Students experience of Metalib and Google Scholar
Else Nygren, Glenn Haya, Wilhelm Widmark

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Student experiences of search tools
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Abstract:
The report describes a study in which 32 C/D level students searched for material for their thesis using the search tools Google Scholar and Metalib. Half of the subjects had prior instruction in using the tools. Results consist of answers to a questionnaire, analysis of amount and type of documents found, and time spent on different search activities. The study concludes that overall, students were not very satisfied with either tool. However, Google Scholar performed relatively better in almost all measurements. Results for both tools were improved by instruction in terms of number of documents saved (Metalib, Google Scholar) and type of document saved (Google Scholar).
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</table>
Background

Why we considered it to be relevant to perform this study

The idea of using a single search interface to access the increasingly large number of academic databases is of great interest to the library community. One symptom of this is that many large academic libraries have purchased, or are in the process of purchasing, a “library portal” program which can be used for federated searches of multiple databases. The majority of universities in Sweden have recently purchased the federated search portal Metalib. In addition to federated search tools, there are other alternatives such as Google Scholar, which attempt to provide a single access point to scientific research. The overall purpose of Google Scholar and Metalib are the same, however the two search tools are very different when it comes to presentation and functionality. More knowledge about how well these tools meet user expectations and how users attempt to use these tools would be very useful to libraries struggling to integrate them with other library resources.
Introduction

Human-computer interaction

In the field of human-computer interaction the focus is on the individual user of a certain computer program. The goal of the research and enterprise in this field is to achieve that a system is easy to learn, efficient to use and also subjectively pleasing.

Usability and usability investigations

Central to the field is the notion of usability. This is defined according to the ISO 9241 standard as – “The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.”

This means that in order to talk about usability we must first give a definition of the user category, describe the specific situation of use and set particular goals that the user want to accomplish.

Today, the assessment of usability is much focused on finding measurable quantities. To complement the collection of user opinions we also need to have a quantitative measure of the usability of a system. This is where the notion of usability evaluations come in. In such an evaluation you specify the user group, the situation of use and express goals in quantifiable terms.

Ecological validity

A usability evaluation can then be performed in different ways. You can isolate a particular feature of a system and test this single feature in a laboratory. This gives a somewhat artificial user situation even if it can give very good data for the comparison of different features. The other way of going about evaluation is to set up a test situation which is very similar to what the users would do with the system in real life. This gives a more holistic evaluation. This type of evaluation is called an ecologically valid evaluation. It is the kind we choose to use in this study.

Measurements and operationalisation

To be able to assess the usability of a system, we thus need to make certain assumptions so that we will have measurable quantities to work with. In this study we make the following assumptions:

1. The user group is students on a pre-graduate level who is in a phase of working with their thesis (C- or D-level)
2. The situation of use is that the student will search for articles relevant for the thesis.
3. As a measure of goal achievement we assume that the more articles they find in a given period of time, the better is the goal achievement. We further assume that articles found that are peer-reviewed indicates a higher level of goal achievement than articles that are not.

Usability evaluation

Our aim is thus to investigate the true usability of these two search tools in an ecological valid context, given the assumptions stated above.
**Aim of the investigation**

<table>
<thead>
<tr>
<th>Cognitive search process</th>
<th>With this investigation we want to gain insight into the cognitive search process of C &amp; D Students using these tools to search for academic literature.</th>
</tr>
</thead>
<tbody>
<tr>
<td>User satisfaction</td>
<td>We also want to assess the user satisfaction with the search tools.</td>
</tr>
<tr>
<td>Problem areas in the search process</td>
<td>Another aim is to identify problem areas in the search process with Metalib/Google Scholar.</td>
</tr>
<tr>
<td>Effect of instruction</td>
<td>Also, we want to investigate the effect of instruction on the use of Metalib/Google Scholar.</td>
</tr>
<tr>
<td>Positive and negative features of the two search tools</td>
<td>Finally we want to indentify positive/negative features of each tool.</td>
</tr>
</tbody>
</table>
Method

Flow chart of the investigation

The investigation was performed as a usability evaluation where the users searched for academic articles using the two search tools. Half of the subjects were given a 45 minutes training session before doing the search. All subjects searched with both tools. The order of the tools was balanced so that half started with Google Scholar and the other half started with MetaLib. The subjects were randomly assigned to a test condition.

<table>
<thead>
<tr>
<th>FLOW CHART OF THE INVESTIGATION</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>32 STUDENTS</strong></td>
</tr>
<tr>
<td><strong>16 STUDENTS</strong></td>
</tr>
<tr>
<td>TRAINING</td>
</tr>
<tr>
<td>NO TRAINING</td>
</tr>
<tr>
<td><strong>8 STUDENTS</strong></td>
</tr>
<tr>
<td><strong>8 STUDENTS</strong></td>
</tr>
<tr>
<td>METALIB</td>
</tr>
<tr>
<td>GOOGLE</td>
</tr>
<tr>
<td>QUESTIONNAIRE</td>
</tr>
<tr>
<td>QUESTIONNAIRE</td>
</tr>
<tr>
<td>GOOGLE</td>
</tr>
<tr>
<td>METALIB</td>
</tr>
<tr>
<td>QUESTIONNAIRE</td>
</tr>
<tr>
<td>QUESTIONNAIRE</td>
</tr>
<tr>
<td>TRAINING (VOLUNTARY)</td>
</tr>
</tbody>
</table>

Subjects

32 C and D level students from several departments at Uppsala University were invited to participate in this study and were offered the incentives of free movie tickets and free copies of any article they found during the search sessions. The students were invited to participate by ads on notice boards on different campus sites. Those who volunteered in this way to participate were randomly assigned to a test condition. The gender distribution was 50/50 and the areas of studies included economics & business, computer science, media and communication science as well as law. All participants were in the process of writing a thesis and searched for material on their thesis subjects. Those of the students that were not assigned to a condition including training, were offered to participate in a voluntary training session after their search sessions were finished.

Equipment

The study was performed in the usability laboratory of the department of Human-computer interaction at Uppsala University. This includes audio- and video recording of the session as well as detailed recording of the user actions and the system events. We used the Morae software system for recording of the test sessions and analysing the data.
**Task**

The task was given to the subjects as follows: 20 minutes search with one search tool. Thereafter a questionnaire was filled in. The subjects then searched with the other tool for 20 minutes, followed by another questionnaire.

**Task procedure**

The subjects were greeted and given verbal and written information about the study and their rights. They waited for a start signal and then were allowed to search for 20 minutes. The search could be followed from the control room. The test leader interrupted after 20 minutes and the questionnaire was administered. This was repeated for the second tool. When a subject found an article that he or she considered to be relevant for their thesis, they were instructed to save the fulltext file to a folder.

**Recordings**

Recordings of all searches (audio, video, keystrokes, mouse clicks, etc…) were done with Morae usability testing software.

**Training session**

16 students attended a 45 minute instructional session typically one or two days before they performed their search sessions. The 45 minute instruction was basic and practical. It included a description of both tools and basic instructions on how to begin. In Metalib the session focused on meta-searching including choosing a category, selecting databases to search with, viewing results and using the SFX button. Students were also informed about common pitfalls including default phrase searching and lack of Swedish language sources [at the time of the study Artikelsök was not configured for Metalib]. In Google Scholar students were instructed in the advanced search screen, SFX button & Libris library search.

**Questionnaires**

A questionnaire was given at the end of each 20 minute search session. The questionnaire consisted of 2 background questions, 7 questions using a 5 point Likert Scale as well as 2 open questions where students were invited to write down their positive and negative impressions. The questions were:

Two background questions about the level of study and former experience with the search tool in question.

Seven Likert scale questions:
- Q1 “My overall impression of the search tool is very positive”
- Q2 “I will recommend the search tool to my colleagues”
- Q3 “The search tool is likely to be my first choice for searching academic literature in the future”
- Q4 “The search tool is easy to use”
- Q5 “I would need instruction or support before I could use the search tool efficiently”
- Q6 “I found material relevant to my thesis subject”
- Q7 “I had to look through to many irrelevant hits”

Finally there were two open questions. These were:
- “What I liked about this search tool was…”
“What I did not like about this search tool was…”

**Implementations**

Description of the Search Environment

Though students were from Uppsala University, during the study they had access to Stockholm University resources via proxy (approximately 200 databases of which over 100 are subscription databases, the remainder are links to freely available resources). The situation was explained to them at the beginning of each session so they were aware of the fact they were searching a different set of resources than they were familiar with. One possible benefit of this arrangement was that students could not necessarily rely on what they already knew and were forced to use Metalib to explore what was available.

**Metalib Notes**

Below are some important notes about our Metalib implementation and how it was presented to students during the study.

1. To access Metalib, students were presented with an HTML page with links and brief descriptions of the 4 Metalib components (quick search, cross search, databases, e-journals).
2. The quick search page included several sets of databases in various subjects.
3. There were occasional technical failures of databases that were “not available” during a cross search (these included sporadic failures for Blackwell Synergy, Web of Science and Academic Search Elite). However, the damage caused by these technical failures was limited since in almost all cases the database which was temporarily unavailable would not have added to the search results.
4. Stockholm University has access to Metalib as part of a consortium where a single installation is shared by a group of universities. This involves certain advantages as well as a few disadvantages including limitations on customization and the lack of personalization features for our users.
5. In the body of this report all references to “Metalib” should be understood to refer to our implementation of Metalib, which is also called Samsök.
Google Scholar Notes  As shown in the figure below, students used Google Scholar with the SFX links to Stockholm University resources activated (Findit@SUB) as well as a library link to Libris, a union catalog in Sweden.

Time of investigation  The search sessions were performed during the time interval of March 22, 2006 to April 6, 2006. The data analysis were carried out during the period April, 2006 to August, 2006.
Analysis

Article count

The number of articles saved for each search session was counted. Mean numbers and variance were calculated. The document type was assessed by a librarian for each article. In doing this, journals were checked in Ulrich’s online to determine if they were peer reviewed. The articles were assigned to one of the following categories:

- Peer reviewed journal
- Conference paper
- Student paper
- Other periodical
- Working paper / report
- Other (thesis, e-book)

Questionnaires

The open questions were transcribed and grouped into different themes by a librarian. The number of answers were counted for each theme thus yielding a measure of how many of the 32 students that had commented on each theme.

Analysis of recordings

The recordings were analysed as follows: The recordings were viewed and usability problems encountered by the subjects were noted. Also particular verbal comments from the participants during the search sessions were noted.

Calculation of the time spent in different phases of search.

The recorded user actions and systems responses are time stamped in hundreds of seconds. This allows for a detailed analysis of the search sessions. By means of this we could calculate how much time was spent in different phases of search. The defined phases of search were:

- **Beginning**, which is from session start to the first writing in a search box. (A search box is here defined as a text entry field for search terms)
- **Searching**, which is from a user starts to write in a search box to when the user hits the search button (or press return)
- **Viewing results list**, from the moment a results list is shown on the screen, to the moment the user performs an action to leave the results list.
- **Viewing metadata**, from the moment a metadata description is shown on the screen, to the moment the user performs an action to leave the Metadata presentation. Abstracts were regarded as Metadata.
- **Viewing fulltext**, from the moment a fulltext article was displayed on the screen, to the moment the user performs an action to leave the fulltext.
- **Saving fulltext**, from the moment a user makes an action to save a fulltext article to the moment when the article is saved.

The time spent in between these phases were classified as **Navigation**. This includes all navigation activities between the different phases, all settings of selection criteria, and all waiting times. It does not include navigation within a phase, for instance
navigation page by page within a fulltext article.

4 search session for each test condition were randomly selected for this detailed analysis. Thus yielding 16 sessions in total (that is half of the total data). The percentage of time spent in different phases of search was calculated.

Event counts

Also the number of certain types of events was counted for each session. These were how many times a user performed a search, how many unique results lists were presented, how many times a user selected one of the articles in a results list, how many times a user viewed a fulltext article, and finally how many times a user saved a fulltext article.

