between the participant and test administrators. While we were unable to get empirical data on this issue, we still think this is a significant problem.

We could have done a better job of establishing motivation for our task of viewing and displaying the contents of a library in various ways. Rather than having a clear reason for exercising the functionality of these options, the tasks simply asked the user to, for example, "Display just the covers of the books." Perhaps the participants may have understood the functionality better with a stronger understanding of why they were doing this. Again, better understanding of actual LibraryThing users could have informed a more motivated task. Additionally, this task used a pre-made library with random books instead of books around the user's interests, lessening motivation even further. A more extensive customized library for each participant may have been more useful.

It would have been interesting to define more advanced searching tasks for participants to use when adding books to a library. The books we asked the participants to find were well defined and required little in the way of hunting for a specific book. Perhaps a more elucidating task would have asked the participant to add a book with less information or with information that returned a much longer match list.

Finally, some tasks would be improved with clearer instruction, more detail and an awareness of task completion from the participant's perspective. One task required participants to post a message to a discussion group. Our first participant was hesitant to complete this task because she created a user account with her real name and wanted to use this account after the usability test. Future tests should instruct participants not use real names or a favorite log-in name for the test account. One participant felt awkward and asked if he could delete the message he had posted. Even though he had used an account he would never use again, he still felt the need to delete the message because it was manufactured. This issue illustrates the need to design tasks that allow participants to feel like they have "finished" the task in a manner consistent with how they would behave outside a usability test.

Facilitating and Note-Taking

We asked both of our participants to use the think-aloud protocol, described it, provided an example and asked them to practice. One of our participants did not always follow the protocol and required some prompting, which felt awkward. Practicing prompting a participant to share more would have been valuable.

The note-taking sheet was difficult to use online. While the start and end time sections before and after tasks were valuable, the sections for taking notes were artificially sized and made difficult to take notes and follow the task sequence. Having a separate section for "Observations" and "Follow-Up Questions" was distracting. Some of our sub-tasks were so short that having a separate section for each one resulted in note-takers occasionally losing their place. One document with tasks and a separate document just for notes would have alleviated the awkwardness.

It may have been useful to spend more time practicing our group's note-taking strategy in advance. Our "Facilitator" focused on noting follow-up questions, our "Note Taker" focused on what the participant was saying and the "Technician" focused on what the participant was doing. There was, of course, some overlap, but overall this worked well.

Post-test Participant Interviews

Our post-test question sessions were fairly successful. We had some structured questions and some unstructured questions. The facilitator administered the post-test questionnaire and then asked follow-up questions. Each of the note takers was then given an opportunity to ask follow-up questions. A question from one person sparked questions from others, so the grouped worked together to build on observations. Everyone took notes during the question session, which also worked well. In further testing, ensuring at least one question is asked about each major task would be beneficial. Once a participant starting discussing a task, we obtained more information about that task than simply what we were asking. This additional information was beneficial, especially with one of our participants who was less expressive than we wanted.

Technology

LibraryThing is a relatively simple application, requiring only a web browser and working Internet connection. This made test setup and task repeatability relatively simple. Our main issues related to our test recording tools. We conducted the test in a conference room at Odegaard Library. We used a laptop and captured the session using digital video and a shareware screen-capture program called CamStudio. This gave us greater flexibility when scheduling our participants and provided us with the experience of testing with a mobile usability lab. Since we cannot depend on companies to have sophisticated usability labs, we felt this was a worthwhile experience if we conduct usability testing in our future professional lives. This system allowed us to successfully complete the test, though we did experience a number of issues worth noting:

- **Laptop**: Our first participant was unaccustomed to using a touchpad, which made the test awkward for her. Also, the small laptop screen made over-the-shoulder video capture difficult. A better system would utilize a standard desktop computer with larger monitor and standalone mouse.

- **Audio**: For audio capture with CamStudio, we initially used an inexpensive microphone plugged directly into the laptop. This picked up fan, hard drive and typing noise. For the second test we used the microphone on a stand. Sound quality was improved; a higher-quality microphone would be even better.

- **CamStudio**: Though the program looked good during our testing of it, it just did not work for us during the usability tests. For the first test we experienced audio issues. Without good quality audio, the video was nearly unusable. In the second test, the audio worked, but the file became corrupted while going through the program's finalization script. The product has recently been moved to an opensource development model and an update is imminent. The potential for this technology is significant, so it should be revisited but we do not recommend it as a standalone test-capture solution as it is now.

