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Metalib Usability Test - Think Aloud Protocols

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MetaLib Usability Test: Think Aloud Protocols

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Abstract

Introduction. Usability testing using think aloud protocols was conducted on the MetaLib, a new product that provides the option to search multiple databases, catalogs, indexes, and other resources, soon to be offered by the university libraries. The object of the testing was to find problems users might experience using the MetaLib site in order to improve site usability.

Method. Volunteers responded to an email request on the university online bulletin board and completed an online demographic questionnaire. Based on responses to the questionnaire, eight volunteers, diverse with respect to affiliation, discipline, gender, language, and computer expertise, were selected to participate. Guided by a moderator and observed by a member of the MetaLib Implementation Group, they completed real-world tasks using the MetaLib interface while verbalizing their thoughts. At the end of the session each participants completed a questionnaire and answered three open-ended items.

Analysis. Transcripts of the sessions were analysed by tasks to determine problems and difficulties with the interface and to record comments and suggestions. A task completion rate was computed based on the number who completed the tasks correctly.

Results. In general, the site performed fairly well, however the usability testing revealed one critical issue related to the usability of the site—problems with the log in. Other issues included problems with primary and secondary navigation; confusing terminology, e.g., Cross Search and SFX; inconsistency with the site design and user expectations in Basic Search and Cross Search; confusion deleting items; and bugs in the site.

Recommendations. The issues identified are addressed individually on a prioritised basis to be determined by the MetaLib Implementation Group with a focus on log in, terminology, and icons; are issues that are the responsibility of the developers are reported to them. Training, tutorials, and quick guides (print or online) need to be considered to facilitate learning of the more advanced features.
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Introduction

This study is one of a series that explores the use of a library search interfaces, specifically MetaLib, by representative members of the university community. By studying the behaviour of participants as they use the interface and complete real-world tasks, we can increase the usability of the interface thus improving users’ ability to locate and use scholarly resources. This study contains the findings of the usability testing carried out on the MetaLib interface, a new product that provides the option to search multiple databases, catalogs, indexes, and other resources, simultaneously soon to be offered by the university libraries. Usability testing using think aloud protocols and a paper and pencil questionnaire were used to provide feedback. The objectives of the testing were to:

- assess the overall navigability and usability of the MetaLib interface
- investigate whether terminology and language are appropriate
- obtain subjective feedback from participants
- provide specific recommendations for addressing found issues

This report includes a description of the methods used in the study, the results of each of six tasks with a description of participants’ movement through the interface and their verbal comments, discussion of the results, the participant questionnaire results, and the implications.

Methods

We used two methods to collect data. The primary method was think-aloud protocols, used to gather feedback from users and to provide an opportunity to observe their movement through the site and record their comments. This is a one-on-one activity, during which representative users attempt real-world tasks. Users are asked to think out loud during task completion and verbalize what they are doing and thinking in order to provide a mental model of their activities. The second method was a short questionnaire with three open-ended items to discover users’ perceptions, suggestions, preferences, and comments.

Participants were chosen to be broadly representative of the target audience. They were offered the incentive of aiding in the development in a library multi-resource search product as well as a monetary incentive of $20. Volunteers were recruited by placing an email request, including a description of the study, on university online bulletin boards. To enable selection of a representative sample, the email included a link to an online survey that requested demographic information. Volunteers responded by completing the survey. Participants, six students and two staff members, were selected based on their feedback to the survey (see Appendix A). They were diverse with respect to discipline, year, first language, gender, and computer expertise. All but one participant (poor searching expertise) were good to expert in their searching expertise.

The library’s human factors researcher conducted each test session. Eight sessions were conducted from April 27 to May 11, 2006 at the Carnegie Mellon University Libraries using a live prototype of the MetaLib interface. Each session lasted thirty-five minutes to one hour. Participants were asked to complete tasks using a live prototype of the MetaLib interface. Six tasks with multiple parts, developed with input from the library’s MetaLib Implementation Group, were designed to replicate the way a user might complete a search, to determine the degree of difficulty of using the meta-search product, discover problem areas, and point out needs that might feed the design of tutorials and training.

Detailed findings – tasks

Within this report, each issue has been given a severity rating based on the probability of an issue occurring and its likely impact on the user. These severity ratings are somewhat...
subjective and should be used for guidance only. The completion rate for the tasks is summarized in Appendix A.

