LIS students seeking information for their final papers: small-scale study at the Faculty of Philosophy in Osijek

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Abstract

The paper focuses on information seeking behavior of library and information science students related to their process of scholarly activities. The study investigates the ways in which LIS students at the Department of Information Sciences, Faculty of Philosophy in Osijek, Croatia, seek and find information for their final papers.

In the first phase of the study, authors analysed reference lists of students’ final papers written in 2010. As expected, the online sources were more frequently used than the print sources. Students mostly consulted monographs, scholarly journal articles, and other undefined sources such as organizational Websites. The average age of the publications used is 8 years with the Croatian as the predominant language. In the second phase of the study, in-depth interviews with eighteen undergraduate LIS students who submitted their final papers in 2011 were carried out. Qualitative data gathered in face-to-face interviews provided deeper understanding of the respondent’s information seeking experiences and influences on their information behavior.

Research results provide LIS teachers and librarians at the Faculty of Philosophy in Osijek with data that can help them in re-evaluation of their instructional program (in particular in information literacy) and provision of library resources and services.

Keywords: information seeking behavior, LIS students, final papers, sources preference, information pathways

Introduction

The information seeking behavior of university students has been extensively researched from the second half of the last century. At the beginning of 1970s such studies were concentrated mainly on the use of academic library services by undergraduate or graduate students. However, from 1990s this area of research has extended to the use and seeking of information among students in different academic disciplines. Today, studies of university students, which belong to the category of information seekers by role (non-employment roles), make up 19% of the literature on information seeking (Case, 2006). These studies investigate the role of curriculum in information seeking behavior of students, attributes of personality in their information seeking behavior, resource preference and selection criteria, citation behavior, search strategies etc. (Lee, Paik, and Joo, 2012)

While majority of recent studies indicated that students start their search for academic information by consulting online resources on the Internet (Google, Wikipedia), a study by Dilevko, and Gottlieb (2002) showed that students at a Canadian university still to a large extent use print resources as well as their starting point (54.1% of all respondents started their research process using print books). The survey results from OCLC study (De Rosa et al., 2006) showed that 68% of college students start their information searches with Google. Similarly, in the study by George et al. (2006) 73% of the graduate students at the Carnegie Mellon University (USA) used the Google search engine for their information seeking, and the half of all respondents (50%) use the Internet to find journal articles, research or white papers, and working papers.

Kerins, Madden, and Fulton (2004) found that students in Ireland choose the Internet (as channel that require the least effort) to define initial information needs. In the US, Head, and Eisenberg (2009) found that almost three-quarters of the student discussions
reported that their research process started with Wikipedia in order to get the big picture and language contexts of the topic. In order to get the background information about their research topic respondents, as well, used online resources in most cases: course readings (97%), Google (95%), online scholarly databases (93%), OPAC (90%), instructors (87%), and Wikipedia (85%) (Head, and Eisenberg, 2010).

Many studies reported that students in general use more network sources than some other kind of sources (print, expert). For instance Martin (2008) indicated that the Internet has been used for the class-related research instead of the library’s resources by almost three fourths of the undergraduate students at the University of Central Florida and Bronstein (2010) pointed out that the main source types utilized by the students of library and information science in Israel were the network sources (63.96%). On the other hand, low level of use of human sources (18.50%), printed sources (14.94%), and expert sources (2.60%) were indicated.

The most searches consisted of only one step after which network sources (25%) have often been consulted and expert sources appeared just at the beginning of one-step pathway. In academic searches students relied more on formal sources like academic databases (22.07%), and printed materials (18.18%). Lee, Paik and Joo (2012) also found that undergraduate students at Yonsei University in Korea were likely to use online resources (67.1%) than the human sources (18.4%), and printed sources (11.5%). On the other hand there are some earlier studies in which students mostly utilized print materials. Kamarudin (2001) indicated that the most preferred sources of information by the students at the University Library of UiTM, Shah Aiam in Malaysia were books (87.2%), printed journals (67.2%), and reference materials such as encyclopedias, abstracts and indexes (51.7%). Similar findings are confirmed in the study by George et al. (2006), Kakai, Ikoko-Odongo, and Kigongo-Bukwenya (2004) realized that the undergraduate students at Makerere University in Uganda consulted lecture notes and handouts, departmental Book–Banks, and the University Library, while newspapers, reference materials, the Internet, and theses/dissertations had very low frequencies of use.

