This study assesses the current environment of electronic database services at the University of North Carolina-Chapel Hill. User patterns, reactions to the new service, “Subject Listings of Selected Electronic Indexes and Databases,” level of satisfaction with electronic databases and training/instruction program issues are presented based on a survey of selected UNC users. The results reveal that users are moderately satisfied with the current electronic services. Several interesting facts were found through this research. More than 70% of the survey respondents would like to have an instruction/training program. Online screen help is the most desired type of training indicated by those surveyed. Still, a majority of users (43%) are seeking the help of reference librarians. In addition, finding the appropriate database is mentioned by users as the biggest issue in the area of research.

Finally, the findings of this study emphasize and challenge the role of the reference librarians as an information manager as well as an educator.

Headings:

Use studies – CD-ROM
User survey – Electronic Database
User instruction – CD-ROM
Reference Service – Academic library
USE AND EFFECTIVENESS OF USING ELECTRONIC INDEXES AND DATABASES
AT THE UNIVERSITY OF NORTH CAROLINA-CHAPEL HILL

By
Judy Eun Hyung Doh

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Approved by:

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Advisor
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Table 1: What do you like about the Library’s Electronic indexes and databases?..35

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Today, it would be meaningless to say that library patrons prefer electronic indexes and databases to the equivalent printed tools for their research. Electronic indexes and databases are indispensable elements to the library environment today, in particular to the academic library where missions it is to fulfill academic information needs of students and faculties. In addition, academic library patrons, especially the undergraduate students, have become so familiar with the CD-ROM technology, it seems that the technology is an important part of their life. Since 1986, when the first CD-ROM database products were introduced in academic libraries, their availability and use has proliferated and grown at a great rate in order to meet end-users high demands (McCarthy, 1997). The University of North Carolina at Chapel Hill is not an exception. There are more CD-ROM databases being transferred to the Internet (web-based CD-ROM database) so that end-users can access them through the UNC Library home page instead of visiting the library.

However, as a professional information manager, evaluating and assessing these new technologies to see whether they really work in the way that they were designed to do is a very important task. It is also crucial to ascertain the users’ feedback regarding their use of these technologies for improving and implementing better services for users.
The purpose of this research is to assess and review the whole electronic indexes and databases environment at the Davis Library at the University of North Carolina at Chapel Hill. The main objective of this study is to determine and obtain user behaviors and patterns of using the electronic indexes and databases at Davis. The Davis Library home page has a link to access the Electronic Indexes and Databases, which has two main paths to browse. The first path is the “Alphabetical Listing of Electronic Indexes and Databases”, which is listed in alphabetical order of the title of each database. The other one is the “Subject Listing of Selected Electronic Indexes and Databases,” that lists several subject categories on the Electronic Indexes and Databases page that was added recently to provide a better way of finding the appropriate databases for end-users.

The specific objectives of the study were to address the following research questions:

1). What are the user patterns of the Electronic indexes and databases?

2). What are patrons’ reactions to the newly listed “Subject Listing of Electronic Indexes and Databases”? Is this feature helpful for the end-users to find the appropriate databases?

3). To what extent are the users satisfied with staff assistance and user guides?

4). Are they satisfied with the overall electronic indexes and databases service?

5). What are the patrons’ perceptions about the need for a training program on using electronic indexes and databases?
It has been about a decade since the study on user behaviors of E-indexes and databases at Davis library of UNC was conducted (Cornick, 1989 & Bucknall, 1992); thus, this study will provide fresh and valuable information about recent UNC user patterns in using the electronic indexes and databases at Davis library. In addition, as more and more academic libraries embrace new technologies in a fast-paced rate, a user survey on this subject will provide important feedback to reference librarian staff about implementing services and procedures.
Chapter 2

LITERATURE REVIEW

According to NOM (National Online Meeting) chair Martha Williams, from 1975 to 1998, the number of databases has grown from 301 to 11,339 and the number of database records from 52 million to 12.05 billion (cited in Lanza, 1999). These amazing statistics indicates that the researchers are enjoying the benefits of new technology and their demands are steadily increasing. The researchers in an academic setting play an important role in increasing these demands. Today, it would be meaningless to ask patrons, in other words, the end-users, whether they prefer to use electronic databases over the equivalent printed ones for their academic information needs. They seem to be well accustomed to the environment with the electronic indexes and databases in a library and seem to take for granted that they are able to use them for their research. In their study, Budd and Williams quoted one of the respondent’s (academic librarians) remarks that the respondent had a standard policy of purchasing CD-ROMs and did not experience resistance from the users. In addition, Budd and Williams noted that they were experiencing “great pressure to acquire as many CD-ROMs as possible” (1993, p.534).

While the end-users enjoy easy and convenient access to a plethora of
information, quite a few professional mediators have to confront many problems associated with users (Ashoor, 1996; Faries, 1992; Jacobson, 1996; McCarthy, 1997). These problems have been discussed and studied by many researchers, covering the end-users’ reaction to the CD-ROM databases for their information needs, selection of the appropriate databases, assessment and evaluation of the use of electronic databases and indexes (including user patterns), instruction and training programs, marketing strategies for informing of electronic services, etc.