The remainder of this report contains the detailed findings and recommendations under the following headings: Navigation, Terminology, Expectations, Requests, Comments, and Bugs

Note: In this report, square brackets indicate participant numbers: e.g., [P3] indicates participant 3.

Navigation
Participants tended to find their way around the site fairly well, however usability testing revealed a number of issues that should be reviewed.

<table>
<thead>
<tr>
<th>Issue 1. Primary and secondary navigation bar</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity: Medium</strong></td>
</tr>
<tr>
<td>The function of the primary and secondary navigation bars (see Appendix D, Figures 22 - 26) was unclear to participants. Though participants noticed and used the primary navigation links, many failed to notice the secondary links and seldom noticed that the secondary links were associated with the primary links.</td>
</tr>
<tr>
<td><strong>Recommendation</strong></td>
</tr>
<tr>
<td>Find a method of making the secondary navigation bar more noticeable and indicate that it is a subset of the primary navigation.</td>
</tr>
<tr>
<td>Methods can include color coding the background of the navigation, e.g., primary and secondary navigation in use has a shaded background; increase font size of both navigation bars to make them more prominent.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue 2. Browser back button</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity: Medium</strong></td>
</tr>
<tr>
<td>Participants who used the browser back button to navigate had problems returning to previously viewed pages.</td>
</tr>
<tr>
<td>‘The back here [pointing to the browser back button], when you try to go back to the search, requires a little fighting before you get to go there.’ [P2]</td>
</tr>
<tr>
<td>The browser back button operated inconsistently. In order for the MetaLib navigation to operate as intended, it’s necessary to use the MetaLib navigation to move to previously viewed screens. For example, the Next link in the results operates incorrectly when participants used the browser back button (see Issue 3). Participants continued to use the browser back button even after they had experienced problems.</td>
</tr>
<tr>
<td><strong>Recommendation</strong></td>
</tr>
<tr>
<td>Use tutorials, training, and quick guides (in print and online) to educate users and library personnel about the most efficient use of MetaLib.</td>
</tr>
<tr>
<td>Report this problem to the developers.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Issue 3. Results: table, brief, full views, and Next link</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Severity: Medium</strong></td>
</tr>
<tr>
<td>Some participants had problems moving from the brief or full view to the table view. Participants who used the browser back button to move from the full view to the table view had unexpected results when using the Next link. For example, if a participant did the following:</td>
</tr>
</tbody>
</table>
table view → click on title → full view of item → browser back to table view → click on the Next link → to the next record in full view [last action using MetaLib navigation was full view]

In the example above, the participant expected the Next link would go to the next page in table view. Instead it went to the next page in full view (the last page visited using the MetaLib navigation).

'It seems like the Next button doesn’t work as I want it to. After looking at this, making one selection, I expected it to give me the next list of results.' [P3]

'Oh, Next just goes to the next record, it's not going to the next page of results. Hmm, what would be the next page of results button? Now it's difficult to get to the next page of results.' [P8]

**Recommendation**

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

Consider using a popup message that suggests using the MetaLib links rather than the browser back for navigation.

Report this problem to the developers.

**Terminology and icons**

Some participants had problems with terms and icons appearing in the navigation and on the pages. Usability testing revealed the following issues.

**Issue 4. Primary navigation links—Cross Search**

**Severity: Low**

Participants were unsure of the meaning of Cross Search appearing in the primary navigation bar. Some users avoided it completely when searching for an alternative searching method to Basic Search.

Both Basic Search and Cross Search offer users the opportunity to search multiple resources. Unlike Basic Search where users select from predetermined Quick Sets of databases and other resources, Cross Search enables users to customize their search by selecting specific databases and other resources.

Though some participants discovered Cross Search by exploring the site, it was tedious and sometimes frustrating. Others didn’t try the link and simply used another technique (often unsuccessfully) to complete the task.

**Recommendation**

Explore alternative terms for Cross Search that are more descriptive of the function of this option. For example, consider names such as Custom Search or Meta-Search. Use mouse-over label to further define the link.

Create a Getting Started guide in hard copy and online that explains how to use MetaLib. Add brief, prominent, onscreen instructions.

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

**Issue 5. SFX link**

**Severity: medium**

Participants had problems finding the full text article. They were not sure of the function of...
the SFX icon [ ]. The icon was not labelled and some participants did not try the icon.