These counts were averaged and compared for the different test conditions. Also, these counts were compared to yield the following ratios: Number of unique results lists per search occasion, number of selected articles per unique results list, number of articles viewed in fulltext per selection and finally number of articles saved per article viewed in full text.
Results

Article counts

In total, the students saved 87 articles using the Google Scholar search tool and 42 articles using the Metalib tool. This gives a mean value of 2.72 articles per search session for Google Scholar and 1.31 articles for Metalib.

The results of the article count is described in this table:

<table>
<thead>
<tr>
<th>Search tool</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2,719</td>
<td>1,312</td>
</tr>
<tr>
<td>Std. Dev</td>
<td>2,372</td>
<td>1,595</td>
</tr>
<tr>
<td>Std Err</td>
<td>0,419</td>
<td>0,282</td>
</tr>
<tr>
<td>Variance</td>
<td>5,628</td>
<td>2,544</td>
</tr>
<tr>
<td>Coeff of var</td>
<td>0,873</td>
<td>1,215</td>
</tr>
<tr>
<td>Range</td>
<td>0 - 8</td>
<td>0 - 7</td>
</tr>
<tr>
<td>Sum</td>
<td>87</td>
<td>42</td>
</tr>
</tbody>
</table>

Effect of training on article counts

The students that received instruction in the form of a training session before their search were more successful in saving articles.

TOTAL NUMBER OF ARTICLES SAVED PER SEARCH TOOL AND TRAINING CONDITION

<table>
<thead>
<tr>
<th>Search tool</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saved articles</td>
<td>87</td>
<td>42</td>
</tr>
<tr>
<td>No training</td>
<td>Training</td>
<td>No training</td>
</tr>
<tr>
<td>Saved articles</td>
<td>37</td>
<td>48</td>
</tr>
</tbody>
</table>

We can see that training resulted in 30 % more articles for Google Scholar and in 150% more articles for Metalib.

Effect of order of search tool

Half of the subjects used Google Scholar first and then Metalib, while the other half use the tools in the reverse order. As is evident from the table below, this order of search did not affect the results in terms of article counts, except that more articles were found then Metalib was the first tool used compared to when it was the second tool used.

TOTAL NUMBER OF ARTICLES SAVED PER SEARCH TOOL AND ORDER OF SEARCH

<table>
<thead>
<tr>
<th>All</th>
<th>First tool</th>
<th>Second tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
<td>64</td>
<td></td>
</tr>
<tr>
<td>Google Scholar</td>
<td>Metalib</td>
<td></td>
</tr>
<tr>
<td>First</td>
<td>Second</td>
<td>First</td>
</tr>
<tr>
<td>41</td>
<td>46</td>
<td>24</td>
</tr>
</tbody>
</table>

Gender difference

As can be seen in the table below, there was a difference between males and females in the number of articles saved.

Regardless of which tool was used, the male test persons saved
about twice as many articles as the female test persons.

**TOTAL NUMBER OF ARTICLES SAVED PER SEARCH TOOL AND SUBJECT GENDER**

<table>
<thead>
<tr>
<th>Search Tool</th>
<th>Gender</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Females</td>
<td>87</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td>Males</td>
<td>30</td>
<td>57</td>
</tr>
</tbody>
</table>

We can also see that there was a difference in the effect of training. In the following table we can see the mean number of articles saved for all the different test conditions divided by gender. The number in bracket shows the number of test persons in the different conditions.

**MEAN NUMBER OF ARTICLES SAVED PER SEARCH TOOL, SUBJECT GENDER AND TRAINING CONDITION**

<table>
<thead>
<tr>
<th>Search Tool</th>
<th>Gender</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Female (16)</td>
<td>1,88</td>
<td>0,88</td>
</tr>
<tr>
<td></td>
<td>Male (16)</td>
<td>3,56</td>
<td>1,75</td>
</tr>
<tr>
<td>No training (16)</td>
<td>Female (16)</td>
<td>2,38</td>
<td>0,75</td>
</tr>
<tr>
<td></td>
<td>Male (16)</td>
<td>3,06</td>
<td>1,88</td>
</tr>
<tr>
<td>Females (7)</td>
<td>Males (9)</td>
<td>1,00</td>
<td>3,44</td>
</tr>
<tr>
<td></td>
<td>Females (9)</td>
<td>2,56</td>
<td>2,57</td>
</tr>
</tbody>
</table>
In the graph below these results are illustrated:

**MEAN NUMBER OF ARTICLES SAVED PER SEARCH TOOL, SUBJECT GENDER AND TRAINING CONDITION**

<table>
<thead>
<tr>
<th>Search tool</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>No training</td>
<td>1.75</td>
<td>1.09</td>
</tr>
<tr>
<td>Training</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Experience with the two search tools

Experience with the two search tools, (1= never used, 2= used a few times, 3= used several times) We show mean values for the groups.

**MEAN VALUES FOR FORMER EXPERIENCE FOR SEARCH TOOL AND GENDER**

<table>
<thead>
<tr>
<th>Search tool</th>
<th>Females</th>
<th>Males</th>
<th>Females</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Google Scholar</td>
<td>1.56</td>
<td>1.94</td>
<td>1.13</td>
<td>1.06</td>
</tr>
<tr>
<td>Metalib</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Summary of the result of the article counts

As a summary of the result of the article counts we can say that the best result was for a male subject using Google Scholar after instruction, 3.71 articles saved. The worst result was for a female subject using Metalib without former instruction, 0.29 articles saved. This constitute a considerable difference.

Types of articles saved

The articles saved were in English and Swedish. The distribution was as follows:

**TOTAL NUMBER OF ARTICLES IN ENGLISH AND SWEDISH SAVED PER SEARCH TOOL AND TRAINING CONDITION**

<table>
<thead>
<tr>
<th>Search tool</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles in English</td>
<td>66</td>
<td>39</td>
</tr>
</tbody>
</table>
We can see that the subjects that received instruction saved more articles in Swedish than those that did not receive instruction. In particular we note that without training no article in Swedish were saved for Metalib.

Types of documents

The saved documents were distributed between the defined classes as follows:

<table>
<thead>
<tr>
<th>Types of documents</th>
<th>Google Scholar</th>
<th>Metalib</th>
<th>No training</th>
<th>Training</th>
<th>No training</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peer Reviewed Journal</td>
<td>35,6</td>
<td>41,5</td>
<td>21,6</td>
<td>46,9</td>
<td>41,7</td>
<td>41,4</td>
</tr>
<tr>
<td>Conference Proceedings</td>
<td>20,7</td>
<td>19,5</td>
<td>16,2</td>
<td>24,5</td>
<td>25,0</td>
<td>17,2</td>
</tr>
<tr>
<td>Student paper</td>
<td>18,4</td>
<td>0,0</td>
<td>21,6</td>
<td>16,3</td>
<td>0,0</td>
<td>0,0</td>
</tr>
<tr>
<td>Other Periodical</td>
<td>10,3</td>
<td>29,3</td>
<td>16,2</td>
<td>6,1</td>
<td>25,0</td>
<td>31,0</td>
</tr>
<tr>
<td>Report / Working Paper</td>
<td>12,6</td>
<td>4,9</td>
<td>21,6</td>
<td>6,1</td>
<td>8,3</td>
<td>3,4</td>
</tr>
<tr>
<td>Other</td>
<td>2,3</td>
<td>4,9</td>
<td>2,7</td>
<td>0,0</td>
<td>6,9</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
<td>100,0</td>
</tr>
</tbody>
</table>

We can see that for the Google search tool, the effect of instruction was that more paper reviewed articles were saved and that less student papers or working papers were saved. For the Metalib search tool the effect of instruction did not particularly affect the part of articles that were peer reviewed. We can see slightly more periodicals and slightly less conference proceedings in the group that received training. The largest part of peer reviewed articles were saved by the group that received training and used the Google Scholar search tool: 46.9%.
In a summary graph we can see the distribution of articles of different classes for all of the test conditions:

**PERCENT OF ARTICLES IN DIFFERENT CATEGORIES SAVED PER SEARCH TOOL AND TRAINING CONDITION**

**Questionnaires**
**Answers to the background questions**
**Gender and level of study**

Of the 32 students 16 were female and 16 were male. The background questions showed that 13 subjects were at the C-level and 19 on the D-level.
Areas of study

The test persons came from different areas of study as can be seen from the table:

<table>
<thead>
<tr>
<th>Area of study</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economics &amp; Business</td>
<td>11</td>
</tr>
<tr>
<td>Media and communications science</td>
<td>5</td>
</tr>
<tr>
<td>Human-computer interaction</td>
<td>5</td>
</tr>
<tr>
<td>Statistics</td>
<td>4</td>
</tr>
<tr>
<td>Computer science</td>
<td>4</td>
</tr>
<tr>
<td>Law</td>
<td>2</td>
</tr>
<tr>
<td>Information science</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

The reason that no subject area like medicine or history was represented is probably due to the fact that these departments are located far from the laboratory where the tests took place. It seems that the voluntary test subjects came from departments that were located near to the laboratory.

Experience with the search tools

The level of experience with the two search tools can be seen in the table:

<table>
<thead>
<tr>
<th>Level of experience with the search tool</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never used</td>
<td>12</td>
<td>29</td>
</tr>
<tr>
<td>Used a few times</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Used many times</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>32</strong></td>
<td><strong>32</strong></td>
</tr>
</tbody>
</table>

We can see that the test persons generally had more experience with Google Scholar than with Metalib. In fact only 3 persons had ever used Metalib and then only a few times.

Answers to the Likert questions Q1-Q7

The subjects answers to the seven Likert scale questions in the questionnaires are shown in the figures below. We remind about the content of the questions which were:

Q1  “My overall impression of the search tool is very positive”
Q2  “I will recommend the search tool to my colleagues”
Q3  “The search tool is likely to be my first choice for searching academic literature in the future”
Q4  “The search tool is easy to use”
Q5  “I would need instruction or support before I could use the search tool efficiently”
Q6  “I found material relevant to my thesis subject”
Q7  “I had to look through to many irrelevant hits”
Comparison between the two search tools

First we will compare how the subjects answered to the same questions for the two search tools.

Overall impression of the search tools

The first Likert-scale question regarded the overall impression of the search tool.

Q1 “My overall impression of the search tool is very positive”

We can see that most subjects were rather neutral to both tools but that a few more favoured Google Scholar in this respect.
The next question regarded the extent to which the subjects were inclined to recommend the search tool to colleagues:

**Q2** “I will recommend the search tool to my colleagues”

The subjects tended to agree slightly more on this statement regarding Google Scholar than Metalib.
Next question that was asked was about whether the subjects would pick a particular search tool as a first choice for searching academic literature in the future:

Q3 “The search tool is likely to be my first choice for searching academic literature in the future”

Most subjects were neutral. However it seems that more would agree to pick Google Scholar as their first choice of tool compared to Metalib.
Ease of use for the two search tools

We asked the subjects as to what degree they agreed that the search tool was easy to use:

Q4  “The search tool is easy to use”

Here we see a more marked difference. Clearly the subjects found Google Scholar to be easy to use, whereas most were rather neutral regarding the ease of use of Metalib.
Need for instruction for the two search tools

We asked about how the subjects felt regarding the need for instruction before the search tool could be used efficiently:

**Q5** “I would need instruction or support before I could use the search tool efficiently”

It is evident that more subjects agreed that instruction was needed to use Metalib efficiently. Most subjects strongly disagreed that instruction was necessary to use Google Scholar efficiently.

Here it is interesting to analyse if this view were dependent on if the subjects had received any training or not. In fact the subjects that had received training tended to agree to a lesser degree than those who had had training. This was true for both search tools. (Google Scholar no training: mean 3.7, training 3.4 Metalib no training: mean 2.4, training 2.2)
We also asked the subjects if they had found material that were relevant to their thesis subject:

Q6  “I found material relevant to my thesis subject”

Most subjects agreed that they indeed found relevant material. We can see that Google Scholar had the highest degree of agreement.
Finally, we asked if the subjects felt that they had had to look through too many irrelevant hits:

Q7 “I had to look through to many irrelevant hits”

In this matter we can see that clearly the subjects felt that they had to look through more irrelevant hits when using Google Scholar than when using Metalib.
Effect of training

We would like to know if there was a difference in the answers between the groups that had and had not received instruction. To see this we have thus split the data according to the training condition.