In some studies the significance of the academic library in the information seeking of the students was emphasized. George et al. (2006) indicated that university library played an important role (e.g. huge and crucial) in information seeking for more than half of all graduate students (55%). In the OCLC (De Rosa et al., 2006) study students’ positive comments about academic and public libraries were related to borrowing good or available books (18%), access to accurate or reliable information (16%), friendly and quiet working environment (13%), knowledgeable and helpful library staff (9%), useful services such as online catalog and interlibrary loan (4%). Some of the negative library associations in the same study included unavailability of current materials (12%), limited hours of operation, lack of privacy and waiting in the line (23%). Almost ten years earlier, Seiden, Szymborski, and Norelli (1997) focused also on academic library use by students and reported that the main indicators for using the computer based resources at the Library of Skidmore College (USA) were efficiency (43%), convenience (38%), full text (17%) etc. Kerins, Madden, and Fulton (2004) identified key factors for students in Ireland when selecting an information source in library the following: opening hours, physical distance of a resource, speed, and ease of use, and accessible language. In this study respondents turned to the library in the middle of their information seeking process. Whitmire (2001) in her study established that the most important library activity at all stages of undergraduates in USA was using the computers in the library. Callinan (2005) revealed that the main reasons for visiting the academic library at the University College in Dublin were studying the course material, borrowing of the books, using the computers, and photocopying, which was also found in the study by Kamarudin (2001).

Some studies showed that people (teachers, peers) have important role in information seeking behavior of the students. For example, George et al. (2006) revealed that information seeking behavior of graduate students is mostly influenced by the advisers and professors (96%) who are often the first step in their research process by offering recommendations, or providing books, journal articles, in formal meetings, through the word of mouth, or an e-mail. In the study by Lee, Paik, and Joo (2012) the most frequently consulted human sources by the undergraduates were colleagues and friends (8.0%), and professors and lecturers (7.0%). In this study friends or colleagues (frequently selected for advice or guidance), family, individual Websites and search engines were considered as easily accessible sources, while professionals (experts), librarians, research reports, organizational Websites, and institutional repositories, although perceived as credible, were not frequently selected.

In order to obtain academic information students use various search strategies. In the study by Kamarudin (2001) students mostly searched a single topic by one search term while a title search and keyword search were the most popular methods of access to the electronic resources. Subject search, author search, and Boolean operators were less frequent. Analyzing reference lists of 219 Masters’ theses, Junni (2007) reported that the most common method for seeking information at the Swedish University and the University of Helsinki (Finland) was tracking references in other sources (particular at the beginning when students were not familiar with the subject).

Study

In order to obtain a deeper insight into the information seeking behavior and experiences of undergraduate students in Croatia, an empirical study
was undertaken from October 2011 to January 2012 at the Department of Information Sciences at Faculty of Philosophy in Osijek. Authors used mixed research methods (triangulation) to identify students’ information seeking behavior in the particular context of writing the final paper which marks the end of their undergraduate study. In particular, selection criteria, information pathways and the role of people (teachers, librarians, peers), Internet and academic library were identified.

Quantitative analysis of the reference lists

First, authors analysed reference lists of eighteen final papers written and submitted by LIS students in 2011 and looked for answers to the following research questions: How many sources did students on average use? What types of information sources (print, online) and what types of publications (monographs, journal articles, conference proceedings, grey literature etc.) did students use? What was the average age and the predominant language of the publications/sources used?

Eighteen out of 36 final papers written in 2011 were analysed. The representative sample was chosen in relation to the number of male and female students and grades given to the papers. As a result authors analysed 11 final papers marked with grade excellent (2 written by male, and 9 by female students), 5 final papers marked with grade very good (1 written by male, and 4 by female students), 1 final paper marked with grade good (written by female student), and 1 final paper marked with grade poor (written by male student).

The total number of the sources listed in the references was 288 and a marked with grade excellent (288 written by male, and 9 by female students) 11 final papers were given to the papers.

Results revealed that the average age of the sources/publications is 8 years. The most sources used were quite recent: almost a third was published in year 2011 (N=96, 33%). This was followed by material published in year 2008 (N=26, 9%), 2002 (N=18, 6.3%), 2010 (N=15, 5.2%) and 2005 (N=13, 4.5%). The same number of sources were published in 2009, 2007 and 2003 (N=12, 4.2%), followed by the year 1999 (N=11, 3.8%), 2006 (N=10, 3.5%), 2000 (N=8, 2.8%), 1998 (N=7, 2.4%); 2004, 2001 and 1997 (N=6, 2.1%). The least used sources were from the year 1986 (N=4, 1.4%), 1994 (N=3, 1%); 1996, 1993, 1990, 1977, 1975, 1973 and 1961 (N=2, 0.7%); 1995, 1992, 1991, 1989, 1985, 1983, 1981, 1971, 1937 (N=1, 0.3%). See the Figure 2.

