Students' Perceived Effectiveness Using the University Library

Cheryl Ann McCarthy

Many academic libraries are wondering whether they are providing adequate physical and intellectual access to library resources for their students. Before planning new services, academic librarians must first evaluate students' current information needs, skills, and satisfaction in using library resources. By using a survey in this investigation, students were asked to rate their effectiveness, their satisfaction, and their needs and expectations in the use of library resources at the University of Rhode Island. After collecting 608 surveys, the data were coded, tabulated, and analyzed, using both quantitative statistical analysis and qualitative content analysis. While the majority of students believe that they are effective seekers and users of library resources, 40 percent were not satisfied with their search for information and materials found. When students were asked what they needed to become more effective users, students recommended better organization and availability of materials, more books and journals, more training and classes, more staff and staff assistance, and enhanced computer facilities.

hile demands and costs for library resources and services increase and budgets decrease, how can university libraries ensure that students have physical and intellectual access to resources needed? How can university libraries ensure that students know how to use library resources effectively, especially online catalogs and CD-ROM databases? How do students' expectations change with the advent of these new technologies? Furthermore, do students know how to formulate research questions and how to identify, locate, select, and use resources relevant for their research questions? While planning library instruction and services, librarians should first ask students about their information needs, skills, and satisfaction in using library resources. Therefore, this study assesses the stu-

dents' perceived effectiveness, their satisfaction, their needs and expectations in the use of library resources at one university library.

THE UNIVERSITY OF RHODE ISLAND LIBRARY: EXPANSION AND EXPECTATION

At the time of this study, spring 1993, the University of Rhode Island Library reached a milestone with near completion of an expansion and renovation project, adding 89,000 square feet and acquiring its one-millionth volume. Simultaneously with the rebuilding project, the new integrated online public access catalog (OPAC) arrived. The new library, aesthetically pleasing with enhanced computer access, faces a new dilemma: how to meet the increasing expectations of its users in this state-of-

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the-art-facility. Diminishing budgets from the state of Rhode Island continue to affect both materials collection and staffing. Expensive serials have been eliminated and staff positions have remained unfilled. During the two-year construction project, the library staff endured five moves of the entire collection while they continued to provide uninterrupted library service. Everything seemed topsy-turvy, even when it was not. Stress on both library staff and users was great. No longer could users determine location of materials from past experience. Each visit to the library required a mental shift. At the time of this study, most of the materials and the OPAC terminals were in their permanent home, but some confusion lingered.

With the introduction of new CD-ROM databases and new OPAC terminals, it became apparent that students expected better and faster access to materials both inside and outside the University Library. The University Library's OPAC is part of a consortium of academic libraries in Rhode Island called the Higher Education Library Information Network (HELIN). HELIN consists of the libraries of the University of Rhode Island, Rhode Island College, the Community College of Rhode Island, Providence College, and Roger Williams University.

In addition to the refurbished library, University President Robert Carothers proposed a new vision for the University of Rhode Island, redefining the role of student from a passive learner to an active learner and a collaborator in research. Also under consideration is a proposal for a revised undergraduate interdisciplinary program using smaller seminar classes. Common sense suggests that demands for library materials and services will increase with a new curriculum emphasizing research. Whether present and future students have the necessary research skills to develop search strategies and to use appropriate library resources remains the question.

This study attempts to identify students' perceived research abilities and their satisfaction in the use of university library resources. Though narrow in scope and focus, this study identifies strengths and weaknesses in students' research skills. In addition, it may influence planning and future studies on the role of the University Library. Future plans for bibliographic instruction may also benefit from this study. The focus of this study, therefore, is on students' assessment of their research strategies and effectiveness, not their assessment of the library's effectiveness. The author recognizes, however, that there may be a correlation between students' perceptions of their effectiveness and their perceptions of the library's effectiveness. The investigator also acknowledges that students' perceptions may not be the reality. However, the investigator assumes that their responses are an honest attempt to assess their abilities.