**Overall assessment of CD-ROM environment in the academic library**

Ashoor and Kanamugire (1996) conducted a user survey to find use patterns and perceptions of CD-ROM services in the King Fahd University of Petroleum and Minerals library in Saudi Arabia. Their study revealed that “CD-ROM resources and services have become such an integral component of library resources and services that they would continue posing challenges in the future” (p.175). In addition, they stated that “urgent needs for a new vision and planning strategy that would enable the library to cope with the challenges posed by the CD-ROM services” (1996, p.175). Overall, their respondents were satisfied with the CD-ROM services; however, Ashoor and Kanamugire pointed out several problems associated with providing access to CD-ROM systems, including publicity and user training, and document non-availability and delivery as a result of the study (1996).

McCarthy, Krausse and Little also carried out a similar user survey at the
University of Rhode Island Library in 1997. Their study identifies students’
“preferences and effectiveness using CD-ROMs and assesses the whole CD-ROM
environment” (1997, p.128). They found that their users were satisfied with CD-ROM
databases services and were confident of searching; however, they found that users
admitted that they needed to know more basic search strategies and wanted more
personal assistance, training and remote online access to databases (1997).

Another survey concerning users’ reactions to CD-ROMs was conducted by
Faries in 1990 at the Pennsylvania State University. The objective of this study was to
determine how users were reacting to the new electronic reference area (1992, p.139).
Faries states that the “Penn State experience with CD-ROMs has been a positive one for
both library staff and users” (1992, p.147).

Manzari (1998) emphasized the importance of user instruction for using CD-
ROM databases as a result of her user survey at C. W. Post College in New York. The
results of her study confirm the results from the previous studies. Most students
indicated that the CD-ROM systems are easy to learn and use and they were satisfied
with the amount of information they are provided with. She suggests in particular that
libraries may consider reevaluating bibliographic instruction (BI) sessions on CD-ROM
and providing instruction programs on demand a priority. She also states that being
trained during instruction programs is the students preferred way of learning and using
CD-ROM.

These studies provide valuable information to the respective reference
departments in that the results of these studies could be criteria to measure the various
CD-ROM environments and to “plan improvements in the total electronic delivery of
databases” (McCarthy et al, 1997, p.131). Moreover, Faries emphasizes the importance of such studies, stating “the results would allow the section to improve service for these new reference tools and to be able to plan for future technological developments” (1992, p.139).

**Online Search Techniques**

A study of online search techniques was conducted by Anderson (1995) at Hayden Library at Arizona State University. Findings by the researcher indicate the following: 1) a need for online help products and staff interaction; 2) careful decisions are needed when increasing the number of terminals when abstracts are offered online; 3) patrons still depend on simple subject searching despite the advanced search functions (1995). Anderson’s third finding is particularly interesting. Even though most of today’s academic library patrons have become familiar with the CD-ROM technology, Anderson’s study results states that their familiarity with CD-ROM does not help them make the most of the improvements to CD-ROMs and to find the needed materials they seek (1995). Thus, this issue brings up the need for more advanced instruction on CD-ROM databases in academic libraries.

**Instruction/Training Program**

Many articles in Library & Information Science literature cover the instruction program for CD-ROM searching in various kinds of libraries’ research centers. Sue Samson (1997) conducted a user survey at the University of Montana to obtain the users’ response to using CD-ROM databases. One of her goals for that study
was to “assess the library’s CD-ROM instruction and public awareness programs” (1997, p.21)". Based on the results of her study, the reference department modified the instruction program. They decided to provide 1) specific database help sheets at each terminal rather than in an adjacent display rack; 2) credit-bearing instruction courses for students; 3) research workshops for their specific assignments during the credit-bearing instruction courses; 4) a self-guided tour, and 5) “A pre-and post-test analysis of library literacy” with freshman composition classes (1997, p.22).

MacDonald et al (2000) reported on their progressive “Information Literacy Plan” which had been carried out with the cooperation of library faculty members with teaching faculty members of the University of Rhode Island (p. 242). The reasons for their plan was to improve the existing instruction sessions and to reach out to as many students as possible across the campus. They developed credit-bearing library instruction courses for students. The evaluation and results of their plan were very successful. The feedback from students was positive enough to encourage the library teaching staff to design a better instruction program and their plan is in progress to satisfy their patrons by providing powerful information searching skills in a structured way on a regular basis (2000).

Jacobson and Newkirk (1996) hypothesized that patrons who had been exposed to searching classes or assisted by a professional mediators would be far better at doing research and conducted a study on “the effect of CD-ROM instruction on search operator use” (1996, p.68). They concluded that their hypothesis seemed to be correct based on their test results; however, they proposed that additional research should be carried out
before they affirm their hypothesis. Additionally, they put emphasis on discovering if “instructing and assistance techniques are inappropriate for the technology” (1996, p.76).

Jokic (1997) in her doctoral dissertation maintained that end-user education is essential for CD-ROM database searching, even if the databases themselves are mostly designed for end-users (1997, p.785).

Bowling Green State University (BGSU) initiated an online tutorial (how to use online catalogue) in its library for thousands students at the beginning of each academic year (Dennis and Broughton, 2000). The BGSU online tutorial is interactive and has a self-contained web page to reach as many students as possible who needed library instruction. The web was designed to be very user-friendly and the web development team received many positive comments and much encouragement on that project. The online tutorial designed by BGSU is a good example of the current trends in instructing students to use technology.