When I first saw SFX I don’t know what it stands for. Usually if I don’t know what it stands for, I don’t bother going.’ [P1]

**Recommendation**

Use a mouse-over label for the SFX icon to alert users to its function, e.g., Find it, or Get it. Change the icon to indicate the function of SFX, e.g., Find it or Get it.

**Expectations**

Participants’ expectations were not consistent with what actually happened or what they found or saw. Due to those expectations, they got stuck, did not find the information they wanted, or even abandoned the tasks often resulting in frustration or even failure.

### Issue 6. Log in

**Severity: Critical**

All participants were completely unaware that they had to log in. When asked to complete a search, they began with the Basic Search in the locked position using the default, Library Catalogs.

Though some commented that they noticed the padlock icon (used to indicate a locked resource and also used as a link to the log in page), they did not recognize it as an indication to log in.

‘It just looked like some sort of symbol. I’ve seen a lock before but it’s down in the right hand corner and it tells you that the place is secure to type in your credit card number.’ [P7]

Instructions on the Basic Search page, written in normal text size, clearly state that users must log in, however, only one participant noticed them only after experiences problems:

‘I didn’t read that at all. Now that we’ve finished two tasks, I just now see the ‘log in log out click the padlock, but only after I’ve been using this for 15 minutes.’ [P8]

Another indicated her frustration,

‘I would rather have a main log in before you even attempt to look at your topics or try to do your tasks.’ [P7]

When I explained that they had to log in to access all resources, no one had a problem finding the log in icon (the locked padlock with a mouse-over label) indicating that the problem is not that they can’t find a method of logging in. The problem is that they are not aware that they have to log in.

**Recommendation**

Find a means of indicating to participants that they must log in to use all resources.

One method is to provide a log in page before they reach the MetaLib Basic Search page. Because most users will be from the Carnegie Mellon community, the first opportunity should require them to log in either as a Carnegie Mellon affiliate or as a guest.

Or use a popup message with the opening page that reminds users to log in.

### Issue 7. Quick sets in Basic Search

**Severity: medium**

The method of designing a search in the Basic Search was not clear to some participants. Though participants had no problems entering the query terms, some were not sure how to select a Quick Set. One participant clicked on the Quick Set title and used the database
The use of radio buttons rather than check boxes and the order of the quick sets posed a problem for another participant:

‘I would have liked to see like check boxes here other than radio buttons. …I would order them differently, like put humanities next to social sciences and so on.’ [P2]

**Recommendation**

The use of radio buttons is used correctly in this context. Radio buttons are used when the choice is limited to one selection, in this case, one Quick Set. Check boxes are used when the choice permits more than one selection.

Create a *Getting Started* guide in hard copy and online that explains how to use MetaLib. Add brief, prominent, onscreen instructions on how to use the *Basic Search*.

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

**Issue 8. Cross Search**

**Severity: low**

Participants had problems using *Cross Search* and the options to search multiple resources. Participants who used *Cross Search* usually used what they could see on the first screen. They selected a category listed under Quick Sets and chose databases. Only one participant used the drop down menu to select categories and subcategories.

![Cross Search opening screen](image)

**Figure 1. Cross Search opening screen**

**Recommendation**

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

Create a *Getting Started* hard copy and online guide to using MetaLib. Add brief, prominent, onscreen instructions on how to use the *Cross Search*.

Report the problem to developers.

**Issue 9. Deleting items in My Space**

**Severity: Medium**

Participants who used the trash to delete items in eShelf had problems when they used the check boxes. Participants expected that after checking an item, only the checked item would be deleted when hitting the trash. Instead, all items in the eShelf were deleted.

Most participants quickly learned that they had to use the delete icon [垃圾桶], however, they were frustrated by the previous action that deleted all items. Future use might result in some
users losing an afternoon’s work.

**Recommendation**

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

Report this problem to the developers.

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### Issue 10. Quotes in the search query

**Severity: medium**

When developing a query in *Basic Search*, participants expected to be able to use quotes to enclose the title of a journal article, however, the MetaLib default assumes quotes. When a user also inserts quotes, the query fails to produce results. Some participants assumed that the article wasn’t in the collection.

They did not receive an error message telling them to omit quotes and no instructions were included to guide the user.

**Recommendation**

Fix the problem so that the search will function with or without quotes.

Add brief, prominent, onscreen instructions on how to enter a query in *Basic Search*.