Appendix A: Problem Statement (Assignment 2)

Product Description

LibraryThing.com is an online service that allows users to create, manage and share a personal library catalog and rate and write reviews for books in their libraries. It also allows users to see others' libraries and create social connections by the rating, reviewing and sharing of books, joining groups and talking with other LibraryThing.com members.

Audience Description

Our target user has the following characteristics:
- Never had an account on LibraryThing.com (though may have heard about it, seen others use it or even seen a demo of it)
- Has a specific topic of interest around which she collects books
- Creates content on a social software site (flickr, del.icio.us) at least one time per month

Research Issues

We will be conducting exploratory testing on LibraryThing.com utilizing the think-aloud protocol. Our aim is to evaluate several key areas of this web application, as detailed below.

The following is a list of concerns and testable questions:

1. *Account Creation and Login*
   The interface for creating an account and logging in to an existing an account are the same. A user may unknowingly create a new account if she mistypes her username or password. It may not be clear to the user that she has created a new account instead of logging into an existing account.

   a. Can the user log into a new account? What happens when the user tries to log into a new account and what problems, if any, does she encounter?
   b. Can the user log into an existing account? What happens when the user tries to log into an existing account? Does the user encounter any problems, especially related to mistyping a username or password?

2. *Adding Books to Library*
   LibraryThing has one simple search box that allows the user to search on multiple fields (title, ISBN, author) to find a book to add to her library. The search may return several items, which could result in confusion or frustration if a long list is returned. The user can add books manually but the list of fields is long and it is not clear which, if any, are mandatory. Also, the link to "add the book manually" takes the user to a page title "Edit Book Data," which could be confusing. The ability to tag books is optional, but is not explained very well.

   a. Can the user add a book to the library with just the title? What happens when the user tries and what problems, if any, does she encounter? Is she aware that the book has been added?

    b. Can the user add a book to the library with metadata other than the title (author, ISBN, etc.)? What happens when she tries and what problems, if any, does she encounter?

    c. Can the user add tags to her books? What happens when she tries? Does she encounter problems related to tagging or does she understand when he tags have been added?

3. *Sorting/Viewing*
The sorting and viewing options are plentiful and not well labeled. There is both a list view and a cover view. Within the list view, there are multiple, customizable display styles. One display style cause books to "disappear" from the list. The user could easily become confused as to what the difference between list view and cover view are and what display styles are. When in the list view, the user has the option to sort her books.

    a. Can the user display books from her library in both the list view and the cover view? What happens when the user tries to display books in each view and what problems, if any, does she encounter? Does she understand the different types of views?

    b. Can the user understand and utilize the different display styles? What happens when she tries to change display styles and what problems, if any, does she encounter?

    c. Can the user customize her display styles? What happens when she tries and what problems, if any, does she encounter?

    d. Can the user sort her books? What happens when she tries to sort her books and what problems, if any, does she encounter?

4. *Social Connections*
There are numerous avenues for making connections with others through similar book interests, discussion groups and reading interest lists. These features are spread throughout the site and not very well explained or labeled. There are multiple names for the same feature. For example, a link to the Standing Group "FAQ" takes the user to the same place as the link for the Message Board "FAQ". Both links are on the same page. The icons and navigational tabs have non-standard names and icons, possibly making navigation problematic.

    a. Can the user find another user with the same book? What happens when she tries to find another user with the same book and what problems, if any, does she encounter?

    b. Can the user find others who share her specific topic of interest? What happens when the user tries to find others who share her topic of interest and what problems, if any, does she encounter when she tries?

    c. Can the user post a message to the found group's message board? What happens when she tries and what problems, if any, does she encounter?

Relevant Research

The following three articles discuss issues that affect our study design:
Article One
Interview-Based Tasks: Spool, Jared M. "Learning from Leonardo DiCaprio"
Originally published: Mar 07, 2006, Retrieved on October 27, 2006, from
http://www.uie.com/articles/interview_based_tasks/

In this article, Jared Spool discusses selection of participants and the creation of tasks for a usability test. He argues that using only random participants and made-up "scavenger-hunt tasks" for usability testing will result in a bad design that does not meet the needs of users. He suggests instead selecting users who are passionate about the subject of the website. For example, when conducting usability tests on a website that sells camping gear, it is important to select participants who are passionate about camping. Users who are passionate about the tasks they are about to do will very likely use the website in different ways than those who are not. He also discusses an approach he calls "interview-based tasks," in which the participants are interviewed extensively to find out what knowledge and prior experience they bring to the website. Once a baseline has been established, the recruiter and the participant work together to create a real-life task. Interestingly, he claims that even though different users will create different tasks for themselves, they tend to discover the same usability issues. One added bonus of this approach is that it gives usability testers great insight into how users really think about the website and their tasks.