**Marketing issues.**

Besides the importance of instructing end-users on using electronic databases, Hart, Coleman, and Yu (2000) emphasized the crucial role of outreach to patrons about a library’s services. They maintain that “to survive and prosper in today’s technological information age, libraries must offer their users resources and services that they can not readily find anywhere else” (p.42). They also point out that the “concept of marketing library services puts emphasis on satisfying customers and meeting their expectations” (p.42). In order to accomplish this mission, patrons should be informed of the resources and services the library provides and the benefits of using those services.
Use patterns

Several authors investigated the use patterns of CD-ROM databases by utilizing statistics for various reasons: “the provision of appropriate information and access tools, minimization of costs associated with CD-ROM database licenses and diagnosis of strengths and weaknesses in the training programs (Hyland & Wright, 1995 & 1996, p.90 & p.169).” Leach analyzed the workstation sign-up records to discover the use patterns. She maintains that this information could serve as “a basis for evaluating the instructional needs of the user group” (1994, p.365).
Chapter 3

BACKGROUND

The University of North Carolina was founded in 1789 as the first state university in the United States. Its enrollment is more than 20,000 students. There are 16 subject-centered branch libraries across the campus including the main library. The main library, named the Walter Davis Royal Library, boasts an extensive book collection of more than 5 million volume as well as an extensive CD-ROM database collection.

At present, Davis provides over 300 database through the Library home page. This service consists of two formats of CD-ROM. Most of them are web-format databases which patrons can access remotely regardless of the limitations of time and space. The others are the individual CD-ROMs which patrons can get from the reference desk and run at the designated computer stations around the reference desk area. However, more and more of these individual CD-ROMs are migrating to the web format of CD-ROM so that patrons can access them from outside the library.

There have been two user surveys regarding CD-ROM use patterns in Davis Library. The first survey was conducted by Donna Cornick in 1989 and the other by Tim Bucknall and Rikki Mangrum in 1991. The results from these studies provided important information about patrons’ satisfaction with using electronic resources for their research. It was quite a different library environment back then compared to the current Davis library. At that time, patrons had limited choices of databases that they could use as well
as limited time for using them with a fewer computer stations available. Today, the Davis Library at UNC-Chapel Hill has more than one hundred and ten computer stations in the reference area and, as mentioned earlier, more than 300 entries of each database are available to provide a plethora of information for patrons’ needs. In addition, patrons can access them without visiting the library. Many full-text articles are available from the Internet and this is one of the most popular services that is provided by the Library currently.
Chapter 4

METHODOLOGY

This research employed the survey method. This method was selected over focus groups or interviews in order to obtain a greater number of responses from a larger sample size in a timely fashion.

Recruiting method of participants

This research used the following method of recruiting participants. With permission from instructors, the researcher distributed the survey in selected undergraduate and graduate classes. The selected classes were in Journalism, Education, Social Work and Public Health. For the undergraduate students, one large elective class was chosen. The rationale for having these differences among the graduate and undergraduate classes is the size of the class. Typically, graduate level courses enroll fewer students; therefore, surveys were distributed among several classes in effort to survey a comparable number of students as might be found in a large undergraduate course. In addition, distributing questionnaires in a large elective undergraduate class included participants with subject majors across many different departments on campus.
Limitations

A survey was the method of this study. Since the available electronic databases through the UNC library home page cover all the subjects of nearly every discipline giving greater access to all the Library’s patrons including, students, faculty, staff and the public, it would be ideal to select as large a population sampling as possible to get more representative results. However, time and funding constraints prevented this researcher from conducting a more extensive user survey.

Period of distribution and design of survey questionnaire

The period of distribution was from September 18 to September 29, 2000. Based on the methodology and design of a questionnaire employed by McCarthy, Krausse and Little (1997), an twelve-item questionnaire addressing five specific objectives, which are mentioned in the Introduction section, was revised with the help of the Davis reference staff to eliminate ambiguity in language and meaning (see Appendix B). The survey employed multiple choice (13) and open-ended (3) questions.

Collection of data and software program

A total of three hundred questionnaires were distributed to faculty, graduate students and undergraduate students at UNC-CH. Two hundred and three (203) completed questionnaires were collected. Among them, one completed questionnaire was found to be invalid; thus, a total of two hundred and two (202) participants’ responses were coded and analyzed using Excel statistical software.
Chapter 5

RESULTS & IMPLICATIONS

Approximately three hundred questionnaires were distributed over a two-week period in the Fall 2000. Two hundred three (203) completed questionnaires were collected and one of them was considered as an invalid. The reason for this judgment is that the respondent had used the databases five years ago and had no experience using the current set of databases. Thus, the responses were not fully applicable to the questions on the survey. A total of two hundred two (202) questionnaires were analyzed for a response rate of 67.33%. The results from the survey were analyzed using Excel program (For questionnaire, see Appendix B).

User profile

Figure 1, ‘user profile’ shows the status of database users. The response rate for these are as follows: 6 faculty members (3%), 72 graduate students (36%), 113 undergraduate students (56%) and 11 others (5%). Others include exchange students, continuing education students, visiting scholars, auditing students, etc. The majority of participants are undergraduate students.
Profile of undergraduate students

Figure 2 shows the break-down of undergraduate students. Primarily junior and senior students participated in this study. Participants were asked to check all that apply so that the total number does not reflect the number of participants. The survey questionnaire does not seem to be evenly distributed to each level of the undergraduate student body. However, since mainly senior and junior students participated in this study and assuming they have experience to using electronic databases more than freshmen and sophomores have, more reliable data might have been collected.
Profile of graduate students

More specifically, Figure 3 shows break-down of their various statuses. As Figure 3 shows below, most of the graduate students who participated in this research were in a masters’ program. The Others category includes continuing education graduate students.
**Usage frequency of electronic databases**

The response to Question 2, asking how many times the patrons use the electronic indexes and databases in a week, is summarized in Figure 4. Most of the respondents (75%) answered that they used them on average one to five times in a week. Only 2% of respondents answered that they did not know about these services and 5% of respondents replied that they never used these databases. Thus, apparently, a total of 7% respondents do not make use of these services. Among these non-users (14 respondents), half of them (7 respondents) answered “Internet Search” for their alternative searching aid tool on Question 2-1, which asked “if you have never used electronic indexes and databases, how do you find the necessary materials for your research questions?” Only 4 respondents checked “Ask for help from reference staff” for their other alternative searching tool.