Use tutorials, training, and quick guides to educate users and library personnel on the most efficient use of MetaLib.

Report this problem to the developers.

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### Issue 11. Find online journal – default search query

**Severity: medium**

The *Find Online Journals* default that defines the search query is ‘starts with’. This in contrary to the *Find Databases* default with is ‘contains’. Participants, who expected that the default was ‘contains’, were surprised when their term produced few or no results.

**Recommendation**

Change the default to ‘contains’. Using ‘contains’ as the default will produce fewer errors that using ‘start with’ as the default.

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### Issue 12. Next to indicate the next page

**Severity: low**

Some participants expected the *Next* link, which indicates the next page, to be at the bottom of the page as well as the top. Seeing no *Next* link at the bottom of a list of databases, one participant assumed that there was no next page.

‘I would have put the Next also at the bottom, that’s where most students look for it.’ [P2]

This expectation can lead to annoyance or incorrect assumptions and failure for those who think there is no next page.

**Recommendation**

Add the *Next* link to the bottom of the page

Report this problem to the developers.
Issue 13. Description for journals

**Priority – low**

Using the e-Journal option in MetaLib while searching for a relevant e-Journal, one participant expected more information about the journal when clicking on the journal name or the ‘i’ [i].

> What I expected to find when I clicked on business history was a description of what the journal business history is, so that I could maybe make a more relevant selection. The ‘i’ doesn’t help either.’ [P5]

**Recommendation**

If the Implementation Team decides to address this issue, they could add more information about the journal, which is found when the user clicks on the ‘i’

**Requests**

Participants were asked for things they would like to change on the site. Some of them also mentioned requests while exploring the site or when they had difficulties with the completion of a task.

No severe issues appeared. Here are the most important ones.

Issue 14. Indicate the type of item (e.g., book, article), especially for full text

**Priority: medium**

Participants consistently indicated that they did not know what type of item was listed in the results. Many participants requested an indicator for full text articles and for full text databases.

> Sometimes I want to easily know what type of article is the one showing on the screen—a book, online article, etc. … ‘One of the problems is that I don’t know which of the databases actually gives full text. I know what Cameo usually gives me.’ [P1]

> I think what people need the most is full text. I think even here the ability to say, give me something that would only give me full text. I don’t care about citations right now. I don’t have the time to explore them. I need the full text.’ [P2]

Because finding a full text article was so frustrating, one participant suggested having an option to search full text only:

> ‘Add a ‘full text only’ search.’ [P4]

**Recommendation**

When and where possible indicate the type of article or database especially with respect to full text.

Consider adding a Quick Set that searches Full Text databases.

Issue 15. Sorting items on the eShelf

**Priority: low**

One participant suggested that users should have the option to sort the items on the eShelf.

> ‘Also there’s no sorting here. I would like to click on the title and sort.’ [P2]

**Recommendation**

Provide an option to sort items on the eShelf.
Report this to the developers

**Issue 16. Help section**

**Priority: low**

One participant, who wasn’t looking for Help, suggested that a link to a Help section should be displayed prominently:

*"Was not looking for a help section, but do not remember seeing one displayed prominently that would help." [P3]*

**Recommendation**

Make the Help link more prominent, e.g., enlarge font size, or use color.

**Issue 17. Indicate the number of databases found**

**Priority - low**

Using the Find Databases option, one participant, who failed to see the small text above the box indicating the number of databases, wanted to know how many databases were found:

*"The thing that is confusing to me is, I don’t know if these are all of the databases here, I sort of expect something to come back, you know how we got the number of citations, I sort of expected that I would see that sort of thing here." [P5]*

Though the font that indicates the number of found items is the same size on all pages with this indicator, the user failed to see it on this page.

**Recommendation**

The problem for this user might just be the result of frustration or eagerness to complete the task. However, if the Implementation Team decides to address this issue, an easy fix would be to increase the size of the font for the indicator of the number of found items everywhere that it occurs.

**Issue 18. Categories and subcategories**

**Priority: medium**

One participant, looking for Arts Management subcategory was surprised it was not a subcategory in Arts-Performing. This participant looked first in Arts-Performing, and then looked in Business before he found the subcategory in Arts-Visual. He suggested that it might be helpful if Arts Management were in all relevant categories.

**Recommendation**

Encourage reference librarians to review the categories and subcategories to check for accuracy and completeness.