Students in their final papers most frequently consulted monographs (N=99, 34%), scholarly journal articles (N=58, 20.1%), and other undefined sources (N=50, 17.4%) whose references are not comprehensive enough (such as organizational and project websites). Respondents used to a smaller degree grey literature (N=26, 9%), reference materials (N=22, 8%), government publications (N=17, 6%), conference proceedings (N=10, 3.5%), handouts from lectures (N=3, 1%), newspapers and magazines (N=2, 0.7%), and masters’ and doctoral theses (N=1, 0.3%). The results are presented in Table 1.

Figure 1. Types of information sources listed in the references

Table 1. Publication types in the final papers (N=288)

<table>
<thead>
<tr>
<th>Types of publications</th>
<th>Number (percentage)</th>
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<tbody>
<tr>
<td>Monographs</td>
<td>99 (34%)</td>
</tr>
<tr>
<td>Scholarly journal articles</td>
<td>58 (20.1%)</td>
</tr>
<tr>
<td>Other (organizational</td>
<td>50 (17.4%)</td>
</tr>
<tr>
<td>Websites)</td>
<td></td>
</tr>
<tr>
<td>Grey literature</td>
<td>26 (9%)</td>
</tr>
<tr>
<td>Reference materials</td>
<td>22 (8%)</td>
</tr>
<tr>
<td>Government publications</td>
<td>17 (6%)</td>
</tr>
<tr>
<td>(laws etc.)</td>
<td></td>
</tr>
<tr>
<td>Conference proceedings</td>
<td>10 (3.5%)</td>
</tr>
<tr>
<td>Handouts from lectures</td>
<td>3 (1%)</td>
</tr>
<tr>
<td>Newspapers and magazines</td>
<td>2 (0.7%)</td>
</tr>
<tr>
<td>Masters’ and doctoral theses</td>
<td>1 (0.3%)</td>
</tr>
</tbody>
</table>

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Figure 2. Age of information sources used in the references

**Qualitative analysis – in-depth interviews with students**

The purpose of the qualitative study was to gain deeper understanding of respondents’ information seeking behavior and use of information to support the process of writing final papers. In this phase of the study the answers to the following research questions were obtained: How do undergraduate students seek and obtain information for academic purpose? What kind of information sources and information pathways, i.e. sequences of sources, do respondents use when searching for information? What role do networked resources, academic library and people (teachers, librarians, peers) have on their information-seeking behavior? In this phase of the study, authors interviewed those 18 respondents whose final papers reference lists were analysed in the first phase of the study.

**Source preferences**

In the first part of the interview general questions were asked about the methods respondents used to seek and obtain information sources for their final paper. The goal was to find out which information sources they have used and how did they find those sources.

Figure 3 presents the different methods the students have used for obtaining information sources for their final paper.

The most popular method for finding information sources was web searching, primarily by using Google search engine. All of the respondents used this method. Second most popular methods were searching library catalogue (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R16, R18) and searching databases (R2, R3, R4, R5, R6, R7, R9, R10, R11, R12, R13, R14, R15, R16, R17, R18). Consulting a mentor was the third most popular method (R1, R3, R4, R5, R6, R7, R11, R12, R13, R14, R15, R16, R17, R18). The least used method was consulting library reference service (R1, R7, R8, R18).

A great deal of respondents (R2, R3, R4, R7, R11, R12, R13, R15, R16, R17) mentioned following up references in other publications as a method for finding information about information sources. Respondents claimed this method to be especially useful in the beginning, when they were not yet familiar with the relevant literature on their particular subject.

When I started looking at articles, I found plenty of links to other papers. Then I went on seeking the rest through these links, mostly by using the references in articles ... (R13)

Students were then asked how important different factors were in the selection of sources that they used to write their final paper on a scale of 1 to 5 (1 - totally unimportant, 5 - very important). As we can see from Table 2 the most important criteria in the selection of resources was the possibility to access the full text. This was closely followed by reliability and quality of information. Surprisingly, respondents said that the least important factor in the selection and use of resources for their final papers was the physical proximity of the source, ease of its use and the habit of using a particular resource.
The language of the publication was mentioned as an important factor in the source selection only by two respondents (R8, R9). These students preferred resources in Croatian which is their mother tongue.