These findings might indicate that a majority of UNC-CH database users make use of this service for their academic needs. Just a few respondents seemed to be uninformed of this service, while the regular Internet search is seemingly a popular reference tool among non-users of electronic databases.

**Figure 4**

![Usage Frequency of Electronic Databases per week](image)
*Place for using electronic databases*

In response to Question 3, the patrons were asked to choose all the places where they used electronic databases. The popular place for searching databases still seems to be most libraries on campus; however, the second most popular place is at home. This result seems to indicate that more and more patrons prefer remote access instead of visiting an actual library for using electronic databases. This might reflect the new trend of utilizing the benefits of current technology. One respondent even commented that it was “painful” to visit the library to get the materials for their assignment and preferred to have more remote access. In the responses to the “other” category, campus computer labs and phone calls to reference desk, among other things, were specified in that category.

![Place for Using Electronic Databases]

[Figure 5]
**User confidence in searching**

Question 4, regarding how confident they were of trying to choose the appropriate databases for their research, One hundred and twenty six (126) participants seemed to be moderately confident (62%) in their searching. Only twenty four (24) respondents (12%) seem to regard themselves as very confident searchers. 16% of respondents (33) did not seem to be familiar with the system. In the responses to the “Other feelings” category (3%), five (5) respondents answered: ‘swamped’, ‘naive, between moderated and confident’, ‘depends highly on the subject of research’, etc. The results are summarized in Figure 6.

![User Confidence in Searching](image)

[Figure 6]

**Subject Listing of Selected Electronic Indexes and Databases**

With much effort from the reference librarians at Davis, the “Subject Listing” was designed to provide patrons with a clearer path to finding the appropriate databases. The

Question 5 simply asks if patrons are informed of this new service. Figure 6 shows the result of the question. As seen below, half of the participants (101) responded that they had experience in using it and 30% of them (60) did not seem to be informed about this service. As Hart et al pointed out, libraries should “place emphasis on outreach to the faculty and improved marketing strategies” (2000 p. 41) in order to notify users of new services such as this. One faculty member in this study also commented that many faculty members needed to be informed of these useful resources for their research and classes. The marketing strategy for publicizing the new service from Library might need to be improved and enhanced to let users make good use of these useful services. Without implementing the concept of marketing library services, it might be useless to only provide the users these useful and convenient databases. Also it could take little effort to provide simple and better tools to help users to find a number of different databases.
Use of Subject Listing of Databases

<table>
<thead>
<tr>
<th># of participants</th>
<th>Yes</th>
<th>No</th>
<th>don't know</th>
<th>no response</th>
</tr>
</thead>
<tbody>
<tr>
<td># of participants</td>
<td>101</td>
<td>28</td>
<td>60</td>
<td>13</td>
</tr>
<tr>
<td>Percentage</td>
<td>50%</td>
<td>14%</td>
<td>30%</td>
<td>6%</td>
</tr>
</tbody>
</table>

[Figure 7]

If the participants answered ‘yes’ to Question 5 asking if they have used the “Subject Listing of Selected Electronic Databases and Indexes” before, then they were asked to answer question 5-1 question regarding the usefulness of the service. About 68% of the users (69) found the ‘Subject Listing’ to be moderately helpful. 27% of respondents (27) seemed to be very satisfied with it. Five (5) users (5%) stated that it is not helpful at all (See Figure 8). In addition, those who answered ‘no’ were asked to specify why they never had a chance to use it before. Seven (7) participants out of 24 responded that they always used a particular database which they are familiar with; therefore, they did not think that they needed to use it. Another strong voice was that they did not know about its availability or were not informed of the service. Other reasons were, ‘too broad, database already subject-specific’, ‘never needed to use it’, ‘did not think it would be particularly helpful’, among other responses.

The reaction to this new service seems to be very positive, since only 5% stated that it was not helpful at all. Considering, however, that only half of respondents were
informed of this service, marketing and publicizing new services to the patrons should be emphasized

![Level of Usefulness of Subject Listing](image)

**[Figure 8]**

*User preferences in seeking assistance*

Question 6 asks participants to indicate where they usually get help when they encounter difficulties selecting the appropriate electronic databases. This inquiry was made to see if today’s library users still need the help of a professional mediator. Respondents indicate that they still seem to look for the reference librarians’ help the most. One hundred and four (104) respondents answered ‘reference librarian’ as their help for research. In addition, the second most helpful source turned out to be ‘Descriptions from each electronic database and index’. Through this study, it was found that the descriptions for each database play an important role for guiding them to find the appropriate source; thus it might be good to enhance the function of this method to provide a better and clearer explanation about each database. Major comments in the ‘other’ category were that they tried to figure it out on their own. ‘Internet’ and ‘web
page' were mentioned frequently as a solution to their difficulties. The findings from this question seem to suggest that the role of the reference librarians are still important to today’s library users and the description from each electronic database and index is also an indispensable guide for them to find the appropriate materials. Regarding “Internet” and “web page” as an alternative solution to their difficulties, critical thinking skills and a professional mediators’ advice are needed when patrons look to them as their alternative aiding tools. Since there are a number of non-authoritative materials on the web which might not be often appropriate for all academic purposes, wise discretion by either end-users themselves or by professional librarians is needed. Figure 9 is the result of Question 6.