**Design**

The following design issues do not necessarily affect the function of the site. Participants’ requests should be considered with caution.

**Issue 19. Whole site screen display**

One participant [P2] commented that he did not like all of the white space on the right and the Go button was too far from the search box.
Issue 20. Basket icon

A few participants suggested that the basket looked more like a shopping cart, though, because of the labelling, they used it correctly.

'The shopping cart is confusing a little bit. It makes me think of Amazon, you know I look at the shopping cart icon that says add to basket, it’s obvious for the meaning, but it’s a little inconsistent.' [P2]

Issue 21. Blue x to indicate delete

One participant felt that the blue X used to indicate delete would be more appropriate if it were red saying,

'The blue x doesn’t fit for me, for delete, I would think it would be red.' [P2]

Bugs

Usability testing revealed bugs on the site that should be addressed either by the implementation group or reported to the developers.

Issue 22. Search summary screen display (Netscape browser)

Severity: Medium

When using the Netscape browser, after completing a few searches in the basic search, the summary search display malfunctioned. The columns of information, which previously displayed in the main screen, no longer fit in the screen. Participants had to use the horizontal scroll to view all columns.

Recommendation

If possible, fix the problem.
Report this problem to the developers.

Issue 23. Screen display changed when the text was enlarged

Severity: Medium

Using either Netscape or Internet Explorer, when the default text size was increased, the text no longer displayed as intended in the main section. The display became difficult to
understand, and the top row of quick sets was partially covered by the search box.

**Recommendation**

If possible, fix the problem.
Disable the browser option that enables users to change the text size.
Report this problem to the developers.

**Issue 24. Terminology in Online Journals option**

**Severity: Medium**

The term used to label the search query box is *Database Name* instead of *Online Journal Name* causing confusion for users. The query box is also labelled incorrectly on the Locate option.

**Recommendation**

Change the label to Online Journal Name in both the Titles and Locate section of Find Online Journals or a generic name, e.g. title or name.

**Issue 25: Sort by option (on Search Results page)**

**Severity: medium**

On the Search Results page, the Sort By option appears to be operating incorrectly. The first problem occurred when I sorted the results by Database Name. The results were not sorted by Database, but appeared to be sorted by Title. The most logical explanation is that the sort order option is named incorrectly. It should be labelled Title instead of Database Name because the results are sorted by the resource title. Using the column heading name for the Sort By name makes it consistent and improves usability.
The second problem occurred when the option to Sort By Database is selected; it appears that the sort order is incorrect.

For example, I completed the following search:

Basic Search → General Quick Set → Keyword library → Go → View Retrieved.

I sorted the results by Database resulting in the following order:

Expanded Academic ASAP, Web of Science, CAMEO (online catalog), Research Library (ProQuest z39.50), Research Library (ProQuest xml)

Either of two possible problems might be the reason the sort order operates incorrectly:

- The sort order is based on a database name that is different from the name that is displayed or
- the sort function is malfunctioning.

**Recommendation**

For the first problem, rename Database Name to Title.

For the second problem, check the database name that is used when determining the sort order and the database name that is displayed. If they are different change them so that they are the same. Then the sort order will be consistent with users expectations.

If the above doesn’t solve the problem, then report this problem to the developers.

**Comments**

**Issue 26. View Results and View Retrieved**

**Severity: low**

After completing a search, the found items are summarized on a summary screen and users are provided an option to view. On the Basic Search the option is labelled View Retrieved and on the Cross Search the option is labelled View Results.

These labels appear inconsistent, however on further examination; the labels appear to indicate a difference. View Retrieved seems to indicate that only those items that have been selected (retrieved) from the total of all results will be displayed in the Results. View Results seems to indicate that all found items will be displayed in the Results.

**Recommendation**

Include this difference in labels in the documentation and educate library personnel about the reason for the labels.
Participant questionnaire

Following the completion of the tasks, participants were asked to complete a questionnaire of ten items rating their experience with MetaLib. Table 1 shows the results of the questionnaire. The items were rated on a scale of 1 to 5 where 1 is strongly disagree and 5 is strongly agree. The results of the questionnaire were consistent with the findings of the tasks.

Most items had an average rating of 3.0 and above with the exception of “error messages clearly tell me what is wrong” which had an average rating of 2.17. The lower rating was an indication that participants felt the error messages were not clearly stated and did not provide help.