Papers were mostly written in Croatian language and that was a huge help because I find it easier to read in Croatian, than having to translate from English. (R8)

Information pathways

The majority of respondents started their process of information searching by surfing the web (R3, R5, R7, R9, R14, R15) or consulting the advisor (R4, R6, R13, R17). A smaller portion of respondents began their search by consulting library WebPAC (R8, R10, R11), course literature (R12, R16) and library reference service (analog or digital) (R1, R2, R18). Interestingly, none of the respondents started their search for information by searching the databases.

Deeper analysis showed that the initial step in the information resources seeking primarily depends on the level of prior knowledge about the topic. Those students who initially knew little about the subject, primarily searched the Internet using web search engines to gather information about the topic before they went looking for specific, more ‘serious’ sources. In the process of gathering initial information about the topic, students were not paying much attention to the authority of the used sources. It was only important to create a clearer picture of the subject, while relevance of the sources was not important at that point.

First I used Google to get the big picture and clarify what was unclear to me... even (irrelevant) sources that can not be listed in the literature. I looked for information on web pages that were not relevant or authoritative on the subject to see the context and then later I searched for ‘serious’ literature that was relevant. (R17)

Most of those respondents who initially knew more about the subject went to secondary sources of information and started their search process in library catalogs.

First I went to the library catalog. The topic was familiar; it wasn’t abstract to me so I didn’t have to go exploring it first. (R10)

The theme was clear enough so I first went search City and University Library catalog. (R8)

Consulting an advisor was the second most common initial step. High ranking of mentors as information sources in the initial stage of information seeking is expected since mentors are the ones who suggest topics of final papers and they have an obligation to assist students in the process of writing.

Internet sources

Generally, throughout their information seeking process on Internet, respondents most often used the Google (R1, R2, R3, R5, R7, R8, R9, R11, R12, R13, R14, R15, R16, R17, R18) or Google Scholar search engine (R4, R6, R10, R16). This was followed by scholarly databases such as Eric, Emerald, Lista, Academic Search Complete (R2, R3, R4, R6, R7, R9, R10, R11, R12, R13, R14, R15, R16, R17). Students explained that they used Eric database most often because it is important in the LIS field and offers freely available full text documents. Respondents also searched institutional web pages (R2, R4, R8, R9, R10, R11, R13, R14, R15, R16, R17) because of the perceived reliability of information available on their web pages.

Articles from the Association of the Blind were quite important to me because they are the organization responsible for this topic in Croatia so I think that they are relevant, an authority in this area. I think I can trust their sources. (R2)

Some respondents consulted online encyclopedias – Encyclopedia Britannica (R1, R6, R11, R13, R17), Prolexis (R5, R14, R16) and Wikipedia (R1, R9, R17). Respondents also used course materials available on Moodle, e-learning software platform that is used at the Department of information sciences at the Faculty of Philosophy (R4, R7, R8, R9, R11, R12, R13, R14, R16, R17, R18). Interestingly, chat reference service is not available in Croatian libraries, but one respondent used this service provided by New York Public Library to trace an author of the book he needed for his final paper.

I found this author using chat reference service in the library in New York. It was a very interesting experience, their system of online services in America is connected and if there is no one at New York who can

<table>
<thead>
<tr>
<th>Source selection criteria</th>
<th>Mean</th>
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<tbody>
<tr>
<td>Access to full text</td>
<td>4,94</td>
</tr>
<tr>
<td>Reliability of information</td>
<td>4,89</td>
</tr>
<tr>
<td>The quality of information</td>
<td>4,83</td>
</tr>
<tr>
<td>Availability of information sources</td>
<td>4,33</td>
</tr>
<tr>
<td>The amount of effort required to find relevant sources</td>
<td>4,00</td>
</tr>
<tr>
<td>The time required to search and access resources</td>
<td>3,94</td>
</tr>
<tr>
<td>The physical proximity of the source</td>
<td>3,67</td>
</tr>
<tr>
<td>Ease of use of resources</td>
<td>3,67</td>
</tr>
<tr>
<td>The habit of using - knowledge of the source</td>
<td>3,61</td>
</tr>
</tbody>
</table>
help you, they simply redirect the call to another library and always someone answers. (R17)

Overall, respondents agreed that three most important purposes of using Internet when searching for scholarly information is to identify key authors and works in the field (R1, R2, R3, R4, R5, R8, R11, R12, R15, R16, R17, R18), to undertake an initial search for general information in order to familiarize oneself with the given topic and to develop further search strategy (R3, R4, R5, R6, R8, R9, R14, R15, R16, R17, R18) and at last, to find full text documents (R2, R4, R8, R9, R10, R11, R13, R15, R16, R17).