Google Scholar:

difference between untrained and trained subjects:

Overall impression

Google Scholar:

Q1 “My overall impression of the search tool is very positive”

We see that the impression was the same with and without training.
Google Scholar: difference between untrained and trained subjects: Recommendations to colleagues

Google Scholar:
Q2 “I will recommend the search tool to my colleagues”

Here we can see that actually there were less trained subjects that strongly agreed to this statement, than untrained subjects. Training seemed to have a negative effect on the agreement to this statement.
Google Scholar
difference between untrained and trained subjects:
First choice for the future

What about the first choice for the future?

Q3 “The search tool is likely to be my first choice for searching academic literature in the future”

Essentially no difference, but a small negative effect of training can be seen.
Google Scholar
difference between
untrained and trained
subjects:
Ease of use

Did the groups that had training find the search tool Google Scholar as easy to use as those who had no training?

Q4 “The search tool is easy to use”

They still agree that the tool is easy to use, but in fact to a slightly lesser extent than the untrained group.
Google Scholar
difference between untrained and trained subjects:
Need for instruction

What about the need for instruction?

Q5 “I would need instruction or support before I could use the search tool efficiently”

Most of the untrained subjects had the opinion that no training was need to use Google Scholar. Most trained subjects were neutral to this statement.
Google Scholar 
difference between untrained and trained subjects: Found relevant material

Did the subjects experience that they found relevant material?:

- Q6 “I found material relevant to my thesis subject”

Here we see that the most of the untrained subjects as well as the trained subjects agreed or strongly agreed to having found relevant material.
Can we see any difference in the opinions regarding the number of irrelevant hits?:

Q7 “I had to look through to many irrelevant hits”

Whereas the untrained group is basically neutral, the trained group agrees more to this statement.
Let us now see the same data for Metalib:

Metalib difference between untrained and trained subjects:

**Overall impression**

Metalib:

Q1 “My overall impression of the search tool is very positive”

In fact the trained group agrees less than the untrained group.
Metalib difference between untrained and trained subjects: Recommendation to colleagues

Q2 “I will recommend the search tool to my colleagues”

We can see that unlike the result for Google Scholar, more of the trained group was willing to recommend Metalib than the untrained group.
Metalib difference between untrained and trained subjects: First choice for the future

Metalib Q3 “The search tool is likely to be my first choice for searching academic literature in the future”

A slightly more positive response could be seen for the trained group compared to the untrained group to this statement.
Metalib difference between untrained and trained subjects: Ease of use

Metalib:
Q4 “The search tool is easy to use”

No one strongly agreed to this statement. There were more in the trained group that strongly disagreed to that the tool is easy to use.
It seems that the trained group is indeed more aware of the need for instruction to efficiently use Metalib as a search tool.
Metalib difference between untrained and trained subjects: Found relevant material

Metalib
Q6 “I found material relevant to my thesis subject”

Generally the trained group seems to have found a little more relevant material than the untrained group.
### Metalib difference between untrained and trained subjects:

**Irrelevant hits**

<table>
<thead>
<tr>
<th>Question</th>
<th>No Training</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q7: &quot;I had to look through too many irrelevant hits&quot;</td>
<td><img src="image" alt="Graph showing differences between groups" /></td>
<td></td>
</tr>
</tbody>
</table>

Most were neutral or did not agree that they had to look through many irrelevant hits. The trained group agreed more to this than the untrained group.

### Summary of the answers for Google Scholar

The most positive response to Google Scholar regarded ease of use (Q4). Interestingly the group that received training gave a slightly less positive answer to this question. The greatest difference between the untrained and trained group were Q7 regarding irrelevant hits. The trained group agreed more to that they had to look through too many irrelevant hits than the untrained group.

### Summary of the answers for Metalib

We can see that the subjects were quite neutral with respect to the search tool Metalib. Those who had received training seemed to be more aware of the complexity of this tool. Users were neither very impressed nor very critical of Metalib. One can see that students’ reaction to the tool was not particularly enthusiastic especially for the untrained subjects who responded negatively to the idea that Metalib would become their primary search tool for finding academic material (Q3). Overall the trained group responded more positively to the tool relative to untrained group (Q2, 3, 6 & 7) at the same time that they were more aware of its difficulties (Q4 & 5).
The open questions were classified into themes by a librarian. The positive and negative comments were treated separately. In total 55 positive and 47 negative comments were given about Google Scholar. 46 positive and 62 negative comments were given about Metalib. Below we can see in the tables how many students that commented each theme.

All comments are presented in Appendix C (in Swedish)

Positive comments about Google Scholar classified into themes:

<table>
<thead>
<tr>
<th>Positive theme</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplicity / familiar interface</td>
<td>24 of 32</td>
</tr>
<tr>
<td>Lots of Results</td>
<td>7 of 32</td>
</tr>
<tr>
<td>Quickness</td>
<td>6 of 32</td>
</tr>
<tr>
<td>Multipe language content</td>
<td>2 of 32</td>
</tr>
</tbody>
</table>

Students consistently wrote that they liked the fact that Google Scholar was simple to use and in some cases added that one of the reasons it was so simple to use was that they were already familiar with the interface from using regular Google. That Google Scholar has a broad scope and typical leads to many results was also viewed positively by some. As one student wrote, it was positive that one “gets lots of results and then has the possibility to find the most relevant pages by adding specific words to the search”.

Negative comments about Google Scholar classified into themes:

<table>
<thead>
<tr>
<th>Negative theme</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Imprecise searching</td>
<td>11 of 32</td>
</tr>
<tr>
<td>Irrelevant results</td>
<td>11 of 32</td>
</tr>
<tr>
<td>Inconsistent presentation after clicking on a link</td>
<td>6 of 32</td>
</tr>
<tr>
<td>Abstracts needed</td>
<td>5 of 32</td>
</tr>
<tr>
<td>Questionable quality or scope of sources</td>
<td>4 of 32</td>
</tr>
</tbody>
</table>

The flip side to getting many results is that many students found Google Scholar to be too imprecise and produce too many irrelevant results. One student complained that they got “many irrelevant results and papers on subjects that were related to my
topic but from another perspective…” Additionally, students did not feel that the brief snippets that one gets in Google Scholar were enough to determine the value of a document and wanted more information up front, particularly more structured abstracts instead of text excerpts. Finally, students wanted to have a more consistent experience after clicking on a document title in the results list. The ideal seemed to be that one goes immediately to a pdf copy of an article 100% of the time. One mentioned that he “didn’t know what I would get when I clicked on a link” and another complained that “the format … is inconsistent. The best case would be if all articles had abstracts and were available in pdf format.”

Answers to open questions about Metalib

Open questions: Positive comments about Metalib

Positive comments about Metalib classified into themes:

<table>
<thead>
<tr>
<th>Positive theme</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope &amp; Organization of Resources</td>
<td>12 of 32</td>
</tr>
<tr>
<td>Relevancy of Results</td>
<td>5 of 32</td>
</tr>
<tr>
<td>Clarity</td>
<td>4 of 32</td>
</tr>
<tr>
<td>Control over content selection</td>
<td>4 of 32</td>
</tr>
<tr>
<td>Cross-search capabilities</td>
<td>3 of 32</td>
</tr>
</tbody>
</table>

Typical positive comments were that Metalib was “very structured and searched in lots of relevant sources” and that it was “reliable and well structured”. Only 3 out of 32 students specifically mentioned cross searching capabilities as one of the features they liked about Metalib.

Open questions: Negative comments about Metalib

Negative comments about Metalib classified into themes:

<table>
<thead>
<tr>
<th>Negative theme</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interface problems</td>
<td>16 of 32</td>
</tr>
<tr>
<td>Complexity</td>
<td>14 of 32</td>
</tr>
<tr>
<td>Lack of results</td>
<td>8 of 32</td>
</tr>
<tr>
<td>Instruction/help needed before use</td>
<td>4 of 32</td>
</tr>
<tr>
<td>Language restrictions</td>
<td>3 of 32</td>
</tr>
<tr>
<td>Technical issues</td>
<td>3 of 32</td>
</tr>
<tr>
<td>Missing functionality</td>
<td>3 of 32</td>
</tr>
</tbody>
</table>

We can see that 50% of the students gave negative comments about Metalib interface problems, and that 44% saying that the complexity of Metalib was a problem. Interface problems mentioned were often general. For example one student called
the interface “clumsy” and mentions that it is not always clear where to click. Another refers to the interface as “not intuitive enough” and yet another commented that Metalib seemed like an “unfinished product”. Others mentioned specific problems, most often having to do with navigation. A typical complaint was that the back button would often not work when navigating around Metalib. Other navigation related issues were cited with students indicating that they had trouble navigating between the full post, search list and search form. Complexity was also a common complaint with one student commenting that “One doesn’t really know where to begin” and that it was simply “hard to use and complicated”.

Analysis of the recordings
Detailed analysis of the recordings

For each of the 4 test conditions (2 x search tool, 2 x training) 2 sessions were randomly selected for a detailed analysis. Thus giving data for 16 sessions in total, or half of the data set. The defined phases of search were:

Beginning, which is from session start to the first writing in a text entry field for entering search terms. We shall hereafter call such text entry field a “search box”.

Searching, which is from a user starts to write in a search box to when the user hits the search button (or press return). This phase is basically the formulation and entering of the search terms.

Viewing Results list, from the moment a results list is shown on the screen, to the moment the user performs an action to leave the results list. This phase involves navigation between different pages of the results list.

Viewing Metadata, from the moment a metadata description is shown on the screen, to the moment the user performs an action to leave the Metadata presentation. Abstracts were regarded as Metadata.

Viewing Fulltext, from the moment a fulltext article was displayed on the screen, to the moment the user performs an action to leave the fulltext. This phase involves navigation page by page within the article.

Fulltext Saving, from the moment a user makes an action to save a fulltext article to the moment when the article is saved. The time spent in between these phases was classified as Navigation. This includes all navigation activities between the different phases, all settings of selection criteria, and all waiting times. It does not include navigation within a phase, for instance navigation page by page within a fulltext article.

Examples of search behaviour

In the graphs below we can see some examples of search behaviour as it is reflected in the shifting between the different phases. We assign the following numbers to the different search phases:
0 = Beginning
1 = Searching
2 = Viewing Results list
3 = Viewing Metadata
4 = Viewing Fulltext
5 = Saving Fulltext
and finally we assign to the last phase:
-1 = Navigation.

More graphs can be seen in Appendix B, where we also show the number of results for each unique results list during the search.

The above graph is for a subject using Google Scholar with no former training. Here we can see how the subject progressively spent time in different phases. We can see that articles were saved on two occasions and that the search was interrupted by navigation activities regularly. This subject spent quite a lot of time in phase 4 which is viewing articles in full text. We can also see that the episodes of navigation are of short duration.
The above graph is for a subject using Metalib with prior training. Here we can see that the subject several times reaches level 3 which is Viewing Metadata, but that the subject fails to proceed from that phase to the next which is viewing Fulltext. Of course it may be that the subject found out from the metadata that the article was not relevant, but a more plausible explanation is that the subject had problems of finding out how to get the fulltext. We can also see that the subject spent a lot of time in the phase of navigation. This subject did not save any article, nor view any article in full text.

More graphs can be seen in Appendix B, where we also show the number of results for each unique results list during the search.
Time spent in different phases of search was calculated for each search condition.