This article closely mirrors our own approach to selecting participants. We have chosen to select participants who are avid collectors of books in a specific subject area. This will tap into both the user's passion for books and passion for their subject area.

Article Two
Nørgaard, M. and Hornbæk, K. (2006) What do usability evaluators do in practice?: an explorative study of think-aloud testing, *Proceedings of the 6th ACM Conference on Designing Interactive Systems,* University Park, PA. Retrieved on October 27, 2006, from
http://portal.acm.org.offcampus.lib.washington.edu/citation.cfm?id=1142439&jmp=cit&coll=portal&dl=ACM&CFID=4368774&CFTOKEN=53550894

Nørgaard and Hornbæk conducted an explorative test of think-aloud (TA) usability sessions to assess the effectiveness of TA testing in practical settings. They observed 14 usability sessions at seven companies and provide recommendations for usability practitioners. Their study discusses findings in six major areas: results analysis, impact of preconceptions on testing, practical issues when conducting testing, questioning during tests, scientific standards and usability vs. utility. Three of those areas will inform our usability test: results analysis, preconception of known issues, and questioning during testing.

Nørgaard and Hornbæk observed that analysis was unsystematic and unstructured. Usability practitioners rarely summed up conclusions and key findings with the tester at the end of the session and practitioners almost never discussed conclusions among themselves immediately following sessions, while results were still fresh in their minds. Practitioners often looked for specific actions to confirm assumptions rather than explore problems. Lastly, questioning during testing often led the tester to predict expected problems instead of striving to understand the tester's experience.

Nørgaard and Hornbæk's study presented practical suggestions for practitioners in areas of analysis and questioning. For example, they recommended using post-it notes during observation and then using those notes to summarize and prioritize with the user at the end of the session. Discussing assumptions and key finding among practitioners immediately following the test was also advised. They urged practitioners to be cognizant of the questions asked during tests and to avoid leading or encouraging users to predict problems, instead focus questions on exploring and probing.

Article 3
McMullin, J. & Skinner, G. (July 15, 2003). Usability Heuristics for
Rich Internet Applications. Retrieved October 28, 2006 from
http://www.boxesandarrows.com/view/usability_heuristics_for_rich_internet_applications.

McMullin and Skinner revisit Jakob Nielsen's seminal 1994 set of usability heuristics with the intention of updating the guidelines to work with web applications or Rich Internet Applications (RIAs). The focus of the article is on Flash-based sites, though they note the updated guidelines can add value to any other rich online technologies, such as a Web 2.0 site like LibraryThing The authors define RIAs – distributed, server-based application with rich interface and application features normally associated with installed desktop programs – and discuss the benefit of such an application to both the user and the application developer.

Using a simple but effective format, McMullin and Skinner list a Nielsen heuristic and supporting guideline, then rephrase the heuristic and provide an illustration to help the original guideline fit the RIA context. For example, Nielsen's *Visibility of System Status* says "The system should always keep users informed about what is going on, through appropriate feedback within reasonable time." The authors extend this, noting "RIAs should leverage the rich display capabilities to provide real-time status indicators whenever background processing requires the user to wait." They also provide examples to cover user expectations: "When dealing with sequential task steps, RIAs should indicate progress through the task (e.g., "Step 4 of 6")." Such expectation setting, the authors note, helps the user stay oriented and on task. The ten original Nielsen heuristics are covered in this manner.

Flash (and AJAX/Web 2.0 today) makes it easy for developers to add high-end features to their sites. McMullin and Skinner embrace this potential but urge readers to focus on using RIAs to help users to accomplish goals as opposed to using the technology to make sites "neat." As they note: "RIAs aren't about grabbing attention, they're about getting things done." RIA use has grown dramatically since this article was first published, yet very little new information is available to update and solidify these guidelines. As a result, this article, though slightly dated in "web time" by virtue of being three years old, is an important tool for informing our investigation of the LibraryThing RIA platform through use of the time-proven Nielsen heuristic framework.

