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**ABSTRACT**

Based on the assumption that librarians can benefit from a better knowledge and understanding of information needs and behavior, this paper presents a review of the literature on information needs and information seeking behavior from 1971 to 1986, a report on a survey of 100 graduate students enrolled in a course on educational research at Memphis State University (MSU) in Tennessee, and a consideration of the implications of this research for bibliographic instruction. The data collected for the MSU study are also compared with data from the Summers group study of 1,078 educators in Canada which was conducted in 1984. The survey instrument and an 86-item reference list are attached. (RP)

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## INFORMATION NEEDS: IMPLICATIONS FOR THE ACADEMIC LIBRARY

by

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Memphis State University Libraries  
1986

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### INTRODUCTION

"I need some information..." Reference librarians hear this a thousand times a day. Often the response is a quickly delivered specific answer: a fact, a book, an index, etc. From time to time reference librarians should stop to consider the underlying complexity of the information need and to ask, as has Fine (1984), "Is a 'need' that which an individual states? What about the need that cannot be articulated—is it then not a need from the perspective of the library?" (p. 447). A continuing investigation into the need for information and into information seeking behavior should be required of all reference librarians.

### REVIEW OF THE LITERATURE

#### THE CONCEPT OF INFORMATION NEEDS AND USES

There is a large body of literature on information needs and uses whose size is bracketed by the estimates of over a thousand published papers on the topic

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(Crawford 1978) or more ( Krikelas 1983) . There is, however, no standard conceptual basis for an understanding of information need. As a result it is difficult for the reference librarian or his/her critic to interpret and relate many of the studies. Ely (1973) challenges us to consider the myths of information needs, stating that "the lack of reliable protocols to measure information needs should offer a challenge to researchers" (p.17). Fifteen years of the most intensive developments in information processing technology have passed and still this challenge remains unmet. Wilson (1981) on the other hand notes that social scientists acknowledge only psychological, cognitive, and affective needs and proposes replacing information needs with "information-seeking towards the satisfaction of needs" (p. 8).

In the published literature there is no simple agreement in terminology. Information need is treated both as a stimulus and as a response. As a stimulus, it is that which stimulates a person to begin seeking information. In this respect, researchers study why someone seeks information. As a response, information need is the system's answer, such as facts, books, or journals. Research from this perspective attempts to determine what information is needed.

Several writers point out the problems in distinguishing need from want or demand. Need may be seen as what one *ought* to have, want as what one *would like* to have, and demand as what one *asks for* (Line 1973). Needs, wants and demands may be one in the same or entirely different. Derr (1983) attempts to establish conditions which are necessary and sufficient to determine an information need as opposed to a "want" or "demand". He argues that a person has a need for information if: 1) there is a genuine or legitimate purpose for the

information, and 2) the information in question contributes to achieving the purpose for which the information is sought (p. 275). He states that "In short, an information need is a condition in which certain information contributes to the achievement of a genuine or legitimate information purpose" (p. 276). The determination of need based on judgements as to the legitimacy of the purpose can lead to potential misuse and possible abuse. Indeed, in a Socialist society the judgement of need is the province of the State (Leupold 1983).

In response to the confusion in definition, many writers prefer to consider needs, wants and demands simply as subsets of information need and concentrate on information use (Faibisoff and Ely 1978). Roberts (1975) suggests that the various stages preceding use be considered as representations of demands upon an information system. He, therefore, proposes an examination of the "Potential Demands" which an individual and a group may make on the system.

While not ignoring the possible ambiguities, a number of writers concentrate on use as indicators of need. In a classic study of the information uses of scientists, Voigt (1961) has identified three levels of information need and approaches to information. The need to keep-up-to-date with the progress in the scientist's own field is labelled the current approach. The need to locate specific information related to ongoing research or problems is the everyday approach. The need for all information on a subject, or at least all that can be found, is the exhaustive approach. While Voigt admits that this framework may be an oversimplification, most of the scientist's needs for information can fit into one of these approaches and it is useful for categorizing information needs.