With an average rating of 1.71 (prefer fewer resources and shorter wait time) participants indicated that, despite the longer wait time, they still prefer to search many multiple resources simultaneously. Participant ratings indicate that they liked the appearance (4.0), were mostly satisfied with MetaLib (3.63), said it was rather easy to use and instructions were clear (3.38), most icons were clear and it was relatively easy to find information (3.25), most link names were clear (3.0), and they lean towards attending a training session (3.0). Their positive ratings for MetaLib indicate that even though they might have had problems with early tasks, they learned quickly. By the end of the sessions, most participants felt that they could use the search reasonably well.

Conclusion

In general, the MetaLib interface performed fairly well, however the testing revealed one critical issue in addition to other issues that led to failure for some participants and should be addressed before general release. The Log in must be presented in a way that is more intuitive and reduces error; icons and terminology must be designed, labelled and/or tagged more clearly, particularly SFX; training, tutorials, quick guides and onscreen instructions need to be considered; and some problems need to be reported to the developers.

The issues identified in the body of the report are addressed individually on a prioritised basis do be determined by the implementation group. All issues that are the responsibility of
the developers are reported to them. In future iterations of the MetaLib interface, revisions that improve usability can be included.

Further usability testing is recommended in a few months after users have had an opportunity to become familiar with the interface and also have had an opportunity to attend some training sessions. Testing will then focus on the usability of the new revisions, and how well participants have learned to use the interface either from their own experiences, from help from friends or personnel, or from training sessions.
Appendix A. Participants and completion rates

We had eight sessions in which each participant completed the tasks. The participants are described below.

- [P1] M - 2nd year undergraduate, CIT; first language – other
- [P2] M - graduate student, SCS, first language – other
- [P3] F – graduate student, Heinz, first language – English
- [P6] M – 2nd year undergraduate, Tepper, first language – English
- [P7] F – staff (research for professor), H&SS, first language – English
- [P8] M – 2+ years undergraduate, CGA, first language – English

Task completion rate

This following summarizes the task completion rates and lists the tasks attempted.

The completion rate is the number of participants who completed the task, divided by the number of people who attempted the task multiplied by 100.

The overall task completion rate was 76% (90 of 118 task attempts, were completed successfully).

Note the number of tasks included the main task and each part. Task 1 included a, b, and c for a total of 3. A task was deemed to be complete only if the participant met the completion criteria.

<table>
<thead>
<tr>
<th>Tasks / successful completions</th>
<th>Completion rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Login 0/8</td>
<td>none</td>
</tr>
<tr>
<td>1a find a full text article on Sigmund Freud 4/8</td>
<td>1a: 50%</td>
</tr>
<tr>
<td>1b email the reference 6/8</td>
<td>1b: 75%</td>
</tr>
<tr>
<td>1c select a second resource 4/8</td>
<td>1c: 50%</td>
</tr>
<tr>
<td>2a find a biography of Andy Warhol 8/8</td>
<td>2a: 100%</td>
</tr>
<tr>
<td>2b add to your list of resources 8/8</td>
<td>2b: 100%</td>
</tr>
<tr>
<td>2c check to see if it has been added 8/8</td>
<td>2c: 100%</td>
</tr>
<tr>
<td>3a cross search 1/8</td>
<td>3a: 13% best method (50% using Cross Search)</td>
</tr>
<tr>
<td>Using any method (4/8)</td>
<td></td>
</tr>
<tr>
<td>3b search using all three 6/8</td>
<td>3b: 75%</td>
</tr>
<tr>
<td>3c show a citation 8/8</td>
<td>3c: 100%</td>
</tr>
<tr>
<td>3d show another citation 7/8</td>
<td>3d: 88%</td>
</tr>
<tr>
<td>4a find a citation given author, title, &amp; journal 6/7</td>
<td>4a: 86%</td>
</tr>
<tr>
<td>4b show the full text 5/7</td>
<td>4b: 71%</td>
</tr>
<tr>
<td>5a find a database 7/8</td>
<td>5a: 88%</td>
</tr>
<tr>
<td>5b add the database 8/8</td>
<td>5b: 100%</td>
</tr>
<tr>
<td>5c check 4/8</td>
<td>5c: 50%</td>
</tr>
<tr>
<td>6 Complete any search, explore the site</td>
<td>N/A</td>
</tr>
</tbody>
</table>

Overall completion rate: 90/118 (93/118) All: 76% (79%)
### Appendix B. Tasks

#### Task 1. Full text article search, email option, and table views in results

Imagine that you’re taking a psychology class you need additional information about Sigmund Freud for a presentation.