#	Category	Issues	Concrete questions	Tasks and materials	Evidence	Data Type(s)	How to collect data?
1	**Account creation and login**	Can users create and login to an account?	Can users create a new login?	A task where user creates a new account	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can users login to an existing account?	A task using an account we have set up with an easily misspelled username or password	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
2	**Adding books to the library**	Can the user add books to the library?	Can the user add a book to the library with just the title?	A task where user adds a book using just the title	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses [Does the user realize they've added a book after it's been added?]	Checkbox, note taking.
			Can a user add a book to the library with metadata other than the title (author, ISBN, etc)	A task where the user adds a book using the author. A task where the user adds a book using the ISBN.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.

#	Category	Issues	Concrete questions	Tasks and materials	Evidence	Data Type(s)	How to collect data?
			Can the user add tags to her books?	A task where the user adds tags to her books.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
3	**Sorting and Viewing**	Can the user understand and utilize the different view and display options?	Can the user display his books in both the list view and the cover view?	A task where the user displays his books in each view.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can the user understand and utilize the different display styles?	A task where the user is asked to utilize one of the display styles.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can the user customize his display styles?	A task where the user customizes his display styles.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can the user sort his books?	A task where the user sorts his books in a certain way.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.

#	Category	Issues	Concrete questions	Tasks and materials	Evidence	Data Type(s)	How to collect data?
4	**Social Connections**	Can the user find and utilize the social connection features like discussion groups, reading interest lists and shared books that are relevant to her topic of interest?	Can the user find another user with the same book?	A task where the user finds another person with a specific shared book	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can the user find others who share his specific topic of interest?	A task where the user finds a group with similar reading interests in the user's area of interest	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.
			Can the user post a message to the found group's message board?	A task where the user posts a message to the message board of the group found in the previous task.	Task success. Steps taken. Verbalizations of thinking.	Yes/no. Pathways & behaviors. Verbal responses	Checkbox, note taking.

Appendix B: Test Design Kit (Assignment 3)

Usability Study:
LibraryThing.com

November 13, 2006

Tim King
Betsy Rolland
Kathleen Walsh

Table of Contents

Screening Script

Hello, my name is _____, and I am a graduate student at the University of Washington. I am looking for participants for a usability study. I would like to ask you some questions to determine if you match our profile. Do you have a few minutes to answer some questions?

1. Do you have an account on the website "LibraryThing.com"?
   [ ] Yes [ ] No

   If No, move to next question. If Yes, end interview.

2. Do you have a collection of books on any specific subject?
   [ ] Yes [ ] No

   If Yes, move to next question. If No, end interview.

3. What is that subject?

   _____

4. Have you ever created content on a social software site such as flickr or del.icio.us?
   [ ] Yes [ ] No

   If Yes, move to next question. If No, end interview.

5. How often do you create content on a social software site such as flickr or del.icio.us?
   [ ] Less than once/month   [ ] More than once/month

   If Less than once/month, end interview. If More than once/month, invite to study.

Thank you for your time. Based on your responses to my questions, I would like to invite you to participate in a study evaluating a product.

Admin Checklist

Facilitator	Technician	Note Taker
One Day Before		
❑ Confirm room reservation ❑ Confirm participants and provide cell phone number in case of problems	❑ Confirm recording software is installed and working on test machine ❑ Confirm there is storage space for recordings	❑ Confirm one *test materials folder* is ready ❑ Confirm one *participant materials folder* is ready for each participant ❑ Confirm one *data collection folder* is ready ❑ Confirm master data collection form is online and one online copy has been made for each participant
One Hour Before		
❑ Confirm room is available ❑ Get refreshment for participant ❑ Confirm cell phone is turned on	❑ Confirm LibrayThing.com accounts are in appropriate state for test ❑ Test recording software on test machine to confirm it is working ❑ Confirm there is enough storage space for recordings	❑ Confirm facilitator *has test materials folder* ❑ Confirm facilitator has *participant materials folder* ❑ Confirm one laptop is available with participant copy of the data collection form open ❑ Confirm you have one *data collection folder*
When Participant Arrives		
❑ Greet participant ❑ Turn off your cell phone ❑ Follow Administrative Script	❑ Turn on recording software	❑ Situate self and technician for note taking ❑ Confirm technician has two printed data collection forms, a notebook and two pens ❑ Confirm you have laptop with online data collection form open for participant