In a similar manner, Mick, Lindsey and Callahan (1980) classify information needs as either applicational or nutritional. Applicational needs "are concerned with finding answers to specific questions or problems" while nutritional needs "are concerned with maintaining the general competence of the individual" (p. 349). These authors propose a model in which the individual's attitudes, environment and situation interact to create a stimulus which produces the need. Need, in this case, is similar to an awareness or readiness stage, which elicits some information seeking behavior. Krikelas (1983) labels these as immediate or deferred needs. Immediate needs initiate directed information seeking behavior, while deferred needs elicit less formal and less directed information gathering behavior. The exhaustive and everyday approaches, applicational and immediate needs are basically the same in that they result in directed information seeking activities. The individual might consult a book or a newspaper or a colleague--in any case a specific behavior is initiated. Similarly, the current approach, the nutritional and the deferred needs have much in common in that the behaviors are less directive. The individual who reads the professional literature, attends conferences, who continues to acquire knowledge in an ongoing, nondirected manner may be said to be acting as the result of these needs.

#### STUDIES OF INFORMATION NEED

What are the information needs of faculty and students? It is important to note that most studies do not distinguish between need and uses and that this distinction is rather difficult. Scientists and engineers (not included specifically in this paper) have been the focus of much of the work (for reviews, see Paisley,

1968; Lin and Garvey, 1972; Martyn, 1974; Crawford, 1978). The first major investigation of social scientists was conducted by Line and his associates at the University of Bath in 1971 (Line, 1973). The Bath study indicates that social scientists rely heavily on print sources, prefer English language materials, want sources which are statistical, methodological and conceptual rather than historical and descriptive and prefer doing their own literature searches. The researchers note that while the actual information required differ greatly among the various social science disciplines, the patterns of use do not vary much from discipline to discipline.

Comparison of the sources used by scientists and social scientists indicate that both groups may use the same types of materials, but differ in the degree of importance assigned to the materials. Both use journals and monographs, but scientists depend more heavily on journals, while social scientists use both with equal frequency (Skelton, 1973). Hurych (1986) attemptto replicate the Bath study with data gathered from requests for online bibliographic searches in a university library. Analysis of 462 university faculty search forms largely supports the conclusions of the Bath study. As compared to faculty in other disciplines, social scientists te to make more general statements, to request more comprehensive searches, to limit their search requests to English language material, and to use more databases than those of other disciplines.

Other studies of humanists (Steig 1981; Stone 1982; Broadbent 1986) suggest similar conclusions. Faculty members in the humanities tend to rely on print material, particularly books and journals, to work alone, to use primarily English language material, and to prefer to do their own literature searches. All groups

complained of difficulties in obtaining sources, specifically dissertations, newspapers, and other less easily available sources, and in using microfilm and computerized information resources. Biggs (1981) suggests that much of the tension between librarians and other university faculty hinges upon decisions regarding material selection, storage, and format. The library's decisions based upon storage and conservation considerations often appear to be opposed to the user's need for easy access.

These studies also investigate the use of reference sources by social scientists and humanists. The findings are similar to those in the sciences. Faculty and researchers in these disciplines do not rely heavily on formal reference sources. Their information seeking behavior appears to be somewhat casual and informal. Bibliographies and footnotes in books and journals rank high as sources for finding information, while indexes and abstracts ranked in the middle and librarians consistently ranked last (Steig 1981). Browsing (which might be characterized as a non-directed directed method of locating information) appeared to play an important role. Computerized information retrieval is of minimal importance. Indeed, Borgman (1985) notes that browsing is more difficult in an online system and that online databases are most effective when used to retrieve a specific or a known item. She suggests that the increasing automation of libraries may present barriers to information access, particularly in disciplines in which browsing appears important.

Gleaves et al. (1984) surveys faculty members in the Department of Education at Vanderbilt University regarding their library use and purpose for research. Research tools most frequently used included published documents, experiments



and/or observation, and interview or questionnaires. For general information, faculty relied on print materials, especially books and journals; they used microforms, audio-visual, and other less traditional materials less often. Respondents stated that the expected product of their research was journal article, while the most commonly completed product was a conference paper.

The information needs of graduate students have not been as extensively studied. This may result from an assumption that the needs of graduate students are similar to either undergraduates or faculty in the discipline. Fehid et al. (1984) surveyed PhD students at Syracuse University in economics, English, history, geology, philosophy and physics on their use of library resources. Differences in use did not correlate with discipline but with the student's position in the graduate program. Students in the coursework phase of the program used different information resources than did those in the dissertation writing phase.