[ Figure 9 ]
Skills needed to be a more effective searcher

To determine users’ most desired skills in searching electronic indexes effectively, users were asked to identify specific needs. Nine specific skills were offered to choose from: ‘Not necessary’, ‘Improve search strategy’, ‘Select the appropriate database’, ‘Use the software interfaces’, ‘Limit/Advanced search (by year, language, proximity, etc)’, ‘Save search results to floppy disk’, ‘Use keywords, thesaurus’ ‘Boolean searching’, and ‘Other’. Figure 10 provides the findings from this question.

As it is seen above, one hundred and fourteen (114) participants replied ‘select the appropriate database’ as the most needed skill for their searching practice and one hundred (100) patrons seem to need a strategy for improving their search techniques. In addition, it seems that several patrons (59 of them) are having trouble with ‘Boolean searching’.

[Figure 10]
searching (using And, Or and Not’), which a professional mediator might consider as the basic skills for retrieving information from databases. Twenty-one respondents (5%) seem to be very confident in searching. Keyword and advanced searching skills seemed to be an issue for end-users also. In response to “other” category, participants responded as following: ‘how to search for journal articles’, ‘how to log on from home’, ‘how to find the full text’, ‘knowing when to find particular journals.’ Several respondents mentioned how to access the databases remotely as one of their desired skills. Actually, this information is currently available from Davis library. Thus, this could bring up the issue again about the need for a better marketing strategy that would highlight such services of the Library.

**Users preference in the type of training program**

Users were asked in Question 8 “What type of training would you like to have in order to become a more effective searcher?” The results of this question are shown in Figure 11.
It is very interesting that the highest ranked type of training is found to be “Online help screen” (111 respondents, 29%) while the users wanted “personal assistance from staff” the most in McCarthy et al’s study (1997) and “brief individual instruction on demand” in Manzura’s research (1998). This might reflect several important new trends in today’s library users. First, the users seem to prefer to get help without leaving their computer screen. Secondly, they seem to want to have more remotely accessible library services instead of visiting the actual libraries. These findings should be considered when developing and revising the current library services to keep up with today’s library users’ expectations. “Personal assistance from staff” is the second-ranked type of training that the users prefer to have. This might imply that the users still want “human help” for their computer-based searching. However, as McCarthy, Krausse and Little (1997) point out, “personal assistance at point of need is the most costly, most time-consuming, and most
demanding on reference staff” (p.137); yet, some studies as well as this research indicate that personal assistance is one of the most desired types of help by students. The comments on the question of user preferences in type of training are specified in the “others” category: ‘overall, I still prefer human help’, ‘computer-based training (CBT) self-paced courses would be good to save librarians' time and allow students to teach themselves’, ‘especially, printed guide that I can keep with me’, etc.

Through these findings, a couple of important facts are evident. First, current users seem to prefer to have online tutorials. One respondent suggested that FAQ style of online tutorials might help to guide them to find the appropriate database. This should be considered in designing a new page for online guide to meet users’ demands. Secondly, as will be discussed later, there seems to be a demand from current users for instruction and training programs.

*Satisfaction with the electronic databases and services*

When asked about the overall satisfaction with the electronic indexes and databases services at Davis, the UNC-CH participants seem to be moderately satisfied with the current electronic indexes and databases services (60% of participants responded). The outcomes are summarized in Figure 10 below.
Only 1% of respondents (2) replied that they are not satisfied with the services and those respondents were asked again to specify the reasons for dissatisfaction in Question 9-1. Those participants who answered either ‘Very satisfied’ or ‘Satisfied’ were not required to answer Question 9-1; however, most of the users responded (even if they answered ‘satisfied’) to Question 9-1. This might indicate that although the users are generally satisfied with the current electronic services, there are certain issues to be clarified for them that would help them with their research. Figure 13 shows the results of Question 9-1. The options which patrons could check off for dissatisfaction with electronic databases and indexing service are the following: “too many electronic databases and indexes”, “hard to find the appropriate one”, “computer related technical problems”, “don’t know how to use”, and “others”.

![Satisfaction with Database Services](image)
It seems that finding the appropriate databases for the research is the main issue for the searchers (33 users responded). Some complained that there are too many databases for research. The comments made in the “Others” category for this question are ‘remote access’, ‘need more web-linked databases and more databases with web like interfaces (fewer CDs and telnet)’, among other responses.

It is likely that library services can never fully satisfy its patrons and one might say it is impossible to meet every expectation from library users regarding library services. However, it can not be denied that library patrons’ demands and preferences have dictated to what today’s library environment looks like and thus their feedback and reaction to these services should not be ignored.
Need for instruction/training program

Finally, participants were asked to answer whether they prefer to have a training/instruction program. Surprisingly, over 72% of respondents (144) seem to want to have an instruction program (See Figure 14). It must be revealed, however, that some respondents commented saying that they are not sure whether they can make time to attend the training session. In addition, Manzari stated in her study on “student preferences for CD-ROM instruction” that students in recent years seemed less passionate about attending instruction/training sessions (1998). Most students in her study also responded that they either needed no instruction or wanted individual instruction/personal assistance rather than attend formal training sessions (1998). Therefore, this research suggests that to pique users’ academic curiosity and to let users feel a strong need for taking these training courses, a well-planned marketing strategy is greatly needed. A traditional lecture type training approach will not work. Several suggestions can be made for a new and fresh approach to training sessions.