STUDY DESIGN AND METHODOLOGY

Study Design and Validity

This study resulted from a request by the acting dean of the library for an investigation into students' use of library resources in order to plan future programs and services. According to Doris Schlichter and J. Michael Pemberton, "Planning and evaluation are not independent processes. Analysis of users' needs and measurement of the effectiveness of programs and services provide the data upon which rationalized future plans of the library must be based."[1] Thus, the objectives of this study were:

- to identify students' perceived effectiveness in identifying, locating, selecting, and using the University Library resources;
- to assess students' reasons for satisfaction or dissatisfaction in their search for information and resources at the University Library; and
- to analyze what students need to improve their effectiveness in the use of the University Library resources.

To measure these three objectives adequately, the investigator designed and tested a questionnaire. After pretesting the survey and consulting with both the acting dean of the library and the acting director of the library, the questionnaire

was revised to eliminate ambiguous language and to provide a more efficient layout. Research investigations show that user studies employing the survey method may not produce useful data for planning unless the design of the survey asks what is intended and the questions are straightforward.[2] After revising the questionnaire and testing for validity, the instrument appeared to measure what was intended—users' success, satisfaction, and expectations.[3]

After an analysis of user studies, Douglas L. Zweizig proposed that measuring user satisfaction is probably a better alternative than measuring the benefits of material availability and information obtained.[4] Thus, the user survey asked students to evaluate the degree of their effectiveness for each step of the research process: searching (question 5), identifying (question 7), locating and selecting (question 9), and using materials (question 11). Questions 6, 8, and 12 asked students if they were satisfied with each step of their search and why or why not. Question 13 asked students to explain what would help them to become more effective users of the library's resources. (Copies of the user survey and the coding sheets are available from the author.)

Data Collection

During the last two weeks in April 1993, the principal investigator along with a graduate assistant, distributed 1,800 questionnaires for approximately two hours each day to students entering the library.[5] An attempt was made to ask each student entering the library to take a survey and to return it in the questionnaire box upon leaving. The time of the visits varied in order to obtain a wide distribution of students. During this two-week period, 681 library users returned their surveys in the box. Only one was eliminated for failure to answer any questions. Of the remaining surveys, 608 student responses were coded and tabulated, while 72 faculty or others were coded but not tabulated. Thus, the return rate was more than one-third of the total surveys distributed.

The data results reflect the population of students who use the library. The concerns of nonusers, therefore, were not considered. In April 1993 there were 10,800 registered University Library borrowers out of a student population of approximately 14,000, a faculty of 750, and a staff of 2,000.

Methodology, Quality of Data, and Reliability

While the survey method was used to collect data, both quantitative and qualitative means were employed to analyze the data. A graduate assistant hand coded the quantitative data. The statistical computer program PC/SAS performed frequency counts, percents, and chi-square tests by comparing sets of data to determine significance.[6] The principal investigator performed a content analysis on the open-ended questions by creating coding schemes identifying categories of reasons given for satisfaction, dissatisfaction, and for needs. To ensure intercoder reliability, the graduate assistant and the principal investigator reviewed each other's coding. The principal investigator, however, analyzed and interpreted all the results. (Copies of the frequency counts coding sheets are available from the author.)

Content analysis was chosen to analyze data because of its advantage in making inferences by objectively and systematically creating categories from specified characteristics of responses.[7] A quantitative content analysis enabled the investigator to identify, count, and rank order categories of responses and assess students' common traits or problems with their search strategies. In addition, with a qualitative content analysis the investigator can offer insights into students' reasons for satisfaction or dissatisfaction, and their expectations to improve effectiveness. The investigator could make valid inferences and draw conclusions from students' responses while moving between the quantitative and the qualitative content analysis, thereby gleaning an insight into the full meaning of the data.[8]

Utility of Study

The data results are interpreted as the beginning stage of an ongoing evaluation of the University Library's resources and services to evaluate how effectively the library meets the information needs of its community. Upon completion of this investigation, the library staff was given a draft of this study and invited to discuss the implications for future planning and evaluations. Peter Hernon and Charles McClure identify the importance of this type of evaluation research to help maintain an effective and efficient organization:

Evaluation should incorporate planning, research, and change. Wanting to make changes is a necessary prerequisite for professional development, the meeting of organizational goals and objectives, and satisfying the information needs of current and potential clientele in a timely and comprehensive way.[9]

INTERPRETATION OF DATA

User Satisfaction and Dissatisfaction (Questions 6, 8, and 12)

Paradoxically, though 88 percent of respondents (488 out of 552) indicated success in identifying materials (question 6) and 82 percent of respondents (453 out of 552) indicated success in locating and selecting materials (question 8), only 60 percent of respondents (332 out of 550), indicated satisfaction with their search for information and materials found (question 12) (see table 1). Why do students indicate an almost 25 percent decrease in overall satisfaction with

TABLE 1
TABLE OF STATUS BY USER SATISFACTION

Question 12: "Were You Satisfied with Your Search for Information and the Material(s) Found?"