### FACTORS INFLUENCING NEEDS

Several studies concentrate on factors affecting the individual's information need. Paisley (1968) describes individuals as living in a number of information environments and maintains that information need is more strongly affected by psychological and demographic variables than by the reason for seeking information. He conceptualizes these information environments as a series of almost-concentric circles including the following: the individual's culture, the political system, the membership group, the reference group, the "invisible college", the formal organization, the work team, the legal/economic system, the individual's cognitive structure and the formal information system. These



systems, with varying degrees of importance, have an influence on the individual's information needs and behaviors. Wilson (1981) concurs with Paisley and includes correlates of needs in the individual's environment (e.g. specifically the work, socio-cultural, politico-economic, and/or physical environment) and role (both work role and performance level). Mick (1980b) also proposes a thorough examination of information needs based on cognitive factors, individual-/experiential factors and environmental/situational factors. It is quite possible that these all factors influence the way people approach and interact with information. Summers, Matheson and Conry (1982) surveyed over 1,000 educational practitioners in Canada. They identified the following as good predictors of information use: position, dissemination of information and attitude toward information. Level of education explained variance for a number of sources, while professional experience and sense of isolation were relatively low predictors of information use. These authors suggest that these variables warrant further study. A better understanding of the factors influencing information use could facilitate the design of better and more cost-efficient information systems.

A reexamination of their data lead Summer, Conry and Matheson (1984) to emphasize that information use cannot be easily explained and that variations may be the result of the interrelationships of a number of personal, professional and psychological factors. Individuals in higher administrative positions tended to seek more information and had a greater variety of purposes for seeking information. These individuals had broader organizational responsibilities and were not always under the time constraints of others. The variety of sources and relative use of information also appears to increase with professional

responsibility. These authors criticize the work of others for discussing the "what" of information seeking rather than the "why". Summers, Conry and Matheson suggest further research—the "whys" of information need and information seeking are still not completely explained.

The relationship between position/work group and purposes for seeking information are interesting. Summers, Conry and Matheson (1984) find that classroom teachers are most concerned with: teaching methods, locating new materials and facts, motivating students, developing new material, solving student problems. Support personnel (such as counselors) had much the same concerns with regard to teaching techniques and student problems, but included broader interests such as: following new trends, curriculum development, evaluation, professional development, writing reports, classroom management, decision making, and public reaction. Administrators had the same purposes as the teaching and support personnel, but also had the most varied and important reasons for seeking information.

In addition there were differences in the sources of information between the groups. Classroom teachers tended to use sources which were close at hand and more traditional. Support personnel broadened included less easily accessible materials and organized interpersonal sources (such as workshops and conventions). Administrative personnel reported the most frequent and active use of information sources. This study appears to support a theory that as an individual advances in the professional hierarchy (which might parallel the educational career ladder in Tennessee), that individual experiences a concurrent need for additional and broader information sources. Librarians in

the academic community, especially those dealing with graduate students who are working to upgrade their professional position through further education, should be aware of this and concerned with facilitating the development of information gathering skills.

### **SURVEY AT MEMPHIS STATE UNIVERSITY**

During the Spring and Fall semesters of 1986 a questionnaire (see Appendix A) was distributed to graduate students enrolled in "Introduction to Educational Research" (EDRS 7521/8521) classes at Memphis State University. The questionnaire was adapted from that used by Summers, Matheson and Conry (1983, 1984) and concerned information-related behaviors and attitudes.

Responses have been tabulated from 100 questionnaires. Of this group, 82% were working toward a Master's degree, 15% toward a doctorate and 3% toward no specific degree. Some students were beginning their graduate program, but many were well into their course of study (one student had completed 88 graduate hours). While 64% of the respondents were students in the Department of Education, other departments such as Psychology, Nursing, History and Biology were also represented. This sample differs significantly from the Summers, Matheson and Conry group. The Summers group was a random sample of 1078 educational practitioners in British Columbia, Canada. It included elementary and secondary school teachers and support personnel as well as school and district administrators. In addition their statistical analysis of the data was more complex than could be attempted here.

Although significant differences exist, it is interesting to compare the data

for the two groups. Responses are based on a scale of 1 (low) to 4 (high). With regard to frequency of use of information sources (Table 1) MSU students ranked textbooks, libraries and journals as the most frequently consulted. In contrast, the Summers group stressed sources which were closer at hand, such as colleagues, notes and files in the office. Both groups placed librarians low on the scale and computerized retrieval was at the very bottom of the list.