When asked what was the role of Internet in researching for their final paper, majority of respondents (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R12, R13, R14, R15, R17) said Internet had an important, very important or the most important role in that process. These respondents explained that they always use Internet when they need any kind of information and writing the final paper in this regard was not an exception. A smaller number of respondents (R2, R6, R7) explained that their specific theme required Internet search or that they used Internet because of unavailability of print sources on the subject (R1, R4).

Given that my final paper related to the creation of web pages, I found a lot of material on the Internet. (R2)

Respondents who said that Internet did not play an important role in their information seeking process based their final paper writing on the print sources available in the library which they supplemented by Internet resources if necessary (R16, R18).

However, in most cases respondents used Internet because of its perceived advantages compared to print, library, human and other sources. The Internet was perceived as an attractive medium for seeking and obtaining information, for the following reasons: accessibility and availability of information sources, variety of up-to-date resources and ease of use. Even those students who used the print materials from libraries to a greater extent, cite the Internet as an important source because they were able to search library catalogs without having to physically go to the library.

It was very important (...) it saved me the time of going to different libraries and asking librarians to search for the literature, I was able to do the search for sources on my own in the catalogue (...) so it was very helpful. (R14)

When asked why did they use the Internet for finding information and resources for their final paper, all respondents mentioned availability and accessibility of information sources on the Internet.

In the library I can not work at 4 or 5 in the morning as I am used to do over the Internet. (R2)

I can access it from home, and access is quick. I can access it whenever I want and use it for unlimited period of time, at any time of the day. (R11)

A large number of respondents cited the ease of search and retrieval of information as an advantage of the Internet search (R2, R4, R5, R6, R7, R9, R10, R11, R12, R13, R14, R15, R18). Some respondents pointed out that on the web it’s much easier to find relevant related authors and papers by following hyperlinks or references, because some references are linked to the cited papers (R2, R18).

I find my way around easily, I can jump from one document to another (...) and follow an author – see which literature (s)he used or jump from one web page to another. (R2)

The simplicity of full text search was mentioned as another important advantage of the Internet search compared to other (print) sources and availability of information in a full text format (R2, R4, R8, R9, R10, R11, R13, R15, R17). Respondents experienced the Internet as a "richer" source of information compared to other sources.

A lot of information is available on the Internet... much more than in print publications, that's why Internet was a much more important source for me ... (R2)

I can find a billion sources on the Internet and select only what is relevant to me. (R13)

Some respondents perceived Internet as a cheaper source of information because the documents can be preserved without having to spend money on photocopying articles (R6, R11).

**Stages of the Internet use**

In most cases respondents used Internet in all of the stages of their final paper writing (R1, R2, R4, R5, R7, R10, R14, R15, R17). To a lesser degree it was used only in the initial stage (R11, R12, R16, R18), in the initial and final phase (R3, R6, R8, R9) or in the middle stage (R6, R13). Respondents explained that in the initial stages they have used Internet for seeking and collecting sources, WebPAC searching, searching for bibliographic data and gathering initial information about the topic. Respondents who used Internet in the middle stage said that they have started from the sources they have been given by their mentors and then continued with the Internet search (R6, R13). Respondents who used Internet in the final stages of their information seeking and paper writing used it to find short and specific information or to further expand the list of references (R2, R3, R4, R8, R9).

**Search methods on the Internet**

Figure 4 shows the share of simple and advanced searches in search engines and databases.
In the initial stages of the search process all respondents used simple search techniques using simple keywords and only less than a third used the advanced search techniques in the search engines (R1, R2, R3, R10, R13). In most cases, only when the simple search did not yield satisfactory results, respondents decided to use advanced search. Respondents also used an advanced search when they had a clear idea of what they wanted to find, or when they searched for a specific information or source.

In the beginning when I was learning about the topic I used simple search techniques (...) and later when I searched for a little more specific information, then I went to the advanced search and chose the format of the document. (R2)

An opinion was expressed that databases require advanced search techniques to a greater extent than search engines in order to get relevant information (R12, R18).

I made more effort to search the database because I felt that I had to choose better keywords – advanced mode - to get better results, and on the web it was somehow easier - based on the simple keywords I’ve received a lot of data. (R12)

Databases actually require more advanced search techniques, in my opinion. (R18)

Respondents used the following advanced search techniques: Boolean operators, full text limits, publication date and truncation.