Test Materials Folder contains:

- Administrative Script
- Screening Script

Participant Materials Folder contains:
- Information from Screening Script
- Participant Tasks
- Participant Book List
- Consent Form
- Post-Study Questionnaire

Data Collection Folder contains:
- 10 data printed collection forms

Admin Script

1. Welcome and Introduction
   a. Welcome participant to the study
   b. Take the participant's coat and hang it nearby
   c. Introduce yourself and the other members of the team
   d. Tour the facilities with the participant
   e. Ask the participant if he wants anything other than water
   f. Ask the participant if he needs to use the restroom before proceeding
   g. Have the participant sit down at the test station and ask the participant if he is comfortable and has any questions
   h. Sit down at the test station and explain the study to the participant, including the overall objectives and the format
      i. *Thank you for agreeing to participate in our study today. I want to explain to you what we are doing so you are comfortable and know what to expect. First of all, I am going to read from a script. This is just to insure that each participant in our study receives consistent instructions from me. Please stop me at any time if you have a question or do not want to proceed.*
      ii. *This is a usability test where we are going to test some features of an online product. It is important to note that we are evaluating a product. I want to assure you that we are <u>not</u> evaluating or testing you. We are interested in seeing how you complete the tasks and use the product.*
      iii. *I'd like to start by explaining how this session will run. I will begin by showing you a consent form. Then I will explain the study and something we use called the Think-Aloud Protocol. After that, we will have you do some tasks with the product. After the tasks, we'll have a few minutes of follow-up discussion where we will ask you some questions. Then we will be finished and you will be free to leave. Do you have any questions?*
2. Consent Form
   a. Give the participant two copies of the consent form and a pen
      i. *This consent form explains the study and your rights as a participant. We ask that you sign it today in order to participate in the test. I will give you a chance to read it now. If you agree with the consent form, please sign it. I will also provide you with a copy to take with you today. Please let me know if you have questions about it.*
   b. Ask the participant sign one copy of the form and return it to the participant materials folder. Make sure the participant keeps one copy of the form
3. Screening Script
   a. Once the participant has signed the consent form, explain to him that you will ask a few additional questions to insure that they still qualify for the test
      i. *Next I would like to ask you a few questions about your background and experiences with the product. These are the same questions we asked when we first recruited you for this study. It is simply to insure that you are still eligible for the study.*
   b. Ask questions from Screening Script and fill it out with answers. Return it to the participant folder
4. Think-Aloud Protocol

a. Show the participant the laptop, including the recording software
b. Explain TAP
   i. *As I mentioned earlier, we are using something called the Think-Aloud Protocol in our study today. The Think-Aloud Protocol means that when I give you a task to do, you simply say out loud everything that you are thinking as you try to complete the task. This will help us to understand your thought process and experiences as you use the product. We are not asking you to tell us how the product should be improved, merely what you are thinking as you progress.*
   ii. *Let me give you an example of the Think-Aloud Protocol while I try to accomplish the task of storing a number in my cell phone.*
c. Demonstrate TAP using the task of storing a number in the cell phone.
   i. *Do you have any questions about the Think-Aloud Protocol or anything else I've talked about so far?*
d. Ask the participant to practice TAP using the task of placing a cell phone call
e. Repeat as needed
f. Be sure to TURN OFF the cell phone when you have finished demonstrating TAP

5. Describe Tasks
   a. Describe the process
      i. *Now we will move on to the tasks themselves. In this study we will ask you to do certain tasks with a product called LibraryThing. LibraryThing is a website that allows you to create and manage a library of your books. This packet has one task per page. When you get to a page, please read through the entire task and then try to do the task. Do not turn the page to move on to the next task until you've completed the current task. When you feel that you've completed the current task, say, "I'm done" and I will ask you to continue on to the next task. Remember to talk aloud about what you are thinking as you do the task.*
      ii. *If you feel like you are stuck or have a question, say those things out loud and try to work through them. Remember that we are not evaluating you, we are evaluating the product and how you interact with the product. There are no right or wrong answers, just your experience of the process of each task. Do you have any questions before we begin?*
   b. Provide the participant with the Participant Tasks
   c. Usher the participant through the tasks, directing him to move on to the next task when he indicates he is finished with the current task.
   d. Do not answer questions about the product.
   e. Provide encouragement to the participant throughout the study.
   f. Once the participant completes the final task, take the task list packet from him

6. Post-Study Questionnaire
   a. Explain to the participant the post-study questions
      i. *Now we will move on to post-study questions. My colleagues and I will ask you to complete our post-study questionnaire.*
   b. Ask the participant to complete the post-study questionnaire
   c. If questions came up during task execution, ask the user about them.
   d. Ask the note taker if he or she has any questions
   e. Ask the technician if he or she has any questions

7. Conclusion

a. Tell the participant that the study is over. Thank him for participating and give him a coffee card for his time.
b. Get participant's coat and show him outside.