	MSU		SUMMERS, et al.	
	MEAN	RANK	MEAN	RANK
1. With what frequency do you use the following as sources of information.				
Textbooks or books	3.41	1	3.21	3
University, public libraries	3.21	2	2.00	10
Professional journals	3.19	3	2.64	6
Notes, files in your office	2.98	4	3.32	2
Conversations with colleagues	2.78	5	3.50	1
Footnotes, bibliographies in books, articles	2.52	6	(NA)	(NA)
Curriculum materials	2.44	7	2.79	4
Outside experts	2.21	8	2.30	8
Abstracts, bibliographies	2.30	9	2.23	9
Research and theses	2.16	10	1.80	11
Librarian	2.15	11	(NA)	(NA)
Bookstores	2.11	12	(NA)	(NA)
Workshops, seminars	2.06	13	2.65	5
Conventions or meetings	1.91	14	2.45	7
Computerized retrieval	1.48	15	1.30	12

**TABLE 1**

With regard to values associated with information sources (Table 2), both groups rated all characteristics fairly high with means ranging from 3.75 to 3.12 in the MSU sample and 3.58 to 2.50 in the Summers group. It appears that the respondents would like information sources to possess all the positive

characteristics of authority, ease of use, availability and inexpensiveness.

Actually the dictionary, possibly Webster's Collegiate, pocket edition, may best fit this description.

	MSU		SUMMERS, et al.	
	MEAN	RANK	MEAN	RANK
2. How important are the following characteristics of information sources to you?				
Authoritative, accurate and objective	3.75	1	3.58	1
Likely to have information needed	3.66	2	3.58	2
Complete and comprehensive	3.43	3	3.44	5
Easy to use	3.47	4	3.22	7
Near at hand and usually available	3.43	5	3.46	4
Responsive to information problem	3.39	6	3.49	3
Keeps you aware of new developments	3.38	7	3.44	6
Leads to other sources	3.37	8	2.86	9
Free or inexpensive	3.20	9	2.50	11
Access without involving others	3.19	10	2.56	10
Variety of viewpoints or discussion	3.12	11	3.13	8

**TABLE 2**

Because the MSU questionnaire collected nominal data while the Summers questionnaire collected interval data, it is impossible to compare the responses to the question on barriers to information. (Table 3). However, it is interesting to note that time constraints were mentioned by 80% of the respondents from Memphis State. Difficulties in locating sources and in understanding library procedures also were important.

What barriers do you perceive to locating  
and obtaining the information you need?

Sources 51% yes  
 Procedures 44% yes  
 Time Constraints 80% yes  
 Financial constraints 27% yes  
 Physical barriers 9% yes

### FIGURE 3

In response to a question concerning their ability to satisfy their information needs, 8% of the MSU group checked "very successful", 74% checked "somewhat successful", 8% checked "somewhat unsuccessful", and 0% checked "unsuccessful". A majority of these students appear to be satisfied with their information seeking behavior. This complacency might play a role in the later frustration these students feel when faced with an information problem they are "somewhat" able to solve.

### IMPLICATIONS FOR USER INSTRUCTION

"Where do I begin?" "I don't know where to start or what exactly I am looking for." Comments like these were frequently written on the MSU questionnaire and support personal observations of reference librarians on the difficulties and frustrations encountered by patrons.

Formal instruction in the use of the library began with a program at the University of Michigan in 1882. A historical interest in library or bibliographic instruction can be found in Ralph Waldo Emerson's comment that while colleges have libraries they "furnish no professor (of) books; and I think no chair is so

much wanted" (quoted in Bonn 1960, p. 27).

Instructional programs are usually directed at the undergraduate student. Faculty may assume that graduate students have the requisite skills. Dreifuss (1981) reports that while 91% of the faculty believed their students knew how to use the library, only 14% of the graduate students surveyed at the University of Missouri felt comfortable using the university library. Madland (1985) stresses that undergraduates do not leave the university with uniform library skills. Stoen (1984) summarizes research studies which indicate that undergraduate education typically requires no or only sporadic or limited library use. Indeed, Rambler (1982) reports on a study of course syllabuses which supports the belief that undergraduates are not forced to make use of the library. Only 8% of the courses required much library use and 63% required no use at all. Much of the information acquired by the undergraduate can be gathered from lectures, textbooks, materials on reserve and prepared reading lists. Few independent literature or information searches are performed or required. The student who begins graduate work after having been out of school for a number of years faces an even greater problem.