Obstacles in searching information on the Internet

While almost every fifth respondents reported having no difficulties while searching information on the Internet, the others have mentioned several obstacles that can be grouped in few categories.

- Lack of relevant and trustworthy resources on their specific topic. (R7, R10, R13, R18)

When I searched for information about the circulation of that specific newspapers, I couldn’t find that information anywhere. (R13)

- Lack of information in Croatian language. (R1, R3)

The only downside is that this subject is not covered at all in Croatia, nobody knows anything about it, it’s not mentioned at all, therefore the only thing I could find was in English, and none in Croatian. (R3)

- Lack of skills in web searching and difficulties in articulating queries for search engines which affected the amount of time needed for finding quality information. (R2, R5, R6, R9, R10, R13)

However much we are studying to be information professionals, we still find it hard to think the way developers of search interfaces were thinking when they created them. (R2)

- Access to full text articles is limited and many relevant sources are not available. (R1, R12, R15, R17)

In particularly books (...) most of what can be found on the Internet is charged. It’s not even possible to see their references or something like that could help in finding other similar sources. (R1)

- Information overload and too much irrelevant information retrieved by single search, especially in the initial stages of the search process. (R3, R4, R5, R9)

Too much information, but only in the part where I was not sure what I am supposed to write about. Later I decided more easily what suits me and what does not. (R4)

- Poor and unreliable information. (R4, R12, R17)

Some pages have not been recently revised, content has not been reviewed for years. There were confusing pieces of information, on some web pages one thing is said and in another place another, so it took time to evaluate what was more relevant and reliable. (R17)

Library use

When asked about the role of the library in their information seeking process, the majority of respondents stated that it had either an important or very important role. A third claimed that library did not play an important role in their search for information. Almost all respondents used the library to check out materials (R1, R3, R5, R6, R8, R9, R10, R12, R13, R14), to use computers (R2, R18) in particular to consult databases a library is subscribed to (R9, R14, R15) and search the Internet (R1). Also, some worked in the reading room (R2, R7, R8, R16, R18). Interestingly, none of the respondents used ILL service for their final paper and only two used that service earlier (R7, R17). Only two respondents did not use the library (R4, R17).

I used it mainly to check out materials. (R14)

Librarians did not help me much because I am a LIS student and I am supposed to know how to find
information. The advantage of using the library is that it is subscribed to databases so I could find an article I needed. (R15)

Library had an important, even key role. Some important publications I found on my own in library catalogue. Librarians put a lot of effort to locate material that was not readily available. And, since most of the material was not eligible for borrowing, I spent a lot of time physically in the library consulting the resources and writing my paper. (R18)

Librarians helped respondents either by providing books or giving advice on relevant and available resources (R1, R2, R3, R7, R8, R9, R11, R18). One respondent stated that a librarian helped her/him with development of the draft of the paper (structure of the paper, which resources to use in which paragraph) (R18).

Respondents used the library in different phases of information searching. However, the majority of respondents used it in the initial phase when they were looking for basic definitions and checking out of resources (R1, R2, R3, R6, R8, R9, R10, R11, R12, R13, R16, R17, R18). Only a few used the library around the middle of the process (R5, R7, R15) and one used the library throughout the process of writing his/her final paper (R14).

Respondents were then asked why did they use the library. They answered that they used it out of habit (R1, R2, R3, R9, R12, R13, R14, R16), because it had relevant and reliable (print and online) resources (R6, R8, R9, R10, R11, R12, R13, R14, R15, R16) and professional staff (R1, R3, R6, R8, R9, R10, R16, R18), comfortable space and quality equipment (R1, R5, R6, R18), motivating working atmosphere in the reading room (R2), and good and fast service (R3).

I use library because I still prefer print material to online resources. (R8)

I use it because in the library I can find information that is reliable and relevant, at least I hope they are... First I go to the library, and only if I don't find what I am looking for in the library I try something else. (R11)

I needed some basic information and I decided to use the library to get them because I can rely on library material. I am not sure if the information I would find on the Internet would be reliable. (R18)

However, respondents identified the following as the main barriers to a more intensive library use: extra time and effort needed to come to the physical library (R3, R5, R8, R11, R12, R15), library materials that cannot be checked out (R3, R5, R11, R13, R16), outdated material (R2, R4, R7, R12), lack of relevant material (R6, R9, R14), slow service (R7, R8, R11), limited working hours (R3, R5), bad searching options on library WebPAC (R9), lack of knowledge about library resources and services and lack of information literacy skills (R9), short check out period (R14), unmotivated library staff (R17). Two respondents did not encounter any barriers to library use (R1, R10).