Screening Script 2

Participant Number: _____

Date: _____

1. Do you have an account on the website "LibraryThing.com"?
   [ ] Yes [ ] No

   If No, move to next question. If Yes, end interview.

2. Do you have a collection of books on any specific subject?
   [ ] Yes [ ] No

   If Yes, move to next question. If No, end interview.

3. What is that subject?

   _____

4. Have you ever created content on a social software site such as flickr or del.icio.us?
   [ ] Yes [ ] No

   If Yes, move to next question. If No, end interview.

5. How often do you create content on a social software site such as flickr or del.icio.us?
   [ ] Less than once/month   [ ] More than once/month

   If Less than once/month, end interview. If More than once/month, proceed with study.

Data Collection Form

Issue 1 - Can users create and login to an account?
Start Task Time:
1. Can users create a new login? (Task 1)
Observations:
Follow-up Questions:
2. Can users sign out of an account? (Task 2)
Observations:
Follow-up Questions:
3. Can users login to an existing account? (Task 3.1)

Administrative Note: Check log-in name on the screen to ensure it is the same as the original account created in Task 1

Observations:

Follow-up Questions:

End Task Time:

Issue 2 - Can the user add books to the library?

Start Task Time:

1. Can the user add a book to the library with just the title? (Task 3.2)

Observations:

Follow-up Questions:

2. Can a user add a book to the library with metadata other than the title (author, ISBN, etc)? (Tasks 3.3-3.6)
Observations:
Follow-up Questions:
3. Can the user add tags to her books? (Task 4)
Observations:

Follow-up Questions:

End Task Time:

Issue 3 - Can the user understand and utilize the different view and display options?

Start Task Time:

1. Can the user display his books in both the list view and the cover view? (Task 5.2 – 5.3)

Observations:

Follow-up Questions:

2. Can the user understand and utilize the different display styles? (Task 5.4)

Observations:

Follow-up Questions:

3. Can the user customize his display styles? (Task 5.5)

Observations:

Follow-up Questions:

4. Can the user sort his books? (Task 5.6)

Observations:

Follow-up Questions:

End Task Time:

Issue 4 - Can the user find and utilize the social connection features like discussion groups, reading interest lists and shared books that are relevant to her topic of interest?

Start Task Time:

1. Can the user find another user with the same book? (Task 6.2)

Observations:

Follow-up Questions:

2. Can the user find others who share his specific topic of interest? (Task 6.3)

Observations:

Follow-up Questions:

3. Can the user post a message to the found group's message board? (Task 6.4)

Observations:

Follow-up Questions:

End Task Time:

Participant Tasks

NOTE: Test kit version with required task materials listed. These materials boxes will be deleted for in-test participant use.

> **Task Materials:**
> For this scenario we need:
> - Computer/browser with active web connection. Browser configured to clear private data (esp. cookies) when closed.
> - List of books tailored for participant interest.

Usability Test Scenario

You recently inherited a large book collection from a long-lost relative. It seems like a serendipitous gift because you already collect books on this topic. However, when the list of titles shows up at your office via FedEx, you are overwhelmed by the number and variety of titles. Some of these books you know must be valuable and should be shared with other aficionados. Others, you are pretty sure are duplicates of titles you already own. The problem is sorting out which is which. One thing is for sure, when that shipment comes you better have a plan or you'll be tripping over old liquor boxes of books for years to come.

As you sit down with the list, you recall the probate attorney telling you of an online service called LibraryThing that he uses to keep track of his personal law library. Firing up your web browser, you figure anything has got to be better than trying to keep track of these with pen and paper…

Please let me know when you are ready to proceed.

Please don't turn page until instructed. Thank you.