First, instruction sessions should have hands-on workshops presented in classes equipped with a number of computer stations that allow attendees to have practical learning experience. Since one of the reasons that respondents in Manzura’s study appeared to be negative about attending formal training programs is a lack of computer-related equipment, facilities, and qualified staff for leading instruction. Providing well-equipped environments seems to be a critical element for future electronic database instruction projects.

Additionally, a plan for generating credit-bearing instruction classes (especially for freshmen) with the cooperation of faculty members might be a desirable alternative.
The University of Rhode Island initiated credit-bearing classes for freshmen and they have found them to be successful (MacDonald, Rathemacher and Burkhardt, 2000). MacDonald et al maintain that “the dynamic character of information is undeniable,” (p.247) and they hope to generate an instruction program which will offer the “flexibility and adaptability to respond to that dynamism, incorporating changes in technology, education and culture as they occur” (2000, p.247).

Moreover, today, many libraries offer a number of web-based tutorials. For example, at Bowling Green State University, its web-based tutorial for the online catalog, called FALCON, received favorable comments and applause from many library communities as well as users of the system. It is designed to be very user-friendly, in particular for freshmen and novice library users (Dennis and Broughton, 2000).

Finally, the more information literacy and instruction programs in an academic library are emphasized, the more the instructional role of academic librarians becomes important. In the 1991 survey of Tenopir and Ennis, several librarians predicted that there would be no need of instruction for library users because of user-friendly systems for end-users and their advanced computer skills. In their 1997 survey, however, almost all respondents admitted “the need for more instruction—and more intense instruction” (1998, p.86). In addition, Tenopir and Ennis point out that users often have unrealistic and heightened expectations of the Internet and claim that “instruction must have several aspects, including critical examination of the accuracy and reliability of Web content, search strategies for Boolean logic and relevance ranking systems, and the ability to deal with a variety of new interfaces and systems” (1998, p.86).
According to Mercado (1999), an outcome of the proliferation of electronic databases is that reference librarians spend less time behind the desk and more on one-on-one instruction for a library user. Thus, reference staff must make an effort to acquire advanced and ongoing education to be qualified as an academic reference librarian as well as an instructor. Mercado (1999) expresses a strong voice that “teaching should be based on concepts that address users’ greatest difficulties: formalizing their information needs, selecting appropriate terminology, and developing search strategies that can exploit the interactive power of any system” (p. 263).

Since, UNC-CH users seemingly seek for user-instruction program on campus, a specified and well-planned project for an instruction program should be considered and initiated.

<table>
<thead>
<tr>
<th>Training/Instruction</th>
<th>Yes</th>
<th>No</th>
<th>Not Sure</th>
<th>No response</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage</td>
<td>144</td>
<td>22</td>
<td>23</td>
<td>13</td>
</tr>
<tr>
<td># of participants</td>
<td>72%</td>
<td>11%</td>
<td>11%</td>
<td>6%</td>
</tr>
</tbody>
</table>

[ Figure 14 ]
**Comments on the current electronic services**

For the last two open-ended questions, the content of comments were coded for analysis. A majority of the respondents (eight-six, 38%) seem to be satisfied with the user-friendly interface of databases. They also commented on the Davis database services as “helpful,” “effective,” “convenient,” “organized,” and “extensive.” Fifty four respondents (54) are seemingly satisfied with the comprehensive collection of databases for their academic needs. They regard the electronic databases as “professional information” and “valuable and credible information.” Some participants seem to favor ‘remote access’ (20) and ‘full-text’ (7) print capability. Besides these comments, patrons seem to like the speed of the Internet, narrowing search capability, economical cost to use them, etc. Some (19) noted dissatisfaction with the service along with their frustration: “need to learn how to use them better”, “a lot of information that is hard to find”, “very large but not specific enough at times”, “searches yield too high in number of finds and not relevant to what I need”, etc.

It appears that patrons are well contented with the user-friendly design of each database, which might eliminate the anxiety about computer technology when searching for academic information. Moreover, patrons appeared to appreciate the extensive information that they can obtain in one place.
**Q. 11 What do you like about the Library’s electronic indexes and databases?**

<table>
<thead>
<tr>
<th>Comments</th>
<th># of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easy to use &amp; user-friendly / effective/helpful/convenient/organized</td>
<td>86</td>
<td>38%</td>
</tr>
<tr>
<td>Comprehensive/plenty of information/professional information/valueable and credible information/extensive and organized</td>
<td>54</td>
<td>24%</td>
</tr>
<tr>
<td>Remote Access</td>
<td>20</td>
<td>9%</td>
</tr>
<tr>
<td>Full-text</td>
<td>7</td>
<td>3%</td>
</tr>
<tr>
<td>Speed of Internet</td>
<td>4</td>
<td>2%</td>
</tr>
<tr>
<td>No Response</td>
<td>34</td>
<td>15%</td>
</tr>
<tr>
<td>Others</td>
<td>19</td>
<td>9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>224</strong></td>
<td><strong>100%</strong></td>
</tr>
</tbody>
</table>

*Comments on improvement of service*

For Question 12, “What can the library do to improve this service?”, users made a number of comments. For the purpose of data analysis, the comments were grouped into eight categories:

- Training/instruction program
- more user-friendly and clear explanation of each database
- online guideline/FAQ
- printed guideline
- more staff
- more full text articles
- easier remote access
- Others
Forty-three (43) respondents (20%) seem to prefer to have instruction/training programs. Some of them mention, in particular, that it would be better for freshmen to have an instruction program at the beginning of their school year. Even though a majority of respondents commented that they like the user-friendly system, some other participants responded that they want to have a more user-friendly system (thirty seven respondents). Twenty-nine (29) respondents (14%) made a comment regarding the online guideline. Some mentioned that a ‘Frequently Asked Question’ style of online tutorial would be helpful for their research. Sixteen suggestions were related to the printed guideline. Thirteen participants suggested more staff to assist and also mentioned that more staff to be near each computer station are needed. Twelve (12) of them (6%) made a comment on more available full text articles. “Easier remote access” suggestions were made too. Narrowing search capability, free print out, more uniform search strategies, hints posted at each station, etc. are grouped into miscellaneous category (19 respondents, 9%).

* Participants were allowed multiple responses so that the number exceeds the number of actual participants.
Q. 12 What can the Library do to improve this service?

<table>
<thead>
<tr>
<th>Comments</th>
<th># of respondents</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Training/instruction program (especially for freshmen class)</td>
<td>43</td>
<td>20%</td>
</tr>
<tr>
<td>More user-friendly and clear explanation of each database</td>
<td>37</td>
<td>17%</td>
</tr>
<tr>
<td>Online guideline/FAQ</td>
<td>29</td>
<td>14%</td>
</tr>
<tr>
<td>Printed guide line/worksheet about refining searches</td>
<td>16</td>
<td>8%</td>
</tr>
<tr>
<td>More staff to assist in all hours/near computer stations/personal assistance</td>
<td>13</td>
<td>6%</td>
</tr>
<tr>
<td>More available full text articles</td>
<td>12</td>
<td>6%</td>
</tr>
<tr>
<td>Easier remote access</td>
<td>7</td>
<td>3%</td>
</tr>
<tr>
<td>Others</td>
<td>19</td>
<td>9%</td>
</tr>
<tr>
<td>No response</td>
<td>35</td>
<td>17%</td>
</tr>
<tr>
<td>Total</td>
<td>211</td>
<td>100%</td>
</tr>
</tbody>
</table>

These findings deserves some discussions. Students’ preferences for having training sessions are again revealed in these findings. This result, however, does not indicate that they prefer to attend a formal instruction session. As were found in the previous results on the preferred type of instruction, most UNC-CH patrons prefer to have instruction in the format of online tutorial and personal assistance from the staff. Despite patrons’ satisfaction with user-friendly design of databases in the previous question, they suggest it here again as a request for library service improvement. This might be confusing and hard to interpret; however, it can be assumed that this finding might have depended on the users’ level of familiarity with computers. Thus, instruction

* Participants were allowed multiple responses so that the number exceeds the number of actual participants.
and training for those who are not familiar even with the user-friendly design of database might be necessary.
Chapter 6

CONCLUSIONS

This research provides the current reference department with the results of the first survey of UNC-CH library users’ behavior related to use of the electronic indexes and databases in 10 years. Overall, users seem to be moderately satisfied with the services; however, some interesting comments were observed that suggests ways to improve and enhance these services.

First, more well-planned and effective instruction/training programs seem to be needed for UNC library users, since more than half of the respondents seem to expect to have an instruction/training program on a regular basis for utilizing the electronic databases and indexes. In particular, the formats of an online tutorial and personal assistance were strongly indicated. Since many undergraduate students participated in this study, they also commented that it would be good for freshmen to have an instruction course in their first year. This might indicate that the users seem to want clearer and more straightforward guidelines for using the electronic indexes and databases that they can make use of early on in their academic career, rather than just being provided with more new technologies and databases.

More and more CD-ROM databases are being purchased by the Library to replace the equivalent printed materials. If the users are not provided with more helpful and organized directions and guides for using them, then these supposedly convenient
tools might only add to the users’ confusion and frustration. They also seem to experience a hard time in selecting the appropriate databases for their academic research, even if they are well exposed to computer technology. One of faculty members suggested to run ‘zillions of instruction workshops’ for students as well as uninformed faculties.

It is very interesting to see the results regarding preferences in type of training. “Help online screen” is the most wanted type of instructions from patrons. This could create a challenge for the UNC-CH Library systems and current reference services for searching the indexes and databases considering the non-availability of online help.

Secondly, publicity about library services is as crucial as providing better assistance to patrons. Only half of the patrons were found to be informed of the service about “Subject Listings of electronic databases and indexes.” It is found to be moderately helpful by patrons who used it; thus it is suggested that as many patrons as possible be made aware of the benefits of this service.

Thirdly, the important instructional role of reference librarians should be emphasized. As many articles and the findings from this study show, the electronic library, or the “cybrary,” has changed and will change the use of libraries and library instruction. The demand and need for training and education of users will grow and “librarians will find themselves to be the ‘information educators’ on campus” (Mercado, 2000, p.264). Librarians must keep pace with the changes of technology in the Information Age and will have to be active learners to teach effectively. In addition, as an information manager as well as an educator, the knowledge and skill of being a librarian should be appreciated by all who make optimal use of information services.
This research has limitations that involve sample size. Two hundred and two (202) sample population out of 26, 600, 0.8% (24, 180 students and 2, 420 faculties) might not represent the whole population at UNC-CH. In addition, the selection of classes for distributing the survey questionnaire might have influenced the current results. The four departments (Education, Social Work, Journalism, Public Health) were chosen mainly because it was thought that these departments might well be involved in research; thus the students enrolled in these department might often use the electronic databases.