### PERCENT OF TIME SPENT IN DIFFERENT PHASES OF THE SEARCH PROCESS PER SEARCH TOOL AND TRAINING CONDITION

<table>
<thead>
<tr>
<th>Search tool / Time spent in phase</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>0.6</td>
<td>3.9</td>
</tr>
<tr>
<td>Searching</td>
<td>15.4</td>
<td>15.9</td>
</tr>
<tr>
<td>Viewing Results list</td>
<td>30.9</td>
<td>11.2</td>
</tr>
<tr>
<td>Viewing Metadata</td>
<td>5.1</td>
<td>11.1</td>
</tr>
<tr>
<td>Viewing Fulltext</td>
<td>30.0</td>
<td>3.9</td>
</tr>
<tr>
<td>Saving Fulltext</td>
<td>2.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Navigation</td>
<td>15.8</td>
<td>52.9</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Search tool / Time spent in phase</th>
<th>No training</th>
<th>Training</th>
<th>No training</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beginning</td>
<td>0.4</td>
<td>0.9</td>
<td>4.4</td>
<td>3.4</td>
</tr>
<tr>
<td>Searching</td>
<td>17.7</td>
<td>13.0</td>
<td>19.6</td>
<td>12.5</td>
</tr>
<tr>
<td>Viewing Results list</td>
<td>31.9</td>
<td>29.9</td>
<td>7.7</td>
<td>14.3</td>
</tr>
<tr>
<td>Viewing Metadata</td>
<td>7.7</td>
<td>2.4</td>
<td>9.6</td>
<td>6.2</td>
</tr>
<tr>
<td>Viewing Fulltext</td>
<td>26.0</td>
<td>34.1</td>
<td>4.1</td>
<td>3.8</td>
</tr>
<tr>
<td>Saving Fulltext</td>
<td>1.5</td>
<td>2.7</td>
<td>1.1</td>
<td>0.9</td>
</tr>
<tr>
<td>Navigation</td>
<td>14.9</td>
<td>16.7</td>
<td>53.4</td>
<td>52.5</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

First of all we can see that the Google users are generally faster to start their search. Training had the effect of helping Metalib users to start searching faster. We can see that while the users of Google Scholar spent most of their time viewing a results list or viewing an article in fulltext, the users of Metalib spent half of their time in the phase of navigation, thus giving them less time proportionally to view results lists or articles in fulltext. This was not particularly changed by training.
We can see that there is a kind of progression between the different phases. The user proceeds by first entering search terms and doing a search, the next phase is viewing the results list, next is the selection of an article title in the list that looks interesting. After the selection the user can proceed by viewing metadata about the article. In some cases the user proceeds directly to the full text of the paper. Naturally then is the viewing of the article in fulltext the next phase. If the viewing of the article text revealed that the article was indeed relevant to the user, then the user proceeds to the final phase of saving the article text.

Here we can see in number of events how the search proceeded in the different test conditions:

<table>
<thead>
<tr>
<th>Number of events</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique searches</td>
<td>86</td>
<td>92</td>
</tr>
<tr>
<td>Unique results lists</td>
<td>83</td>
<td>48</td>
</tr>
<tr>
<td>Selections of an article</td>
<td>110</td>
<td>52</td>
</tr>
<tr>
<td>Viewing article in fulltext</td>
<td>81</td>
<td>11</td>
</tr>
<tr>
<td>Saving article</td>
<td>20</td>
<td>7</td>
</tr>
</tbody>
</table>

We can see that the greatest difference is in the number of articles viewed in fulltext. The Metalib users only viewed a fulltext article 11 times while the Google Scholar users viewed fulltext articles 81 times.

Number of events

Another way of putting these data is to ask how many times a search results in the viewing of a results list? For Google we have 0.97, which means that 97% of the searches resulted in a new results list. For Metalib the corresponding ratio was 0.52. This means that only about half of the searches actually resulted in a results list, the rest either yielding a zero-result, or was interrupted by the user after some waiting time before the hit list was displayed on screen.

We can also ask how many articles were viewed per selection? We recall that a selection was defined as clicking on a specific article in the results list. For Google, 73% of such clicks resulted in an article in fulltext displayed on the screen. For Metalib this happened only in 21.2% of the cases.

The failing cases for Google Scholar were of two kinds, either...
there was a faulty link leading to an error message "The page cannot be shown", or the subject run into trouble when trying to get from metadata (for instance LIBRIS) to the fulltext. The failing cases for Metalib were most often due to problems getting from metadata to fulltext.

Finally we must ask how many articles were saved per viewed article? Google users were a little more selective in this sense and saved only 25% of the articles viewed, while Metalib users saved 64%.

The following table shows the ratios for all test conditions:

<table>
<thead>
<tr>
<th>Ratio</th>
<th>Google Scholar</th>
<th>Metalib</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique results lists per search</td>
<td>0,97</td>
<td>0,52</td>
</tr>
<tr>
<td>Fulltext articles viewed per selection</td>
<td>0,73</td>
<td>0,21</td>
</tr>
<tr>
<td>Articles saved per viewed article</td>
<td>0,25</td>
<td>0,64</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ratio</th>
<th>No training</th>
<th>Training</th>
<th>No training</th>
<th>Training</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique results lists per search</td>
<td>0,98</td>
<td>0,96</td>
<td>0,44</td>
<td>0,60</td>
</tr>
<tr>
<td>Fulltext articles viewed per selection</td>
<td>0,70</td>
<td>0,76</td>
<td>0,18</td>
<td>0,23</td>
</tr>
<tr>
<td>Articles saved per viewed article</td>
<td>0,20</td>
<td>0,28</td>
<td>1,00</td>
<td>0,50</td>
</tr>
</tbody>
</table>

We can see that the ratios for results lists per search and fulltext articles per selection ratios were indeed increased by training. More so for Metalib than for Google Scholar. However, the ratio of viewed fulltext articles per selection is still on a very low level for Metalib. Only 23% of the articles selected results in viewing a fulltext article.

Zero-results
Since the number of zero-results were so high for Metalib, we conducted a more detailed analysis of this.

Instruction eases the “zero-results” problem
The data showed that searches which yielded zero-results occurred far too often, particularly for the untrained students. The trained students encountered the same problem but only half as frequently. Looking closer at the searches which resulted in zero-results for the untrained group, we could see that there were two main reasons for the failure: language problems and phrase search problems.

Language
47% of the zero-result searches were Swedish language queries. Since no Swedish language database was cross searchable at the time of our test, this typically resulted in 0 results. Students
seemed to think, quite reasonably, that since the Metalib interface was in Swedish that it must be possible to search for material in Swedish as well. The need for clarification through instruction or other means was clearly there. While this problem does not exist for English language countries it is likely an issue in all countries where English is not the first language.

Phrase search  
Another 24% were searches for multiple keywords which failed often because the databases searched treated what was typed in as a phrase. This means that without instruction more than 1 out of every 4 searches was failing because students assumed that they would encounter the same search rules that they are used to from Google and other web search engines. A typical example of this was an attempt to search in the database Econlit for “telecommunication developing countries” via the Metalib interface which gives no results. If the search is properly divided up into telecommunication AND developing countries one finds over 200 references in Econlit.

Other zero results  
Other zero results (29%) could not be attributed to language or phrase search problems.

Usability problems  
From viewing the recordings several usability problems were noted. In this description these are interfoliated with user comments for clarity. So the usability problems described here are based in observations as well as on users comments in the open question section of the questionnaires. The usability problems are presented here in order of the different phases of
Beginning: Google Scholar

Google Scholar started directly. The interface prompts the user to start immediately by entering searchwords in the very dominant search textfield (Appendix A. Picture G1). A few users moved straight on to advanced search. This link is not dominant and you must essentially look for the link before it captures your attention.

A user comment was: “Very easy to search I did not have to make choices and whirl around among different points of entry”

However there were also users that would have preferred to be able to do more choices initially. One comment was: ”I did not like that I could not choose where I wanted to search, subject, databases etc”

In the advanced search function of Google Scholar (Appendix A. Picture G2) some users had problems understanding the meaning of the different selection fields. Some noted the lack of an option to re-sort results by year. Some students also wished they could save articles in a personal inbox for later scrutiny.

Beginning: Google Scholar: Metalib

In Metalib the users are immediately presented with a choice. They have to select which type of search they want to make (Appendix A. Picture M1). Most often they choose to start with a quick search. Depending on which type of search they have selected they can be presented with more choices before actually getting to the point of entering search words (Appendix A. Picture M2). Probably this initial set of choices accounted for the observed differences in the time spent in the Beginning phase. A comment was: ”I did not know where to start and I did not manage to add a database and search more than one so I could only search in one database and I think then Metalib misses its point”

Selecting databases

This was not an issue for Google Scholar users. Metalib users had trouble with this. It was unclear which of the databases that could be selected, and especially why some could be selected why others could not (Appendix A. Picture M3). A great many comments regarded this. It seemed that users had problems in understanding how the selection of databases worked.

One comment was: ”It is unclear what the purpose is of the functionality and the databases”

Another was: ”Why are there databases that can not be selected?”

Entering search terms

The Google Scholar users just entered the searchwords as they are used to do in Google. A surprisingly many times the first words were misspelled and they benefited from the functionality in Google Scholar that allowed them to immediatly select a
suggested correct spelling. The Metalib users commented on this, they missed this function.

**Waiting for the results list**

Google Scholar results lists were presented very quickly as was also reflected in the user comments (Appendix A. Picture G3). Metalib users had to wait for the result and were sometimes unsure how to proceed when the search had produced results in some of the databases searched but not all (Appendix A. Picture M4). Some users pressed the interrupt button at this stage, expecting to be able to view the results found so far. They were confused when the search was completely terminated.

A Metalib user commented on this: “Make it clearer that the user must not press "interrupt" when the search tool has found articles, because it then goes back instead of presenting what had already been found”

**Selecting results list**

Google Scholar users had always only one results list, whereas Metalib users were presented with one results list per database and figures of how many hits were found in each of them. The user then had to select which one of the lists that should be viewed first. There was also an option to see all hits. This presented a lot of options to the users.

One comment was: "There are too many clicks to see the result of a search”. These choices probably accounted for the longer time spent in navigation in this phase by the Metalib users compared to the Google Scholar users.

**Parallel searches**

Many users had the strategy of doing many searches in parallel. In Google Scholar this worked fine. They kept the old search and started a new one in a new window. They could then quickly shift between the different results lists. In Metalib the users also tried to do this, they did not want to wait passively for the search to finish but wanted to start a parallel search with other search terms. However in doing this they run into problems of navigating between the different searches and they did not understand how to get from one to another.

A comment was: "I could not do searches in parallel because automatically only one window was used”

**Navigation in the results list**

Metalib users wanted to have navigation buttons at the bottom of the results list. They had to scroll back to the top of the list to be able to go to the next page of the list.

**Presentation of the results list**

Some Google Scholar users liked that the results list gave a good overview of the search and that you got everything at once. However, some did not like the amount of text displayed under each link label. They either thought it was too much information or too little. Google Scholar users liked that they could see which links in the results list that they had already been following by the
Selection: from link label to fulltext

In the Google Scholar results list you could many times see whether a certain link label would take you straight to a pdf-file, but not always. The users wanted this. They did not want to have to click the link without knowing what would come. Most times a click on a link label from a list in Google Scholar caused the fulltext paper in pdf-format to be displayed on the screen. Sometimes the click resulted in the presentation of metadata. The users generally did not like this. They had to make a choice between similar looking versions of links to go on. If the metadata lead to for instance LIBRIS, the users often had problems finding out how to proceed to the fulltext.

In Metalib a click on a link label in the hitlist never resulted in a fulltext presentation. The users always had to struggle with the passage through the metadata space. The greatest problem here was to find the right link to proceed. The sfx-button was far from obvious to the users. The untrained users tried just about everything except it. Also the red arrow button in the LIBRIS section of the metadata were not tried by the untrained users. Actually, even some of the trained users forgot to use this link.

The results list disappeared

When a Metalib user had pursued a selection, it was sometimes problematic to find the results list again. This caused for navigation among different alternatives and frequently to the user redoing the search instead of finding the current results list. A comment was: It was difficult to come back to the results list", another comment was: "The results list disappeared"
Discussion

Students were polite

The students in this study were rather neutral in their comments regarding both search tools. Sometimes this was surprising. There were for instance some subjects that did not succeed in ever getting the fulltext content of an article on the screen when searching with Metalib and still wrote quite neutral comments about Metalib. Why was this so? One explanation may be that the test situation clearly communicated a fair and serious comparison between the two tools. The students were polite and really tried hard to write both positive and negative things about both tools.

Why was it a difference between the genders?

We saw an unexpected difference between female and male students regarding how many articles they saved during their search sessions. The males generally saving twice as much as the females. This of course cannot be generalized because of the small sample of test persons. Still, we may wonder, why in this particular sample of students did we get these results? One possible explanation that comes to mind is that male students generally have more computer experience than female students. This being partly an effect of males spending more time in their youth playing games and thus getting experienced in downloading and searching game-relevant information on the web. Another explanation is that the males in our study were a little more experienced with Google Scholar than the females.