Status (Class Year)	User Satisfaction or Success		Row Total
	0–No Not Satisfied	1–Yes Satisfied	
Graduate			
Frequency	49	79	128
Percentage	9	14	23
Row percentage	39	62	
Column percentage	22	24	
Upper			
Frequency	111	162	273
Percentage	20	30	50
Row percentage	41	60	
Column percentage	51	49	
Lower			
Frequency	58	91	149
Percentage	10.5	16.5	27
Row percentage	39	61	
Column percentage	27	27	
Column total	218	332	550
Column percentage	40 Not satisfied	60 Satisfied	100

Statistic	Statistics for Table 1–Status by Satisfaction or Success		
	DF	Value	Probability
Chi-square	2	0.249	0.883
Likelihood ratio chi-square	2	0.249	0.883
Phi coefficient		0.021	

their search for information and materials found?

By analyzing the reasons offered by students for both satisfaction and dissatisfaction in their searches, the investigator gleaned an insight into students' rationales. Although there were a total of 1,273 yes responses for satisfaction in questions 6, 8, and 12, only 151 reasons were given for satisfaction. More than twice as many reasons were given for dissatisfaction, however, with 330 reasons offered from a total of 381 no responses for these questions. Thus, 87 percent of students who were dissatisfied with their search gave reasons for their discontent, while only 12 percent of those who were satisfied gave reasons for their satisfaction. Perhaps, when students checked yes for satisfaction on these questions, they thought that the reason was obvious: I succeeded at the task. On the other hand, students who checked no wanted to express their reasons for dissatisfaction in hope that the library would make changes. The following scenario illustrates students' desires for action. Two pharmacy students hand delivered their surveys to the investigator and asked whether the library staff would consider their request for more journals. They asked: "Will the library respond to our recommendations? We know how to research, but we need more current pharmacy journals in order to do our research."

The investigator combined reasons given for satisfaction in questions 6, 8, and 12 and collapsed them into five major categories with frequency counts, percents, and rank order under "Satisfaction" in table 2. In addition, reasons given for dissatisfaction in questions 6, 8, and 12 were also combined and classified into ten major categories with frequency counts, percents, and rank order under "Dissatisfaction" in table 3.

TABLE 2
RANK ORDER "SATISFACTION"

Reasons Given for Yes to Questions 6, 8, and 12	Frequency Count	%
1. Located materials needed	49	32
2. Used computer (HELIN or CD-ROM)	46	30
3. Satisfied with information or resources found	35	23
4. Received help from staff	15	10
5. Completed assignment	6	4
Total	151	99

TABLE 3
RANK ORDER "DISSATISFACTION"

Reasons Given for No to Questions 6, 8, and 12	Frequency Count	%
1. Lack of materials at URI (books or current materials)	71	22
2. Unable to find enough materials (missing or not on shelf)	65	20
3. Lack of journals wanted on topic (not at URI)–ownership	62	19
4. Unable to find journals (not on shelf, not available, missing, or mutilated)	61	18
5. Search process too long, too confusing, or too difficult	24	7
6. Need more reference staff or staff help	11	3
7. Could not identify sources on topic*	11	3
8. Can not find books listed in HELIN (Not on shelf or not at URI)	10	3
9. Library materials are disorganized*	10	3
10. Need faster or better ILL service	5	2
Total	330	100

*Denotes tie with item above.