The thing is that I have to come physically to the library. When I use the Internet I don't have to go anywhere. Also, sometimes I have to wait in line for some time to get a book, and sometimes even material cannot be checked out. (R5)

Respondents were then asked about persons who influenced their information-seeking process. As expected supervisor played a crucial role (R1, R2, R3, R4, R11, R12, R14, R15, R18). They are followed by peers at LIS Department (R1, R2, R16) and other departments (R3), friends (R7) and experts (R13, R18). Peers and friends helped respondents in informal way through conversation on specific topics their final papers dealt with (R2, R3) or by providing tips and advice on how to search for and find relevant resources (R1, R2, R16).

I asked a friend (on Facebook) for advice on relevant literature. And she suggested some basic textbooks to consult, such as Introduction to social psychology, Psychology Basics etc. She is studying psychology so she is familiar with that literature. (R3)

When I started, I talked with colleagues who wrote an essay on the library services for the blind, what was the theme of my final paper. And they directed me to some useful resources, and told me where to look for information. (R2)

In most cases the supervisors helped the respondents in the beginning (R2, R3, R4, R5, R6, R9, R10, R15, R16, R17, R18) or throughout the process of writing their final paper (R1, R12, R13, R14). They helped by suggesting (R1, R2, R3, R4, R5, R6, R11, R12, R14, R16, R18) or providing relevant resources (R1, R7, R13) either in person or via e-mail. They also helped with methodological advice with students whose papers included experimental work (R5, R8).

None of the respondents contacted authors to obtain publications that were unavailable to them. They did not do it because they did not think of that possibility (R1, R10, R11, R16) or they found everything they needed either in the library or on the web (R2, R4, R7, R9, R10, R12, R13, R15, R16).

Information literacy

The last couple of questions referred to the respondents’ information literacy skills. They were asked to grade a number of information literacy skills on a scale 1 to 5 (1-insufficient, 5-excellent). The results, given in the Table 3, show that the respondents are highly skilled in simple search techniques, while they obviously lack knowledge and practice in using advanced searching mode. According to their self-evaluation they are relatively skilled in evaluation, selection and organization of resources. Also, they are familiar with different information sources and possess
sufficient knowledge skills to identify their concrete information need.

Table 3. Information literacy skills

<table>
<thead>
<tr>
<th>IL skills</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Use of simple search techniques</td>
<td>4.78</td>
</tr>
<tr>
<td>Identification of reliability and validity of information and information sources</td>
<td>4.39</td>
</tr>
<tr>
<td>Selection of information</td>
<td>4.33</td>
</tr>
<tr>
<td>Organization and use of information</td>
<td>4.28</td>
</tr>
<tr>
<td>Knowledge of different sources (print, online)</td>
<td>4.28</td>
</tr>
<tr>
<td>Identification of information need</td>
<td>4.06</td>
</tr>
<tr>
<td>Use of advanced search techniques</td>
<td>3.89</td>
</tr>
</tbody>
</table>

All respondents said that their process of searching for and using of information in the process of writing a final paper was facilitated because they took several classes in information literacy during their undergraduate study, such as Information sources and reference services and Introduction to scientific work. In those classes they were more or less systematically introduced to specific information literacy skills such as searching for information (in print and online environment), critical evaluation and effective organization of information.

Those classes helped me a lot because I learned to search for information, assess its relevance and evaluate the sources I am using. I learned about a lot of new information sources such as databases, digital repositories, web directories etc. (R2)

Now, I know how to obtain the needed information, easier, faster. I am not limited to web search engines such as Google as I was when I started studying. Now I know there are databases, directories, journals... I know how to select information on my topic. (R2)

I think those classes facilitated my writing of the final paper in a way that I could find my way around much easier by using advanced search techniques... I am sure that earlier I would not be using Boolean operators or truncation. (R12)

In addition, respondents were asked if they were satisfied with their information literacy skills, in general. Majority of respondents is totally satisfied (R1, R3, R4, R5, R6, R8, R12, R16, R17, R18) and satisfied (R2, R7, R10, R11, R13, R14, R15, R) with their IL skills while only one is not satisfied (R9). In general, respondents feel that there is room for improvement, in particular in the area of advanced (database) search strategies – query formulation, use of synonyms, Boolean operators etc. (R1, R2, R3, R4, R5, R6, R7, R8, R9, R10, R11, R13, R14, R15, R16, R17, R18) and resource evaluation (R5, R6). In their opinion, library should provide access to more relevant full-text databases which should be accessible from home (R1, R12) and offer advanced IL training (R4, R5, R6, R8, R9, R14, R15, R16, R17, R18). Furtheron, teachers should integrate into their classes different tasks (essays, exercises) which include information seeking in different environments and encourage students to practice their IL skills on daily basis (R2, R3, R10, R11, R13, R15, R16, R17).