- Show me a full text article about Sigmund Freud.
- Show me how you would email the reference to yourself.
- Examine the list of found resources and select a second resource about Freud.

**Successful completion criteria**

- Participants will find a full text article about Sigmund Freud.
- Participants will be able to locate the “email” icon and know how to use it.
- Participants will be able to go back to the table view to select a second resource (article, book, etc.).

#### Task 2. Book search (using Basic Search), the Add option, and My Space

Imagine you are writing a paper for an Art History class that focuses on the life and achievements of Andy Warhol.

- Locate a biography of Andy Warhol and view the citation.
- Add this reference to your list of resources.
- Check to see if this resource has been added.

**Successful completion criterion**

- Participants will find a biography of Andy Warhol.
- Participants will locate the basket icon and add this reference to their own list.
- Participants will be able to check their resources using My Space → eShelf.

#### Task 3. Search using “Cross Search”

You are writing a paper on business ethics and need resources. You would like to select resources that are not included in the Basic Search.

- Find a method of searching that lets you select your choice of databases and other resources.
- Select 3 resources on business ethics.
- Complete a search and find resources on business ethics.
- Show me a citation.
- Show me another.

**Successful completion criterion**

- Participants will use the cross search to select the appropriate category and then select their own business ethics resources.
- Participants will be able to complete a search using their selected resources, select a resource and show the citation.
- Participants will be able to move among tables for different views of the results and select an additional resource.

#### Task 4. Citation search and full text

Imagine that you’re writing a paper for your engineering class. A friend gave you a citation for a relevant article and you would like to find the article.

- Find the article “The March of the Robot Dogs” by Robert Sparrow in the journal Ethics and Information Technology.
- Show me the full text of the article.
Successful completion criterion

- Participants will find the article “The March of the Robot Dogs” using any method.
- Participants will go to the full text using the SFX option.

### Task 5. Find database

Imagine that you're on a team that has designed a new product. You would like information about getting a patent for your product. Find a relevant database with patent information. Add this database to your list of databases. Find your list of databases to see if this database has been added.

**Successful completion criterion**

- Participants will find a relevant database about patents.
- Participants will be able to add this database to their own databases using the Add icon.
- Participant will find their list of databases using My Space → My Databases.

### Task 6. Open search

Think about a subject of interest or one you have written about. Find relevant resources on a subject of your own choosing using any method. Take this time to explore the site and comment or ask questions.

**Successful completion criteria**

There is no completion criterion.
**Appendix C. Participant questionnaire**

1. Please indicate which of the following you have used. (Check all that apply).

   ____ Cameo (library catalog)  ____ Library databases  ____ multi-database search
   ____ CiteSeer  ____ Google  ____ Yahoo or other
   ____ Amazon.com  ____ Other searches _________________________

2. Indicate your level of agreement. (Check N/A if not applicable.)

   The multi-database and research search:

   Overall I am satisfied with the MetaLib search.  
   It was easy to learn this system.  
   The system gives me error messages that clearly tell me how to fix the problem.  
   It is easy to find the information I need.  
   The screen instructions are easy to understand.  
   The names of links and labels are easy to understand.  
   The purpose of the icons is easy to understand.  
   The appearance of this system makes it appealing to use.  
   If the library had training sessions, I would attend.  
   I prefer to search a set with fewer databases and resources and have a shorter wait time.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>N/A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall I am satisfied with the MetaLib search.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>It was easy to learn this system.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The system gives me error messages that clearly tell me how to fix the problem.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>It is easy to find the information I need.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The screen instructions are easy to understand.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The names of links and labels are easy to understand.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The purpose of the icons is easy to understand.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>The appearance of this system makes it appealing to use.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>If the library had training sessions, I would attend.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
<tr>
<td>I prefer to search a set with fewer databases and resources and have a shorter wait time.</td>
<td>Strongly disagree</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Strongly agree</td>
</tr>
</tbody>
</table>

   Use the back of the paper if you need more space.