This topic offers a number of areas where future research is needed. The next step could be the design of online help screens. This could involve more qualitative and quantitative research, such as conducting user surveys of many other librarians who already deal with the issue of providing online tutorials. Additionally, the plan for generating credit-bearing instruction courses for freshmen, along with the user study, should be assessed.

Lastly, it was a good opportunity to read the fresh thoughts about current library services from a new generation.
Bibliography


APPENDIX A: COVER LETTER

Dear UNC Colleague:

I am conducting a user survey for the use and effectiveness of electronic indexes and databases which are available from the library home page. I am a graduate student at the School of Information and Library Science at UNC and this research is for my master’s paper. Hopefully, the results will provide valuable data for evaluating and improving the current reference service at Davis library. I hope that you will consider taking a few minutes to participate in this study.

All information you provide will be completely anonymous and confidential. Your participation in this study is also completely voluntary and no risks are anticipated to respondents. Returning and completing of this survey will be taken as indication of your consent to participate in this project. Additionally, you may refuse to answer any item you choose to omit.

Completing the questionnaire will take less than 10 minutes of your time. This study has received approval by Institutional Review Board. If you have any questions regarding this research, you can directly contact me at (919) 914-7741 and dohe@ils.unc.edu or if you need confirmation about this research, you can contact my master’s paper advisor, Dr. Claudia Gollop at (919) 962-8263 and gollop@ils.unc.edu.

Thank you in advance for your support and cooperation.

Sincerely,

Judy Eun Hyung Doh
Graduate Student, School of Information & Library Science.

This study has been reviewed by the University of North Carolina Academic Affairs Institutional Review Board. You may contact the Board, if you have questions about your rights as a research subject.

Academic Affairs Institutional Review Board
David A. Eckerman, Chair
CB# 4100, 201 Bynum Hall
The University of North Carolina at Chapel Hill
Chapel Hill, North Carolina 27599-4100
(919) 962-7761
email: aa-irb@unc.edu
APPENDIX B: QUESTIONNAIRE

Please, answer following questions.
Thank you in advance for your support and cooperation.

Eun (Judy) Doh
Graduate Student, School of Information & Library Science.

1. What is your academic status at UNC?
   [ ] Undergraduate : Freshman Sophomore Junior Senior
   [ ] Graduate : Master’s Doctoral Other
   [ ] Faculty
   [ ] Other __________________________________________

2. How many times, on average, have you used the electronic indexes and databases listed on the library web page in a week?
   [ ] Do not know about these
   [ ] Never used
   [ ] 1-5 times
   [ ] 6-10 times
   [ ] 11-20 times
   [ ] 21 or more

2-1. If you have never used electronic indexes and databases, how do you find the necessary materials for your research questions?
   [ ] Use printed indexes
   [ ] Ask for help from reference staff
   [ ] Ask for help from a student or colleague
   [ ] Internet Search
   [ ] Other (please specify) : ________________________________

3. Where do you use the electronic indexes and databases? (check all that apply)
   [ ] Any main or branch libraries on campus
   [ ] Home
   [ ] Work office
   [ ] Other (please specify): ________________________________
4. How do you feel when you try to find the appropriate databases for your research questions?
[ ] Very confident
[ ] Moderately confident
[ ] Not confident at all
[ ] Other feelings (please specify):

5. Have you ever used the “Subject Listing of Selected Electronic Indexes and Databases” (which is available from the library home page) for your research questions?
[ ] Yes [ ] No [ ] I don’t know what this is.

5-1 If you answered yes, how helpful is the “Subject Listing” for your selection of the appropriate databases for your research questions?
[ ] Extremely helpful
[ ] Moderately helpful
[ ] Not helpful at all

5-2 If you answered no, why didn’t you use the index?

6. When you encounter difficulties selecting the appropriate electronic databases, where do you mostly get help or assistance?
[ ] Reference librarians
[ ] Descriptions from each electronic database and index
[ ] Ask for help from a colleague
[ ] Instructors
[ ] Other (please specify)

7. What do you need to know to be more effective at searching electronic indexes and databases? (check all that apply)
[ ] Not necessary; searching effectively.
[ ] Improve search strategy
[ ] Select the appropriate database
[ ] Use the software interfaces
[ ] Limit/Advanced search (by year, language, proximity, etc)
[ ] Save search results to floppy disk
[ ] Use keywords, thesaurus
[ ] Use AND, OR & NOT operators
[ ] Other (please specify): ____________________________________

8. What type of training would you like to have in order to become a more effective searcher? (check all that apply)
[ ] Personal assistance from library staff
[ ] Hands-on workshop
[ ] Online help screen
[ ] Printed guide
[ ] Lecture/demonstration
[ ] Others (please specify)

____________________________________________________________________

9. Overall, how satisfied are you with the electronic indexes and databases services?
[ ] Very satisfied
[ ] Satisfied
[ ] Slightly satisfied
[ ] Not satisfied

9-1. If you are not satisfied, please check the appropriate reason(s) below:
[ ] Too many electronic databases and indexes
[ ] Hard to find the appropriate one
[ ] Computer related technical problems (speed of download, remote access, etc).
[ ] Don’t know how to use
[ ] Others (please specify)

____________________________________________________________________

10. Do you think that there is a need for instruction/training program explaining the uses of electronic databases and indexes?
[ ] Yes
[ ] No
[ ] Not sure

11. What do you like about the library’s electronic indexes and databases services?

12. What can the library do to improve this service?