This test was not intended to be a competition

This test was not intended as a competition, but rather an attempt to understand a little more deeply how the search process works for this group of students. Nevertheless the results undoubtedly points in favour of Google Scholar in all of our measures.

Are librarians biased?

One can ask whether this was expected or not. To our experience, many librarians often express a kind of intuitive dislike and/or mistrust of Google Scholar. The most common problem being a lack of documentation on what sources are searched and the fact that there are large gaps of data even for the sources that are covered.

While Metalib provides more thorough coverage in theory since it connects to native databases, in practice this was not at all the case. Limitations in the interface and the search syntax combined with the fact that students only got 30 results from each source and never took action to retrieve more resulted in the fact that one in no way searched effectively through the complete sources behind Metalib. The idea that Metalib’s coverage is better than Google Scholar’s is in practice highly questionable, based on the results we saw. Librarians clearly have a position to defend and the question is whether this position creates a bias towards tools such as Metalib compared to Google Scholar.
**Students Google habits affect expectations**

Students, on the other hand, have a different perspective than librarians. They are often in their 20’s and have grown up with internet and used Google as a daily tool for many years. We could see from their search behaviour that their Google habits were indeed strong and this clearly affected their expectations. What follows are some specific examples of these expectations:

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Misspelling</strong></td>
<td>Working with Google there is no need to be particularly meticulous with the correct spelling of words since the suggestions mechanism &quot;Did you mean…&quot; can always take you right. This means in interface terms that the cost of mistakes is very low, causing users to adopt a behaviour of experimenting and trying out many searches easily. This habit may have caused trouble when using Metalib which is definitely not tolerant to spelling errors.</td>
</tr>
<tr>
<td><strong>Speed</strong></td>
<td>Google searches are very fast while Metalib searches takes more time before the results list is visible. This means that the cost of failure in Google is very low, thus encouraging students to test many different searches. &quot;If it is not right then I can easily do another one.&quot;</td>
</tr>
<tr>
<td><strong>Entry of search words</strong></td>
<td>Searching in Google requires the user to enter some searchwords that will all be searched using the OR convention. In Metalib the students carried over this habit and run into problems because the words were interpreted as a sentence, generally giving a zero-result.</td>
</tr>
<tr>
<td><strong>Fulltext direct</strong></td>
<td>In Google you get the result directly when you select something in the results list. The students seemed to expect this also from the Metalib hit lists and were confused by the intermediate level of metadata that showed up.</td>
</tr>
<tr>
<td><strong>No care about databases</strong></td>
<td>Google users never have to care about databases. Their mental model is probably that there is a huge set of &quot;things&quot; on the internet that is being searched. Metalib confronts them with a new mind set, that different things can be found in different databases and that search terms and conditions may be different for different databases.</td>
</tr>
<tr>
<td><strong>A philosophic question: Hide the complexity or not</strong></td>
<td>Finally there is also a personality trait in search behaviour. Some people like to know all details and want control of what is going on &quot;under the hood&quot;. Some do not care about the detailed workings of things but just want it to work and do the job for them. We can see similar discussions regarding many other computer tools. Should you hide the inherent complexity to the user or let the user control it?</td>
</tr>
<tr>
<td><strong>Zen and the art of motorcycle maintenance</strong></td>
<td>This is essentially a philosophical question which were described at length in the famous boook &quot;Zen and the art of motorcycle maintenance&quot;</td>
</tr>
</tbody>
</table>
maintenace” by Robert M Pirsig.

The Mac PC divide

Also we could see reflections of this question in the debate between the preponderers of "Mac versus PC" in the 80-ies. This has in fact been a general issue of debate in human-computer interaction for many years. To sum up the content of this discussion you could say that if your audience is the masses you should stick to the later view, hide the complexity, if your audience is the specialist, then, let the user be in total control.

A tool for the masses?

An example of an interface to a very complex structure with millions of posts in different types of databases is iTune Music store. It uses innovative interface elements based on what is in interface terms called ”a multiple-pane selector” with extensions.

This interface may not be perfect but that it works is evident from the many millions of users that actually manages to download music, videos, e-books and podcasts every day from this site. This shows that it is indeed possible to design the user interface to a web-based tool that enables the masses to navigate and exploit material even if the underlying complexity is large.

If Metalib wants to be a tool for the masses, then it has to change

The logical questions then is, is Metalib intended for the masses or for the specialists. A definite answer to this question is needed to determine the changes that may be needed in the future.

ITunes Music store user interface

Are the problems with federated search

Determining this is well beyond the scope of our study, but the difficulties encountered by students in the study raises the
The question of federated searching; specifically, whether the problems of standardized search across a so large and growing number of heterogeneous resources are realistically surmountable.

Will it always be, as many students in our study found, a somewhat clumsy and complex tool weighed down by the technical challenges of mapping to so many varied sources.

It’s worth asking the question since the single repository solution (whether Google Scholar or some other) is likely to keep improving. Metalib and tools like it have also been improving of course, but much more is required of them in the coming few years or the user satisfaction gap between the two is likely to grow.
Conclusions

Is it Metalib or is it us? Metalib is a tool which libraries can customize to a certain extent and use in different ways. Therefore, it is difficult to know to what extent the results of this study can be generalized for Metalib users in general and which are just applicable to our implementation of Metalib, which as mentioned in the section "implementation" has certain limitations due to the fact that we use Metalib as part of a consortium. What we can state with certainty is that our results apply to our implementation and resources. Other institutions will have to decide for themselves how their situation may differ from our own and to what extent the conclusions and recommendations apply.

Cognitive search process The recordings showed that there were two general problem areas in the search process in Metalib. The first was to understand the functionality of the tool. This problem was reflected in the failure to produce results lists for many of the search attempts. The second problem with Metalib was the difficulties to get from the results list to a fulltext article. Students were unfamiliar with the metadata presentation and failed to find the right buttons to get to the fulltext. Many of the problems encountered during search can be attributed to the mismatch between user expectations that result from their long habit of using Google, and the poorly communicated hidden assumptions in the Metalib interface.

User satisfaction with the two search tools Questionnaire results show that students were not enthusiastic about either tool. This lack of enthusiasm can be seen in students' responses to the question #3 of the questionnaire “the search tool is likely to be my first choice for searching academic literature in the future”. Average results for each group were either neutral or slightly negative indicating that regardless of instruction neither of these tools provided a good enough initial experience to generate any excitement among students. Overall, students were slightly more satisfied with Google Scholar than Metalib. This is most noticeable in questions #4 and #7, where on average students “agreed” that Google Scholar was easy to use and that they found relevant results with the tool.

Problem areas in the search process: Metalib For Metalib the biggest problems involved getting started and navigating through the interface. This is can be seen in the time spent in different phases of the search, with students spending over 56% of their time in the “beginning” and “navigation” phases of their search as opposed to only 17% with Google Scholar. Another indication of the difficulty in getting started is the large number of searches with zero-results in Metalib (on average 42% for students without training and 20% for students with training). Finally the navigation problems were confirmed by the responses to the questionnaire where the most common negative
comments about Metalib related to interface problems and complexity.

Problem areas in the search process: Google Scholar

For Google Scholar, the biggest problem area was difficulty zeroing in on relevant results. This is supported by the results of the questionnaire where the most common student complaints related to imprecise searching and irrelevant results. It is also indicated by the relatively large percentage of time (31%) Google Scholar users spent in the phase of the search in which they were browsing through the results lists trying to identify relevant documents. Finally, the relatively low percentage of articles saved after viewing the fulltext (28% in Google Scholar compared with 50% in Metalib) may well be an indication that irrelevant results were a significant problem for Google Scholar users.

Effects of training on the two search tools

Training resulted in a positive impact on both tools, however the impact was quite different for each tool.

For Metalib the short instructional session helped students get started quicker as can be seen in the reduction of the time spent on the phases “beginning” and “entering search term” (21% on average without instruction, 16% with instruction). The fact that the amount of searches resulting in zero-results was reduced by half was also a strong indication that instruction was helping students getting started using the tool. However, the fact that students who had instruction still saved on average only 1.9 articles per session, compared to 3.1 for students using GS, indicates that students still had difficulties using Metalib effectively even after instruction.

In regards to Google Scholar, the most striking impact of training was a change in the type of articles saved. Users after training got 48% of their articles from peer reviewed journals compared to only 21% for Google Scholar users without training. This change in the type of articles saved could be due to the fact that instruction drew students’ attention to the SFX links present in Google Scholar which appear predominately next to academic journals as opposed to student papers or conference proceedings. Another indication of the positive impact of training was that the average student with training saved 3.1 articles in their Google Scholar session compared to 2.4 for students without training.

Comparing all groups of students (both Google Scholar and Metalib), students with training searching Google Scholar performed best in a few key areas. They saved the more articles, and more articles from peer reviewed sources, than their counterparts in other groups.

Positive and negative features of the tools were identified by
features of the two tools

the students in the questionnaire results and their comments are consistent with the analysis of articles saved and the analysis of time spent on different phases in the search process.

Metalib Positives
- Scope of the tool; covers in principal all a library’s online resources
- Organization of the resources into categories

In the open ended part of the questionnaire, students often praised Metalib’s scope and organization, particularly the placing of all electronic resources in categories. Verbally, some students gave comments indicating that Metalib gave the impression of an impressive academic resource. It seemed like a powerful tool to them, though often they felt they did not know how to use it.

Metalib Negatives
- Clumsy & complex search interface
- Inconsistent and non-standard search rules across databases

Many students found the interface to be too complex and difficult to use with some commenting that they did not know where to begin. The lack of articles found is partially the result of another major problem: non standard and inconsistent search rules across resources. It was clear from observing the searches that the tool did not match the expectations of the users when it came to how it searched.

Google Scholar Positives
- Simplicity and familiarity of interface
- Lots of results; large collection of documents to search

The fact that Google Scholar was simple to use and used familiar search rules was often praised by students. Some students also appreciated that it seemed to search in a very broad collection of documents.

Google Scholar negatives
- Too many irrelevant results
- Confusion resulting from inconsistency after the click

Predictably, students often had trouble getting to relevant results and cited this as a large drawback of the tool. There was also confusion over the inconsistency of the experience after the click. Students wanted more standardized information, especially abstracts for each document and a more consistent process for getting the fulltext of a document.

Overall usability of the two search tools

Usability here is defined according to the ISO 9241 standard as “The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.”

In the specific context examined in this study, that is students seeking material for their thesis, Google Scholar had higher usability than Metalib in the short search sessions that we examined. This is based on the fact that students using Google Scholar were more successful at finding articles, and in the case of
students with training, even found a higher percentage of
documents from high quality sources (peer reviewed academic
journals) when compared to counterparts searching Metalib. The
results of the questionnaire also support this conclusion with
students reporting a more satisfied experience with Google
Scholar particular in the areas of simplicity of search and finding
relevant documents. This being said, Google Scholar had some
functionality deficiencies including problems with irrelevant
documents and lack of precision searching which inhibited the
effectiveness and the satisfaction of the students using them as
evidenced by the only lukewarm response students gave Google
Scholar in our questionnaire.
Recommendations

Neither tool should be first line of defense for new students

Libraries can offer their users many different ways to search. However, they still have to make the decision about which option is going to be “the” primary way for students searching for articles. This primary option is typically prominently displayed on the first page of a library web site and in many cases it is a link which leads students to a database page where they can retrieve a list of databases which can be limited by subject.

Google Scholar and Metalib are two alternatives that library’s could use as their new primary option for new students. However, results from our study indicate that using either of these tools as the primary option, particularly for new students would most likely frustrate them (in the case of Metalib) or provide them with an only mediocre search experience (in the case of Google Scholar).

In essence, we saw nothing in our study to indicate that providing a link to Metalib’s meta search screen or quick search screen would provide students with a better experience than the current solution used by Stockholm University, which is providing a link to a list of databases which can be viewed by subject. This is not to say that librarians should not inform or instruct students in these tools or provide links to the search tools somewhere on the website. Of course, they should when appropriate. The recommendation here merely applies to the primary path to research or the “first line of defense” which is typically prominently displayed on a library web page.