Much of the student's frustration may result from problems associated with defining their information needs and developing an effective strategy to meet these needs. There have been several studies of question formation which might be useful for an understanding of information need and the building of a "bibliographic bridge" (Eenson and Maloney 1975) between the need and the information. Taylor (1962, 1968) identifies four levels of information needs and their expression through questions. He distinguished a spectrum from which



included the following categories:

- Q1 -- the actual, but unexpressed need for information (the *visceral* need);
- Q2 -- the conscious, within-brain description of the need (the *conscious* need);
- Q3 -- the formal statement of the need (the *formalized* need);
- Q4 -- the question as presented to the information system (the *compromised* need).

As the individual's information need proceeds through these levels, it moves from unconscious to conscious, from ambiguous to rigid, from complex to simple. The unexpressed need is translated into a formal question which becomes the basis for interaction with the information system. The questions the individual asks depend at least in part on the individual's ability to formulate questions within the framework of the information system. The *compromised* need represents the individual's expectations with regard to the information system. Taylor is concerned specifically with an interaction between patron and reference librarian. He notes that in an actual self-help situation, the questioning behavior is open-ended and dynamic, often changing in response to feedback from the system.

Markey (1981) incorporates isolated and negotiated levels of question formation into Taylor's model. She focuses on question/need formulation during an interview for an online search. Any level in which there is an interaction between librarian and patron becomes a negotiated level. In most cases negotiation occurs at level Q2 through Q4 during which a librarian tries to understand the patron's needs and provide a response derived from the information system. It appears that one can incorporate the process of question negotiation into any information seeking activity whether or not an librarian or other intermediary is present. Basically, the individual negotiates between the

information system and the information need. The individual's needs can change with feedback from the system.

Horne (1983) suggests that question generation is dependent upon information need and that questioning is an operational reflection of the need. Derr (1984b) characterizes questions as having a given structure—a subject and an inquiry—and classifiable according to the concepts they presuppose. He identifies the following presuppositions: existence, identity, properties, relation, number, location, time, and action. Some of these presuppositions appear to resemble the psychological, sociological, environmental factors in information need suggested earlier. Derr suggests that training in the rules of question identification and classification would help an information professional understand and deal with a patron's information request. These researchers suggest that analysis of the question may lead to analysis of the need. An effective approach to teaching the student to analyze the information need might be to encourage question formulation and classification. Much of the success a user attains in seeking information may depend, not only on the sophistication of the information system, but on the user's ability to effectively interact with it.

Effective interaction also hinges upon an awareness of the information with which the individual interacts. In an interesting and related articles, Rudd and Rudd (1986) make the point that users frequently engage (intentionally or not) in activities which seek to avoid or minimize information overload. An individual may interact with only a subset of the available information and may completely avoid formalized information seeking. Such avoidance procedures result in incomplete information or misinformation. Rudd and Rudd suggest that

instruction in the use of library resources and in strategies to improve access would be beneficial. They make some interesting observations on the way in which system facilitates avoidance. For example, most bibliographic tools are designed in a manner which allows user to restrict information seeking to only a portion of the available information. Access by date or keyword encourages the user to examine a subset of the information (p. 317). This observation suggests that online bibliographic searching as a tool for promoting student awareness of and interaction with the literature. Online databases are not divided into annual volumes and retrieval is not limited by keywords or subject headings. The computer response is instantaneous, providing opportunity for feedback and new strategy formation.

Online searching has traditionally been used to retrieve citations from the literature and searches have been performed by information professionals, working as the student's information broker. Recently services have been marketed which encourage the student to perform the search alone. Memphis State University offers the U-SEARCH service through which patrons access over 90 databases available through BRS/After Dark.

A computer search has the greatest possibility of success when the information needs are expressed in a form which can be translated into a strategy that elicits the appropriate information. At Memphis State we have developed a worksheet to help students prepare for a search (see Appendix B). The first step is an expression of information need. Step 2 on the worksheet asks the user to identify specific concepts. Building on search tactics suggested by Bates (1979), alternate methods of expressing the problem are formulated and investigated.

Step 3 on the worksheet directs the student to list additional terms, to expand and further explore the question.