Concluding discussion

In line with the results of numerous foreign studies, three most common first steps in respondents' information seeking process were Internet, advisor and academic library. The majority of respondents started their search for academic information on the Internet, in most cases with Google search engine. This was in particular done by respondents who were not familiar with the topic so they surfed web pages of questionable quality and authority just to get the big picture and define their information need. Additionally, since respondents were faced with the lack of relevant resources on their specific topic in Croatian, they found this approach helpful in determining the (English) language context of the topic. This, in turn, helped them later on in choosing keywords and formulating search queries. Following Google, a great portion of respondents started their search for academic information with their academic advisors. They provided students with key authors and publications on the given topic. And lastly, those respondents who were familiar with the topic of their final paper from the start and knew exactly what they were looking for, started their search for information in academic library catalog. Apart from these sources, more than a half of respondents said that they followed references in known publications to find relevant resources on their topic.

In writing their final papers respondents used slightly more online resources (59%) than print (41%). Interestingly, resources which were finally chosen and used were most often found through Google/Google Scholar/Google Books. This was closely followed by resources obtained in bibliographic or full-text databases (Eric, Emerald, Lista, Academic Search Complete etc.) and in the physical library. Surprisingly Wikipedia, students' favourite online encyclopaedia, was used only on two occasions, far less than Encyclopaedia Britannica or Prolexis, a Croatian online encyclopaedia provided by Croatian Academic Research Network (CARNet). Although the physical proximity and ease of use of the resource are usually noted by students as the most desired characteristics of the sources consulted, in the selection of academic information for their final papers respondents valued far more the availability of the full text version of the publication and the reliability and quality of information.

When searching for information on the Internet, a medium which they claimed had an important role in general and in this particular information seeking process, the majority of respondents employed only simple searching (by keyword, title or author). Only less than a third, in the case when they were not happy with
the results provided by a simple search, used the possibility of advanced searching. Interestingly, respondents who consulted databases used to the same degree simple and advanced searching (truncation, Boolean operators, publication date etc.). This is probably due to the fact that as opposed to Google, a search engine that they use on daily basis when searching for different kinds of information which they successfully obtain by simple keyword searching, respondents had some formal training in database searching and were introduced to the benefits of advanced searching in databases.

While two respondents did not use the library at all, the majority said that it played an important or very important role in their information seeking experience. In most cases respondents checked out items because they believe library material is reliable and of higher quality than information found on the Internet. They also indicated that in their opinion library staff is highly professional and can offer them valuable service (information provision, guidance etc.). Every third respondent used library computers (to search databases) although they complained about their age and said that library did not have enough workstations for all interested students. The same number of respondents also worked in the library reading room which they believe provides motivating working atmosphere.

While respondents listed a number of barriers to library use such as extra time and effort needed to come to the physical library, inhouse use of some relevant library materials and limited working hours, almost half of the respondents said that they used the library in this particular information seeking process because they always use the library when they are looking for high quality and reliable academic information. This could mean that the Internet, although highly used, has not replaced the library still, as the main source of quality and relevant information.

While respondents assessed their information literacy (IL) skills with extremely high grades, qualitative data shows that there is room for improvement. Although they were introduced to specific information literacy skills such as searching for information (in print and online environment), critical evaluation and effective organization of information during their undergraduate study, almost all respondents said they would benefit from additional training in particular in the area of advanced search strategies. In their opinion, both librarians and teachers could help. While library should provide access to more relevant full-text databases which should be accessible from home and offer advanced IL training, teachers should integrate IL into their classes by introducing different tasks (exercises, essays) which require information seeking in different environments and encourage students to practice their IL skills on daily basis.

Since this was one of the first studies into student information behavior in Croatia in general we believe it will motivate researchers and librarians to further investigate this phenomenon. Also we hope the results of this pilot study will contribute to the deeper understanding of ways in which students in general seek and utilize information for academic purposes.

References