Task Materials:
For this task we need:
- Computer/browser with active web connection. Browser configured to clear private data (esp. cookies) when closed.
- List of books tailored for participant interest (page 26 of Test Design Kit).

Open your web browser to www.librarything.com. Take a few moments to look over the home page.

1. **Create a new account so you can get started organizing the books.**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Task 2:

Uh-oh, You just remembered you need to pick up your boss at the airport. You'll have to work on your booklist when you get home from work.

1.   **Please sign out of LibraryThing before you go and close your browser.**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Task 3:

<div style="border:1px solid black; padding:10px;">

Task Materials:

For this scenario we need:

- Computer/browser with active web connection.
- List of books tailored for participant interest.
- Participant-created account

</div>

You're back. You've delivered your boss home and you are ready to enjoy the weekend. You are excited to spend some more time with your new book collection, so you start up your web browser and head back to http://www.librarything.com.

You've got a partial list of some of the books you'll have in this new collection but not all the information is there. You can still try to add them to your new library on LibraryThing using the information you have.

1. **Sign into your account**
2. **Add book 1**
3. **Add book 2**
4. **Add book 3**
5. **Add book 4**
6. **Add book 5**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Task 4:

Task Materials:
For this scenario we need:
- Computer/browser with active web connection.
- Participant-created account populated with books.

Now that you've entered your first few books, you want to add some descriptive tags to them. You can find the descriptive information on your book list.

1. **Add at least two pieces of descriptive information to two of the books.**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Task 5:

Task Materials:
For this scenario we need:
  • Computer/browser with active web connection.
  • Participant-created account populated with books.

You've decided you'd really like to take a look at a catalog with a lot of books in it to see if this will help you organize this large collection you've inherited. You decide to log into the sample account you've been given.

1. **Log into sample account**
2. **Display the books in a way so no book covers are shown**
3. **Display the books so only book covers are displayed**
4. **Display the books so you see both the Library of Congress Call Number and Subject Headings for the books**
5. **Customize the book display in some other fashion.**
6. **Sort the books by Entry Date**
7. **Log out of the sample account**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Task 6:

You realize this is going to be a big job. It would be more fun if you knew some people with whom to share this book collection.

1. **Log back into the account you created.**
2. **Find someone who has the same book as one of the books in your library**
3. **Find a group that shares your interest and that you might want to join and find out how many books they have in their member library**
4. **Post a message to the group's message board about how you've just joined and found the group**

Please let me know when you have completed this task by saying "Done."

Please don't turn page until instructed. Thank you.

Thank you. You've completed the task portion of the test. Please complete the following questionnaire. When you are done, we can talk for a few minutes and I will be happy to answer questions from you.

Post-Study Questionnaire

1. How did you know you had successfully created a new account?

2. How did you know you had been successful in adding a book to your library?

3. While in the list view in the library, did you know what the various icons meant and where the links would take you?

4. Where did you think the tab "Groups" and "Talk" will take you? What did you think the difference might be between these two?

5. Where did you think the tab "Joy" would take you? "Psst"? "Zeitgeist"?

6. [Follow-up questions from note-takers…]

Sample Participant Book List for Task 3

Template – Modify list with books appropriate to user's "interest."

Participant 1 Inherited Book list

	Title	Author	Notes
1)	*The canine clan : a new look at man's best friend*		1983 hardcover. Book about dog/man relationship from the standpoint of a zoologist. Scientific but meant to be approachable. Examines history, evolution, domestication, etc.
2)	*Whippets today*	Patsy Gilmour	Detailed, expert-level non-fiction book about the breed, show standards and breeding and lineage info. 1994.
3)	?	Parkhurst, Carolyn	book club version? Fiction novel. Picture of woman and dog on cover, but title is illegible. Something about "Bab--"?
4)	277 secrets your dog wants you to know : a doggie bag of unusual and useful information	Paulette Cooper and Paul Noble	Dog care info. Dog with rose on cover. Lots of useful info for dog owners of all levels.
5)	Best(?)	Peters	Full title is missing but ISBN number is 0300115881. Brand new. Hardcover. Academic

Appendix A – Assignment 2

We did not make any changes to our Assignment 2. However, based on feedback from Dr. Ramey, we significantly increased the level of specificity of our participant tasks. They are now written so that "task success" is a clear and obvious observable behavior. For example, for the task of creating a new account, it will be clear whether or not the user has successfully completed this task, as the new account name will be displayed on the screen.