One can tell a student that there are approximately 1500 journals in education or one might have the student do a search on a topic such as teaching science in the elementary school. Retrieval on the term "elementary school" (2600+ documents) gives some evidence on the scope of the literature, as does "science" and "teaching methods". The search is refined by combining terms, but can be expanded by including other terms and recombining the conceptual groupings. Displaying titles and subject headings can give students some clues as to the relevancy of the sources. Students can then evaluate what they have found and their original request (need statement) or strategy. Instruction can focus on the relation of their information desire and the questions they ask of the system and how subsequent modifications affect retrieval. Because the computerized databases are so large, often containing over a million records, the amount of information available becomes immediately apparent. So, too, does the necessity to analyze the information need/request to effectively interact with the system. Macfayden (1975) has described inquiry as a process which requires display and feedback—guided by a certain amount of doubt (p. 3). The use of a computerized search as an instructional tool for a process is suggested because it provides ample opportunity for display and feedback. To be useful in this manner online searching must be seen as a process rather than a method of retrieval. This supports instructional strategies emphasizing process over source (Mellon 1984).

## CONCLUSIONS

The literature on information needs and uses is large and diverse. It indicates that needs are not simple and direct, but depend on personal, cultural, psychological, intellectual and other environmental factors. Much of human information seeking activities are casual, based on habit rather than instruction. If a goal of higher education is to produce a self-directed, life-long learner, students would benefit from learning to effectively seek information on their own. Students should be helped to better understand their information needs, to develop skills to analyze their needs and wants and to transform them into demands which can effectively interact with the information system.

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## APPENDIX A

## SURVEY QUESTIONNAIRE (Sample = 100)

The purpose of this questionnaire is to gather data on the behaviors people employ when they are looking for information. The need for information may arise when you need to answer a question, solve a problem, or try to understand something.

Department: \_\_\_\_\_ Major: \_\_\_\_\_

Candidacy: Doctorate: 15 Masters: 82 Special: 3

Number of hours completed in graduate school: 0-88

Number of hours currently taking: 1-16

Do you work? No: 20

Yes: 80 Full-time: 56 Part-time: 4

	low		high	
1. With what frequency do you use the following as sources of information.				
Conversations with colleagues	15	24	28	32
Workshops, seminars	35	34	22	9
Notes, files in your office	9	16	43	32
Textbooks or books	0	11	37	52
Professional journals	6	13	40	41
Outside experts	29	30	32	9
Conventions or meetings	40	33	23	4
Computerized retrieval	66	22	7	4
Abstracts, bibliographies	23	37	27	13
Research and theses	27	39	25	9
Curriculum materials	24	25	36	15
University/public libraries	6	15	33	45
Bookstores	28	42	21	9
Footnotes, bibliographies in books/articles	17	28	41	14
Librarian	21	46	21	9

	low		high	
<b>2. How important are the following characteristics of information sources to you?</b>				
Authoritative, accurate and objective	1	2	18	79
Likely to have information needed	0	3	28	69
Responsive to information problem	2	11	33	54
Near at hand and usually available	1	12	30	57
Complete and comprehensive	0	5	40	55
Keeps you aware of new developments	2	7	42	49
Easy to use	0	9	35	56
Variety of viewpoints or discussion	1	19	47	33
Leads to other sources	0	14	35	51
Access without involving others	3	18	36	43
Free or inexpensive	5	17	31	47
<b>3. How frequently do you consult the following when at a public or university library?</b>				
Card catalog	6	15	35	44
Online catalog	45	28	14	13
Reference books	3	18	41	38
Periodical indexes	4	13	28	55
Journal abstracting services	25	29	20	26
Online bibliographic search services	53	31	12	4
Librarian	10	39	35	16
<b>4. What barriers do you perceive to locating and obtaining the information you need?</b>				
Sources	51			
Procedures	44			
Time constraints	80			
Financial constraints	27			
Physical barriers	9			



5. When do you most often have a need for information?  
At work 5 For coursework 89 For personal needs 6
6. How many professional journals do you read regularly? 0-6( $m=1.65$ ,  $SD=0.53$ )
7. On the average, how much time per week do you spend reading professional books or journals? 0-20 ( $M = 4.05$ ;  $SD = 3.87$ )
8. On the average, how much time per week do you spend seeking information?  
0-10
9. In general, how successful do you think you are in satisfying your information needs?
- |                                 |                                |
|---------------------------------|--------------------------------|
| Very successful <u>18%</u>      | Somewhat successful <u>74%</u> |
| Somewhat unsuccessful <u>8%</u> | Unsuccessful <u>0%</u>         |