3. What was most frustrating in this multi-database and resource search?

4. If you could change anything about this system what would you change?

5. Please add you comments or questions.
### Appendix E. Summary of findings chart

<table>
<thead>
<tr>
<th>Description of Problem</th>
<th>Possible fixes</th>
<th>Severity</th>
<th>Priority</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary and secondary navigation bar – function unclear, not prominent</td>
<td>Make secondary bar more prominent, using font size, color</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Browser back button results in problems for users</td>
<td>Training &amp; tutorials</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Moving between table views is difficult especially for those who use the browser back for navigation</td>
<td>Training &amp; tutorials</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Search meaning is unclear</td>
<td>Rename, e.g., Custom Search, Meta-Search; Get Started Guide; Training</td>
<td>low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SFX link, icon unclear to users</td>
<td>Label the link (Find the article, Get the Article); Change the icon to indicate above</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Logging in – Not clear that log in is necessary</td>
<td>Create log in page; add a popup message to remind users to log in</td>
<td>critical</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quick Sets in Basic Search – not sure how to use the quick sets</td>
<td>Change radio boxes to check boxes Add onscreen instructions Create a Getting Started Guide</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cross Search – not sure how to use it, did not use drop down menus</td>
<td>Add onscreen instructions; create a Getting Started Guide; training &amp; tutorials</td>
<td>low</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Deleting items in My Space: the check boxes and trash are confusing</td>
<td>Training &amp; tutorials</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quotes in the search query will cause the search to malfunction</td>
<td>Fix the problem Training, onscreen guide Report to the developer</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Find online journal – default is 'start with', inconsistent with Find Databases</td>
<td>Change the default to 'contain'</td>
<td>medium</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>REQUESTS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------------------------------</td>
<td>-----------------------------------------------------------------</td>
<td>---</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Next to indicate next page – expected to see it at the bottom</td>
<td>Add the <em>Next</em> link to the bottom</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>More information about the e-journal</td>
<td>If possible, add more descriptive information about the e-journal to the journal's information page</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Indicate the type of item, especially for full text</td>
<td>Users want to know if it is a book, article, and especially full text</td>
<td>medium</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Sorting items on the eShelf</td>
<td>Request to add to sort option to eShelf</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td><em>Help</em> section</td>
<td>Make the link to the <em>Help</em> section more prominent</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Indicate the number of databases found</td>
<td>MetaLib does this, however the text might be enlarged</td>
<td>low</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Categories and subcategories</td>
<td>Add <em>Art Management</em> to <em>Arts-Performing</em> and to <em>Business</em></td>
<td>medium</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check other categories and subcategories</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**DESIGN**

Design issues do not necessarily affect the function of the site. Participants’ requests should be considered with caution.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>19</td>
<td>Whole site screen display</td>
<td>One user did not like the partial use of the screen</td>
<td>low</td>
</tr>
<tr>
<td>20</td>
<td>Basket icon</td>
<td>One user felt that the use of a shopping cart to indicate the basket was inconsistent</td>
<td>low</td>
</tr>
<tr>
<td>21</td>
<td>Blue x to indicate delete</td>
<td>Use a red x to indicate delete</td>
<td>low</td>
</tr>
</tbody>
</table>

**BUGS**

Many of the following are the responsibility of the developers and should be reported.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>22</td>
<td>Search summary screen display</td>
<td>In the Netscape browser, the screen display malfunctioned after a few uses</td>
<td>medium</td>
</tr>
<tr>
<td></td>
<td>Screen display changed when the text was enlarged</td>
<td>Using either browser, enlarging the text caused irregularities in the screen display Report to the developer</td>
<td>medium</td>
</tr>
<tr>
<td>---</td>
<td>-------------------------------------------------</td>
<td>-------------------------------------------------------------------------------------------------</td>
<td>--------</td>
</tr>
<tr>
<td>24</td>
<td>Terminology in the online journals option</td>
<td>The search box is labeled database name instead of online journal name Change the name to a generic label, e.g., title or name</td>
<td>medium</td>
</tr>
<tr>
<td>25</td>
<td>Sort by option is operating incorrectly</td>
<td>Change Database name to Title Check for consistency between the name of the database when used for the sort option and when used for the display</td>
<td>Medium</td>
</tr>
<tr>
<td>26</td>
<td>View results and view retrieved</td>
<td>View results indicates that all items are displayed in the results View retrieved indicates that online the retrieved items (not all found) are displayed in the results</td>
<td>low</td>
</tr>
</tbody>
</table>