So what should “the first line of defense” be?

One option is simply to stick with the “tried and true” until one of these tools (or another option) becomes good enough to replace it. There are some other alternatives to consider which include using Metalib’s deep linking capabilities:

1. Provide students with a single quick search box built into the library web page which is linked to a “quick search group” consisting of the libraries ten most popular databases. By providing the quick search box on the library web page the library takes away a lot of the confusion encountered when first using Metalib. No decisions have to be made by the student, they simply type in a search. Technically, this can be accomplished using a “deep link” into Metalib sending a query to a predefined quick search group. If the quick search group includes Artikelsök, then the search box would return results for both English and Swedish queries. This option does not eliminate all problems however, since students still end up in the Metalib results list from which we saw that students without training had a lot of difficulty navigating to the fulltext. [For more information on deep linking, look in the Portal Wiki website or refer to this document from Yale University http://www.library.yale.edu/lso/databaseadmin/metalib/metalib.html]
After providing this simple search alternative, a more complex alternative can be offered. One possibility is the standard list of databases. These can be enhanced by using Metalib deep linking to generate lists of databases which can be limited by subject, database type and any other appropriate fields that exist in Metalib. For example, students could retrieve a list of online reference works in the humanities.

**Metalib valuable as an administration tool**

In addition to the suggestions above for using Metalib’s “deep linking”, Metalib is also clearly valuable as a database administration tool and all libraries in the Swedish Metalib consortium will likely benefit from this aspect of the tool, regardless of whether or not they choose to rely on Metalib’s Meta search or Quick Search screen as a primary search tool.

**Google Scholar with SFX should be included in library instruction**

The fact that instruction increased the amount of “peer reviewed” material students found in Google Scholar was a surprise to the designers of this study and should make libraries consider including it in their instructional programs. This study is a strong indication that librarians should not assume that Google Scholar is so simple to use that merely pointing out its existence to students is enough. It seems worthwhile to spend time during instructional sessions to go over the SFX capabilities in Google Scholar to students since it seemed to result in an increase in the quality of results that they found.

**Specific Recommendations for Improvements in Metalib**

We also want to add some recommendations for improvements in Metalib.

**Help students find the Swedish resources:**

In our study one major stumbling block was the confusion over if and where one can search for Swedish language material in Metalib. This problem has been alleviated somewhat by the fact that Artikelsök is now cross searchable and can be included in all the “quick groups” that libraries create. However, libraries need to be aware that this is a big issue for students and provide a clear indication of how to find Swedish language resources in Metalib. Simply informing students that “they are in there somewhere” is not enough. One possible solution is to go in to the Metalib administration screen and fill out the language field of all non-English databases. Once that is done, a library could use the following “deep link” to provide students with a list of all Swedish language databases and could incorporate that link appropriately on their web page (http://samsok.libris.kb.se/V/I?func=find-db-1-locate&mode=locate&F-WLN=SWEDISH&restricted=all)

**Work towards Google like simple search**

Our study showed that almost half of searches launched in Metalib by users without training resulted in 0 results and a large part of the reason was the expectation that a search was Google-like in nature, in other words keyword searching with quotation marks used to indicate a phrase. Instead Metalib often uses a default phrase search. The result is a disaster. Libraries need to work with Libris and Fujitsu to do whatever
possible to change this discrepancy between student expectations and search rules in Metalib otherwise the product will remain seriously flawed.

Back button fiasco
The fact that the browser’s “back” button often does not work when using Metalib may seem like a trivial issue, however it often was the issue that caused frustration with students and forced them to navigate using the links inside the Metalib interface which they found confusing. The minimum response to this issue is to address it specifically in library instruction or through some other means, telling students that the back button cannot be relied on in Metalib and demonstrating how one navigates using the links in the interface. Examples of when students had trouble navigating included going from the results list back to the search screen and navigating from the full metadata post, back to the results list [note: Libris has already improved some of the navigation link terminology and this will most likely improve students understanding, however, the basic fact that the back button cannot be relied on should still be addressed explicitly during instruction.]

Show ALL databases within a category by default
Students need to see “ALL” databases within a category by default when using meta search. For example, when coming to the Metalib search screen, General databases are chosen by default. Under General databases there are several sub categories. Libraries need to change their interface so that the sub-category ALL is the first one that comes up rather than a very specific sub-category which merely happens to come first in alphabetical order. Instruction on how to resort the sub-categories so that “ALL” comes up first can be found in the manual: “Administration av kategorier” on the Portal Wiki web site.

Make a very broad “general” quick group
Students using Metalib tended to find too few articles or no articles at all when searching. Therefore, if a library has created a general “quick group” they should be sure to include as many major databases as possible, erring on the side of including too many rather than too few in order to ensure that the prospect of getting some results is increased. Of course, any available Swedish language databases should be included in this group as well.

Ability to cross search across subjects:
Several students were under the impression that one could select databases using Metasearch, then navigate to other categories, select more databases and finally search in all the databases that they have selected. The result was that they lost several of the databases they had selected when hopping from category to category. Since several students seemed to want to metasearch across categories, the ability to select databases to from several different categories seems like a reasonable feature to suggest for a future version of Metalib.
Acknowledgments

All students
We would like to thank all the students that participated in this study who shared their personal experiences of the two search tools by most notoriously wrote down so many insightful comments.

Librarians at the Economicum Library at Uppsala university
We also like to thank the librarians at the Economicum Library at Uppsala university, in particular Jenny Betmark and Christina Hagerlid who helped in recruiting test persons and also took care of the waiting test persons.
Appendices

Appendix A  Screenshots of the two search tools
Appendix B  Graphs of the search process
Appendix C  Students answers to open questions
Appendix D  Questionnaire form
Appendix E  Written information to the participants
Appendix A. Screenshots of the two search tools

Picture G1  Google Scholar. Beginning. Start screen
Picture G2  Google Scholar. Searching. Entering search terms in the search box
Picture G3  Google Scholar. Results list
Picture G4  Google Scholar. Example of metadata
Picture G5  Google Scholar. Example of fulltext
Picture G6  Google Scholar. Saving fulltext article
Picture G7  Google Scholar. Advanced search form

Picture M1  Metalib. Beginning. Start screen
Picture M2  Metalib. Searching in Quick search search box
Picture M3  Metalib. Number of results found
Picture M4  Metalib. Results list with sfx-buttons
Picture M5  Metalib. Metadata with sfx-button
Picture M6  Metalib. Metadata Libris with red arrow button
Picture M7  Metalib. Fulltext
Picture M8  Metalib. Saving fulltext article
Picture M9  Metalib. Metasearch and selection of databases
Picture M10  Metalib. Database search
Stå på giganters axlar
Stå på giganters axlar

Google Hemsida - Om Google - Om Google Scholar

©2006 Google

Picture G2   Google Scholar. Searching. Entering search terms in the search box
Understanding mobile contexts

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Abstract Mobile urban environments present a challenge for context-aware computers because they differ from fixed indoor contexts such as offices, meeting rooms, and lecture halls in many important ways. Internal factors such as tasks and goals are different—e.g., factors such as social resources are dynamic and unpredictable. An empirical, user-centric approach is needed to understand mobile contexts. In this paper, we present insights...
support design. Consequently, there have been doubts about whether the entire concept is of any use [5, 7].

The demand for a new, empirical approach has been noted. For example, Dourish distinguishes between two strands of empirical context-aware computing research. The first is informed by research on physically based interaction and augmented environments. The second attempts “to develop interactive systems around understandings of the generally operative social processes surrounding everyday interaction” [4, p. 231].

The majority of empirical research falling under the first strand has mainly been concerned with fixed indoor contexts (e.g. offices, meeting rooms, and lecture halls). Perhaps because such settings appear to be static, the researchers have tried to create rigid taxonomies and general “all-embracing” definitions of context—with negligible success. Technological advances have largely driven this branch of research. As a result, the viewpoint of the end-users has been ignored (see [9]). When research has been carried out in a user-centred way (Dourish’s second branch), it has focussed on different kinds of work contexts and mobile workers. For example, Luff and Heath’s [10] analysis of different kinds of mobilities and their relations to collaborative work together with Perry et al.’s [11] study of the everyday nature of mobile busi-

especially in the rapid change of contexts in everyday urban navigation. How are mobile contexts actively created and upheld by people’s interactions with other people, with available technology, and with the outer surroundings of their actions? In addition to the user-centeredness, this study emphasizes two points. First, our interest is confined specifically to context changes occurring on the move in urban public and semi-public places (typically, somewhere between home, leisure activities, and work). In contrast to previous work, which has concentrated on restricted areas such as museums, offices, or university campuses, we are interested in the interplay between dynamic context-changes, moving people, and their actions. Second, unlike previous research on mobility, e.g. [10, 11], we are specifically interested in the majority of people—the elderly, single mothers, and youngsters—instead of focussing on businesspeople or researchers as usual.

3.1 Background of this study

This study was part of a strategic design research project that envisioned new concepts for selected target groups. Understanding their typical ways of moving around the
Picture G6  Google Scholar. Saving fulltext article
Google Scholar. Avancerad sökning form
Samsök Portalen

Här kan man söka artiklar, avhandlingar, böcker, tidsskrifter, osv...
Samsök är en ingång till biblioteksresurser som databaser, kataloger, e-böcker och e-
tidsskrifter. Den möjliggör samsökning över många resurser samtidigt och i många fall
erbjudar tillgång till hela texten av en artikel eller dokument.

Man kan börja på olika sätt:

Snabbsök
Sök bland grupper av förvalda databaser

Metasökning
Sök bland databaser som du väljer ut själv

Databaslistan
Hitta en specifik databas

E-tidsskriftslistan
Hitta en specifik e-tidsskrift
Picture M2  Metalib. Searching in Quick search search box
Resultat av Snabbsökning

Sökning på "completed contract" i "Ekonomi"

<table>
<thead>
<tr>
<th>Databasens namn</th>
<th>Status</th>
<th>Hittade</th>
<th>Hämtade</th>
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</thead>
<tbody>
<tr>
<td>Business Source Premier</td>
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<td>30</td>
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<td>Emerald Fulltext</td>
<td>Search Failed</td>
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<tr>
<td>Social Sciences Citation Index (ISI)</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>EconLit</td>
<td>Search Failed</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Picture M3  Metalib. Number of results found
<table>
<thead>
<tr>
<th>Rank</th>
<th>Title</th>
<th>Authors</th>
<th>Journal/Publication Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Completed contract method to stay</td>
<td></td>
<td>Accountancy, Vol. 117, Issue 1234, p.87</td>
</tr>
</tbody>
</table>

**Picture M4: Metalib. Results list with sfx-buttons**
Nicer Energy, LLC., Naperville, Illinois has signed an exclusive two year agreement to provide natural gas and electricity to the members of the Metropolitan Chicago Healthcare Council (MCHC) and the Illinois Hospital & HealthSystems Association (IHHA). Nicer Energy is a joint venture between Nicer and Dynegy that offers natural gas, electricity, and energy-related services to industrial, commercial, and residential customers in the Midwest. Dynegy is one of the largest wholesale energy suppliers of natural gas, electricity, propane, and fuel oil in North America.

Fentress Bradburn Architects Ltd., Denver recently completed The David Skaggs Research Center, Boulder. This new, 372,000-sq. ft. federal office building is the headquarters for the National Oceanic & Atmospheric Administration’s (NOAA) Boulder, Colorado Research Laboratories. The facility consolidates 1,035 employees who were previously divided among five buildings on two campuses.

Ground has been broken in McLean, Virginia for 1600 Tysons Boulevard, a 13-story, 300,000-sq. ft., Class A tower designed by Weihe Design Group, PLLC (WDG). The new office tower is the third office building in The Corporate Office Centre at Tysons II, a five million-sq. ft., multi-phased, mixed-use complex developed by Lerner Enterprises.

Bellevue, Washington-based McCarthy completed on schedule the $15 million Millennium Corporate Park Phase I in Redmond, a development of Bentall U.S. L.L.C. of Bellevue. Due to the success of the first phase, McCarthy has been awarded Phase II which will be a mirror image of the three, multi-story buildings in Phase I.

Ballinger, Philadelphia has announced the completion of Three Franklin Plaza, SmithKline Beecham’s new, $36 million office building in Center City, Philadelphia. The 215,000-sq. ft. curved, glass building is currently eight floors but has the potential to expand to vertically to 16 stories. This project represents
Picture M9  Metalib. Metasearch and selection of databases
Picture M10  Metalib. Database search
Appendix B. Graphs of the search process

Explanation of the graphs:

With the help of these simplified graph we can explain how to read the graphs from the study.

In the example graph above we can see the search process of a person searching during ten minutes. The x-axis is the time in minutes. We can see that the person starts to do the first search after 1 minute. After finishing the entering of search terms at 2 minutes the person is viewing the results list for one minute, and then do another search. This search does not produce any results list. The person is doing some navigation for 2 minutes. Then another serach is made. This leads to first viewing of metadata at 7,5 minutes, to viewing fulltext at 8 minutes, and finally to the saving of the fulltext at about 8,5 minutes.

The lower graphs show the number of hits in the results list. The first search resulted in a results list of 4 hits. The second search at 7 minutes resulted in a list of 560 hits.
 Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
TIME SPENT IN DIFFERENT PHASES OF SEARCH

GOOGLE SCHOLAR TRAINING (ID=TG9G)

PHASE
- Saving Fulltext
- Viewing Fulltext
- Viewing Metadata
- Viewing Results list
- Searching
- Beginning
- Navigation

NUMBER OF HITS

Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
TIME SPENT IN DIFFERENT PHASES OF SEARCH

GOOGLE SCHOLAR TRAINING (ID=TMIG)

PHASE
- Saving Fulltext
- Viewing Fulltext
- Viewing Metadata
- Viewing Results list
- Searching
- Beginning
- Navigation

NUMBER OF HITS

Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
TIME SPENT IN DIFFERENT PHASES OF SEARCH METALIB NO TRAINING (ID=NG5M)

PHASE
- Saving Fulltext
- Viewing Fulltext
- Viewing Metadata
- Viewing Results list
- Searching
- Beginning
- Navigation

NUMBER OF HITS

Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
TIME SPENT IN DIFFERENT PHASES OF SEARCH METALIB TRAINING TM1-M

PHASE
- Saving Fulltext
- Viewing Fulltext
- Viewing Metadata
- Viewing Results list
- Searching
- Beginning
- Navigation

NUMBER OF HITS

Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Nygren, Haya, Widmark Usability evaluation of the two search tools Metalib and Google Scholar
Appendix C. Students answers to open questions

STUDENTS ANSWERS TO THE OPEN QUESTIONS:
“What I liked about this search tool was…”
“What I did not like about this search tool was…”

WHAT THE STUDENTS LIKED ABOUT GOOGLE SCHOLAR

Google Scholar  Ease of use
"Enkelt"
"Enkelt gränssnitt"
"Lätta att använda"
"Lätt att använda"
"Lätt att söka i"
"Enkelt och bra sökverktyg"
"Enkelt att använda"
"Enkelheten"
"Sögränssnittet känns smidigt Mycket enkelt interface - går inte att göra fel"
"Enkelt men funktionellt gränssnitt"
"Välj att lätt att söka. Jag behövde inte välja och "irra omkring" mellan olika ingångar"
"Behöver inte välja databaser, osv"
"Bra att använda som startredskap"
"Trots att man inte hade fått någon utbildning i det gick det bra."

Google Scholar  Speed
"Sökmotorn är snabb"
"Snabb"
"Snabbt"
"Snabbheten"
"Snabbt och söker på många ord oavsett ordföljd"

Google Scholar  Familiarity
"Enkelt, likt vanlig Google, snabb"
"Enkelt. Använd Google förut så man visste vad man skulle komma."
"Man känner igen det från Google, man är van vid utseendet"
"Liknar Google-hög igenkännning"
"Välj att lätt att använda pga att det liknar vanliga Google"
"Välj att lätt att använda pga att det liknar vanliga Google"
"Påminner om "vanliga" sökinstrument, ej artikelsök"

Google Scholar  Hit list / results
"Välj att lätt och överskådligt. Fick upp allt på en gång."
"Många träffar, man fick fram mycket information"
"Många träffar, snabb tillgång till mycket info"
"Många träffar och inte enbart de man brukar få då man söker i tidskriftsdatabaser"
"Det kändes som den rangordnar träffarna bra"
"Lättanvänt och man får mycket relevanta träffar. Bra sökmotor."
"Jag fick en hel del mycket relevanta träffar"
"Fick upp många relevanta träffar"
"Det gick att hitta några artiklar"
"Att man får ett stort antal träffar och sen har möjlighet att hitta de mest relevanta sidorna med hjälp av specifika ord som man lägger till sökningar"
"Finns mycket"
"Att den ger inte överdrivet många träffar"
"Fick upp många relevanta träffar"

Google Scholar  
Multiple Language Content

"Att man kan söka på både svenska och engelska"
"Svenska"

Google Scholar  
The hit list

"Såg relativt tydligt var artiklarna kom ifrån"
"Vetenskapliga artiklar som gav en överblick över tidigare forskning med samma teori grund"
"Bra att pdf versioner av artiklar (och inte bara ett abstract) är kopplade till databasen"
"Oftast står det om det är en pdf fil så att man vet vad man kommer till"
"Sedan gillar jag findit länken som fanns på vissa träffar, tyvärr fungerade den inte alltid"
"Bra att man ser vad man tidigare varit inne på"

Miscellaneous

"Deras citat träffar"
"Hittade en del att använda & lära mig"
"Kan söka hemifrån"
"Ju fler ställen att leta på, desto bättre!"
WHAT THE STUDENTS DID NOT LIKE ABOUT GOOGLE SCHOLAR

---

**Google Scholar Search queries**

"Vet ej hur sökorden ska skrivas in, man får chans a lite"
"Svårt att formulera sökfrågor som gjorde att jag fick upp det jag sökte efter"
"Att du inte kan välja var du vill söka (inom vilka ämne, vilka databas osv)"
"Svårt att hitta relevant material men det beror nog på vad exakt man söker på för ord"

---

**Google Scholar Advanced search**

"Vid avancerad sökning kändes det inte helt lätt att förstå vad det var de olika fälten exakt gjorde med orden jag skrev"
"Åmneskategoriiseringarna i avancerad sök var mycket breda"
"De avancerade sökalternativen var ej så bra, t ex om man bara vill avgränsa till sökning på svenska"
"Det var svårt att göra en avancerad sökning om man inte vet en författare eller tidskrift att söka i"
"Deras "advanced search" alternativ tycktes inte innehålla alternativet "peer reviewed", dvs att sökträffarna ska vara akademiskt "godkända"

---

**Google Scholar Functionality**

"Den var lite för begränsad. Ibland är det bra med lite lösa träffar som kanske kan leda till någon stor infokälla"
"Kunde ej bestämma ordning på träffarna efter årtal osv"
"Det är möjligt att det fanns, men jag såg ingen funktion som möjliggör att spara dokumenten. Ingen slags "online inbox" för senare granskning"

---

**Google Scholar Irrelevant hits**

"För många irrelevanta träffar"
"Många träffar som är ej relevanta."
"Relativt mycket irrelevanta länkar"
"Irrelevanta länkar högt upp i ordningen"
"Som alltid när man söker på internet var det alltför många irrelevanta träffar, och man fick leta igenom mycket för att hitta några små guldkorn"
"För många orelevanta träffar"
"Det kom upp väldigt många träffar men med ett ämne så pass snävt som mitt gör det inte så jättemycket. Jag kan tänka mig att det är värre för andra ämnen"
"Många felträffar och uppsatser på ämnen som berörde det jag sökte men med annat syfte"
"Svårt att få relevanta träffar"
"Om Man inte vet exakt vilket sökord man ska söka på (som t ext ett namn på en specifik modell) så får man upp väldigt många träffar som inte är relevanta"
Google Scholar
Quality of hits
"Det finns ingen kategorisering av verken"
"Jag vet inte vilka artiklar de har tillgång till vad det är för "kvalitet" det vet jag när jag söker på IEEE eller ACM"
"Mycket info från källor jag aldrig hört om"
"Vissa sidor fanns inte längre"
"Att man måste specifisera sök[unreadable] för att få relevanta träffar i mitt område"
"Vet inte vilka database som Google plockat infor ifrån. Bör sökningen kompletteras med sökning i andra databaser?"
"Kan man lita på det som finns på Google?"
"Ville veta mer om böckerna som kom upp men med mertid hade det kunnat göras"
"Just det material jag sökte kunde jag inte hitta alls"
"Vet faktist inte riktigt. Har en positiv bild av Google Scholar"
"Ofta kom man också till recensioner av böcker"

Google Scholar
Language
"Förstår inte riktigt hur stor skillnad det blir vid sökning mellan svenska & engelska"

Google Scholar
Need for instruction
"Vore bra med en utbildning i hur man använde sökverktyget på absolut bästa sätt, då skulle det ge ännu mera."

Google Scholar
The hit list presentation
"Lite mycket text att titta igenom under rubrikerna"
"Skulle behövas mer text under länken så man slipper klicka på onödiga länkar"
"För lite info eller abstrakt på sökträffarna"
"Lite större abstract i träfflistan så man slipper gå in på länken"
"Man vet ej om man kommer direkt till en artikel eller till en hemsida där artikeln ligger."
"Visste inte vad jag skulle få upp när jag klickade på en länk"
"Inga Abstracts"
"Olika ingångar till artikeln"
"Länkar till reklamsidor där man kan köper böcker, ej intressant"
<table>
<thead>
<tr>
<th>WHAT THE STUDENTS LIKED ABOUT METALIB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Metalib</strong></td>
</tr>
<tr>
<td><strong>Ease of use</strong></td>
</tr>
<tr>
<td>&quot;Bra gränssnitt&quot;</td>
</tr>
<tr>
<td>&quot;Tydligt. Inte massa plotter.&quot;</td>
</tr>
<tr>
<td>&quot;Bra uppdelning på hur man söker i databaser, artiklar, mm&quot;</td>
</tr>
<tr>
<td>&quot;Relativt tydlig sökning.&quot;</td>
</tr>
<tr>
<td>&quot;Bra uppställt. Lätt överskådligt.&quot;</td>
</tr>
<tr>
<td>&quot;I stor utsträckning självisänderande&quot;</td>
</tr>
<tr>
<td>&quot;Bra att åskådliggöra vilka databaser som man söker i&quot;</td>
</tr>
<tr>
<td>&quot;Att det är positivt att man kan söka på många ställen samtidigt och att det är relativt enkelt att använda&quot;</td>
</tr>
<tr>
<td>&quot;Tydligt vilka databaser man söker i&quot;</td>
</tr>
<tr>
<td>&quot;Många databaser&quot;</td>
</tr>
<tr>
<td>&quot;Lätt att ta sig fram till sitt huvudämne (dvs i mitt fall statistik) för att sedan söka det delämne jag är intresserad av&quot;</td>
</tr>
<tr>
<td>&quot;Pålitligt och bra upplagt&quot;</td>
</tr>
<tr>
<td><strong>Metalib</strong></td>
</tr>
<tr>
<td><strong>Search functionality</strong></td>
</tr>
<tr>
<td>&quot;Att den har olika kategorier så att man kan välja en kategori man är intresserat av och i den kategorin hitta relevanta tidskrifter som man annars inte visste fanns&quot;</td>
</tr>
<tr>
<td>&quot;Direkt kopplat till Libris&quot;</td>
</tr>
<tr>
<td>&quot;Att man kan välja sökområde specifikt&quot;</td>
</tr>
<tr>
<td>&quot;Möjligheten att inkludera/exkludera databaser i mina sökningar&quot;</td>
</tr>
<tr>
<td>&quot;Att man kan välja om man vill söka i databaser eller tidskrifter&quot;</td>
</tr>
<tr>
<td>&quot;Länkade till en bra databas&quot;</td>
</tr>
<tr>
<td>&quot;Kändes bra med alla sökmöjligheter&quot;</td>
</tr>
<tr>
<td>&quot;Väl avgränsade sökalternativ&quot;</td>
</tr>
<tr>
<td><strong>Metalib</strong></td>
</tr>
<tr>
<td><strong>Search in many databases</strong></td>
</tr>
<tr>
<td>&quot;Det verkar som om den samlar alla biblioteksresurser (vilket också namnet antyder)&quot;</td>
</tr>
<tr>
<td>&quot;Bra att man kan söka i flera databaser samtidigt&quot;</td>
</tr>
<tr>
<td><strong>Metalib</strong></td>
</tr>
<tr>
<td><strong>Organisation</strong></td>
</tr>
<tr>
<td>&quot;Det var mycket bra organiserat dvs alla databaser var uppdelade i olika kategorier&quot;</td>
</tr>
<tr>
<td>&quot;Den var väldigt strukturerad och den söker på väldigt många relevanta platser.&quot;</td>
</tr>
<tr>
<td><strong>Metalib</strong></td>
</tr>
<tr>
<td><strong>Relevant hits</strong></td>
</tr>
<tr>
<td>&quot;Jag lyckades hitta artiklar som var intressanta (men visste inte hur man begränsade sökningar - det blev ett stor &amp; spretiga material)&quot;</td>
</tr>
<tr>
<td>&quot;Abstract= mycket bra&quot;</td>
</tr>
<tr>
<td>&quot;Fick intressanta träffar och snabb tillgång till olika&quot;</td>
</tr>
</tbody>
</table>
"Det fanns mycket texter på engelska för den som vill ha det och man får mycket träffar."  
"Dessutom fick jag inte för många orellevanta träffar"  

<table>
<thead>
<tr>
<th>Metalib Fulltext</th>
<th>&quot;PDF artiklar&quot;</th>
<th>&quot;Alla dokument man hittar är i ett bra format&quot;</th>
<th>&quot;Att så många artiklar finns i databaserna, om man hela tiden bara hittar abstract så tröttar man rätt fort&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metalib Learning required</td>
<td>&quot;Bra när man lärt sig hur det funkar&quot;</td>
<td>&quot;Med lite mer träning tror jag att det fungerar bättre&quot;</td>
<td>&quot;Överskådligt när man väl har lärt sig&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;Jag känner att om jag skulle fått använda det lite mer så skulle det gå mycket bättre, det känns som att det finns mycket potential i verktyget&quot;</td>
</tr>
<tr>
<td>Metalib Miscellaneous</td>
<td>&quot;Verkar vara mer avancerat än Google&quot;</td>
<td>&quot;Finns mycket information (om man nu kan hitta den)&quot;</td>
<td>&quot;Verkar genomarbetat och det går att finna mycket relevant och bra information om det ämne man söker&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;Inga brutna länkar&quot;</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>&quot;Färgsättning på gränssnitt&quot;</td>
</tr>
<tr>
<td>WHAT THE STUDENTS DID NOT LIKE ABOUT METALIB</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metalib</strong> Beginning</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Man vet inte riktigt var man skall börja och jag lyckades inte heller att lägga till en databas och söka i flera utan kunde bara söka i en i taget och då förlorade Samsök sin poäng.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metalib</strong> Difficult to use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Det var svåranvänd och komplicerat.&quot;</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>&quot;Det var inte helt lätt att förstå hur man söker effektivt&quot;</td>
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</tr>
<tr>
<td>&quot;Den var otydlig&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Krånglig att förstå om den sökte på alla ord, det gick inte att förstå varför den inte kunde hitta något&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Metasökningen är nog egentligen bra men svårförståelig&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Rörig, för definerade kategorier&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Känns inte som en färdig produkt&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Kan nog ta en liten stund att vänja sig vid funktionerna för en person med lite datorvana.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Att vissa funktioner skulle man inte veta hur man skulle använda utan tidigare undervisning&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Metalib</strong> Difficulties using the search functionalities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Förstod inte riktigt varför jag inte hittade lika mycket som i Google. Måste vara någon annan typ av sökning som jag inte var van vid. Skulle behövt mer utbildning.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Oklart vad syftet med olika funktioner/databaser är&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Kan nog ta en liten stund att vänja sig vid funktionerna för en person med lite datorvana.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Artiklar var svårt att hitta då jag inte visste vilken tidskrift jag skulle använda&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Kunde inte välja ur lista i sök databas var tvungen att veta namn eller del av namn för att hitta databas. Samma med e-tidskriften&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Svårt att veta hur man anger sökord&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Att vissa funktioner skulle man inte veta hur man skulle använda utan tidigare undervisning&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Att man inte kan samsöka alla baser. Tror inte att man annars använder sig av dem som inte går att samsöka&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Att man var tvungen att söka på ämnen vilket var svårt eftersom jag leter väldigt tvärvetenskaplig artiklar och var tvungen att söka på samma ord inom många olika ämnen.&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Jag hade lite svårt att söka i vissa databaser&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Att det är lätt att missa att fylla i databaser&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Artiklar var svårt att hitta då jag inte visste vilken tidskrift jag skulle använda&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&quot;Kunde inte välja ur lista i sök databas var tvungen att&quot;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
veta namn del av namn för att hitta databas. Samma med e-tidskrifter"
"För dåligt med databaser, vissa ämnen hade 0 vilket ger ett oseriöst intryck"
"På ett sätt bra att man kan välja vilka databaser man vill söka i, men samtidigt irriterande då man inte hittar något trots att det borde finnas...kanske jag gjorde fel." 
"Metasökningen fanns bara två databaser i mitt ämne vilket jag inte tror stämmer"
"Varför finns det med databaser som inte går att bocka för?"
"Litar inte på resultatet"
"Jag hittade inte vad jag sökte efter"

<table>
<thead>
<tr>
<th>Metalib</th>
<th>Hitlist</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Att det inte går att sortera träffar efter relevans utan bara på år&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Inget förslag på alternativ stavning&quot;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metalib</th>
<th>Need for instructions</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;För lite hjälp&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Det var bra men jag skulle behöva mer utbildning inom hur man bäst tillämpar&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;En introduktion till hur man ska söka vora bra&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Jag tror inte att jag skulle hantera Samsök lika effektivt om jag inte hade fått instruktioner innan&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Den var lite för avancerad. Det skulle krävas lite info om hur man söker innan, man ger sig på denna program.&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Det var mycket detaljer och jag missade kanske relevant information men det beror nog på att jag inte exakt vet hur man söker i Samsök&quot;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metalib</th>
<th>Searchfunctionality</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Att man inte kan samsöka alla baser. Tror inte att man annars använder sig av dem som inte går att samsöka&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Kunde inte välja att söka i flera ämnes databaser i snabbsökning&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Kunde ej göra sökningar parallellt eftersom automatiskt användes endast ett och samma fönster&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Kunde inte välja att söka i flera ämnes databaser i snabbsökning&quot;</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Metalib</th>
<th>Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Inte tillräckligt intuitivt&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;För många klick för att se en sökning&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Lite klumpigt interface. Ibland ologiskt vilka knappar man ska trycka på. Vill slippa AND frasen, gör som på Mediearkivet istället&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Otydligheten i länkar och ikoner&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Att träfflistan försvann&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Varför finns det + knappar?&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Bläddrade ner söksidan av sig själv&quot;</td>
<td></td>
</tr>
<tr>
<td>&quot;Sök knappen kanske skulle flytta till att ligga under&quot;</td>
<td></td>
</tr>
</tbody>
</table>
"Tydliggör att man inte ska trycka "avbryt" när sökmotorn hittar artiklar, då går den tillbaka istället för att "nöja sig" med det som redan laddats klart."

"Sidorna såg lite väl lika ut. Svårt att veta om man sökt på samma plats tidigare"

"Back knappen fungerade ej"

"Svårt att komma tillbaka till resultslistan"

"Att träfflistan försvann"

"Att man inte kunde gå fram och tillbaka längst ner på träffsidorna"

"Svårt att gå tillbaka till söklistan"

"Att det var relativt svårt att få fram hela artikeln"

"Det var tydligt, men just att få upp fulltext var svårt att hitta."

"S-Knappen är inte lättförstålig."

"Att man inte kan använda svenska ord"

"Jag saknade svenska databaser"

"Enbart på engelska"

"Jag hade svårt att hitta texter på svenska."

"Jag hade problem att nå vissa databaser"

"Långsamt"

"Ef tersom jag inte hittade relevant information är det svårt att uppfatta systemets nackdelar."
Appendix D. Questionnaire forms
<table>
<thead>
<tr>
<th>Namn</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nyå</td>
<td>☐ A ☐ B ☐ C ☐ D ☐ Doktorand ☐ Övrigt</td>
</tr>
<tr>
<td>E-post</td>
<td>☐ Aldrig använt ☐ Sällan använt ☐ Använd många gånger</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instämmer helt</th>
<th>Instämmer</th>
<th>Varken eller</th>
<th>Instämmer inte</th>
<th>Instämmer inte alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitt intresse av Google Scholar är mycket positivt</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag kommer att rekommendera Google Scholar till mina kolleger</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Google Scholar kommer att bli mitt främsta verktyg att söka vetenskapligt material med i framtiden</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Google Scholar är lätt att använda.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag skulle behöva instruktioner eller teknisk support innan jag effektivt skulle kunna använda Google Scholar</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag hittade material som var relevant för mitt ämne.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Jag var trunken att titta igenom allt för många irrelevanta träffar.</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

Vid jag inte gillade med Google Scholar var…

Vid jag gillade med Google Scholar var…
Samsök

<table>
<thead>
<tr>
<th>Namn</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nivå</td>
<td>□ A □ B □ C □ D □ Doktorand □ Övrig</td>
</tr>
<tr>
<td>E-post</td>
<td>□ Aldrig använt □ Sällan använt □ Använd många gånger</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mitt ursnyg av Samsök är mycket positivt</th>
<th>Instämmer helt</th>
<th>Instämmer</th>
<th>Varken eller</th>
<th>Instämmer inte</th>
<th>Instämmer lite alls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jag kommer att rekommendera Samsök till mina kollegor.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Samsök kommer att bli mitt fäste verktyg till att dela vetenskapligt material med i framtiden.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Samsök är lätt att använda.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Jag skulle behöva instruktioner eller teknisk support innan jag skulle kunnas använda Samsök.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Jag hade mer material som var relevant för min ämne.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Jag var tragen att titta genom allt för många irrelevanta titlar.</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Vad jag inte gillade med Samsök var ...

Vad jag gillade med Samsök var...
Appendix E. Written information to the participants

P528

Välkommen till det här testet!

Vi är mycket tacksamma över att du vill ställa upp och hjälpa oss. Som testdeltagare har du ett antal rättigheter som du bör känna till.

De data som genereras sparas på ett helt avpersonifierat sätt så att det inte går att förknippa dig med enskilda resultat. Inspelningen visar vilka sidor du besöker under din sökning. Kameran registrerar bara dina händer vid tangentbordet. Inspelningarna kommer att analyseras och kan komma att visas upp för berörda personer (exempelvis bibliotekarier).

Du har rätt att när som helst och utan några förklaringar avbryta testet. Du får naturligtvis ändå den kompensation du blivit utlovad.

Du har rätt att få hela testet förklarat för dig om du så önskar, dess syfte, metod etc. Testledaren kommer att svara på sådana frågor så långt det går utan att resultatet av försöket påverkas, så snart du frågar. Vissa förklaringar måste dock ibland ges först efteråt för att resultaten ska vara tillförlitliga.

Testledaren får inte ge falska eller vilseledande uppgifter.

Jag har tagit del av dessa upplysningar:

<table>
<thead>
<tr>
<th>Ort och datum</th>
<th>Namnteckning</th>
<th>Namnförtydligande</th>
</tr>
</thead>
</table>
Kvittens

Jag har idag mottagit två biocheckar som ersättning i samband med användartester.

<table>
<thead>
<tr>
<th>Ort och datum</th>
<th>Namnteckning</th>
<th>Namnförtydligande</th>
</tr>
</thead>
</table>
Students experience of Metalib and Google Scholar

Studenters upplevelse av samsökningsverktyg

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Student experiences of search tools
BIBSAM 2006 Dnr 63-612-2005