The number one reason given for satisfaction was simply, "I got what I needed" or "I found what I wanted." Students also indicated contentment with the quality of materials found (reason number three). Evidence cited for satisfaction with the quality and quantity of materials found include comments such as, "diverse information and good quantity," "fairly comprehensive coverage of information," and materials found "pertained well to my topic." Thus, by combining reasons number one and three, more than half of all responses given for satisfaction were ease in locating materials and contentment with the quality and quantity of materials found.

The second highest reason cited for satisfaction is the use of computers to help find information resources. Thirty percent of the written responses for satisfaction praised CD-ROM databases and HELIN. Comments included, "HELIN is GREAT," and "CD-ROM and HELIN, especially [are the] best addition to the library." Satisfaction with computer access seems, paradoxically, to increase students' expectations for more computer services and better access to materials. One student suggested that although "I found some of what I needed, a lot mentioned in HELIN [was] not available at URI." Another student recommended that the library should add computer "online request for books and Gopher service in [the] library building." Others requested more computer terminals, more CD-ROM databases, and more online services. Students using CD-ROM databases indicated satisfaction with their serial citations, but dissatisfaction with a lack of journals at URI. Several users of MEDLINE claimed they were dissatisfied with a lack of medical and science journals to match their citations. One student wrote, "This library didn't have any of the articles/journals listed in computer [database-MEDLINE], had to go to Brown." Another user praised search results using several computer databases: HELIN, MEDLINE, Applied Science & Technology, and ABI, but complained, "once [I] got the references, it was difficult to obtain journals & books in [the URI] library."

Moreover, 10 percent of satisfied students indicated that the reason they succeeded was because of staff assistance. Students commented that they "used staff help" or "asked staff guidance" to get the information or sources they needed. The remaining 4 percent of satisfied students stated that they were pleased merely to complete their assignments.

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Coincidentally, the major reasons given for dissatisfaction correlate with the major reasons given for satisfaction. While 55 percent of students claimed satisfaction with locating materials and with the quality and quantity of materials they found, 42 percent of students claimed dissatisfaction because of their inability to find materials and because of the lack of materials available. Journals were cited as the item most frequently missing or not available at URI. Nineteen percent expressed discontentment with the lack of journals. In addition, 18 percent expressed frustration with their inability to find journals or articles because they were missing, misshelved, mutilated, or not on the shelf. By combining these top four reasons, nearly 80 percent of the dissatisfied students were discontent because of a lack of materials or journals and their inability to find materials or journals needed. Moreover, what appears to please students most—the ability to find materials and the quality and quantity of materials found—also appears to displease students most—the inability to find materials and the lack of resources needed.

Although 10 percent of the satisfied students received help from the staff, 13 percent of the dissatisfied students indicated a need for more staff assistance. By combining three categories for dissatis-

faction (search process too difficult, need more staff assistance, and could not identify sources) into one explanation, the investigator inferred that 13 percent would benefit from more instruction or staff assistance in their search process. If more staff were available to assist students or to teach them, then students might be able to clarify their own needs and locate appropriate resources while increasing their satisfaction and skills using the library. Some students blamed the staff for being unresponsive; however, others claimed that the library was understaffed, especially in the evening. One comment illustrates a plea for help, "What we need is more staff members to assist in the [research] process."

Although there is not a statistically significant difference in the degree of effectiveness, it appears that graduate students are more confident in their skills to search and use library resources while lower division undergraduates appear less confident in their skills.

Other reasons cited for discontent were: cannot find books listed in HELIN (3 percent) and need faster or better interlibrary loan (ILL) service (2 percent). While 30 percent of the students expressed satisfaction with the new computers, 3 percent claimed frustration with computers because of their inability to find materials listed in HELIN. "Some materials [are] not on shelf, but should have been, according to HELIN," wrote one student. Students commented that, although they identified citations from CD-ROM databases, the journals either were not available at URI or that they were unable to find them: "I found the information from CD-ROM with no problem, but the journal articles weren't available." One inference seems plausible: once students' identify citations from the computer databases (HELIN or CD-ROM), they expect all of the materials (books and journals) listed in the computers to be available at URI,

whether the library owns them or not. Moreover, they desire access to these materials either online or via document delivery. They also requested online access to ILL via the computer terminal. Although no one suggested the virtual library, dormitory delivery, or robotics retrieval, requests were made for more online access to library materials from remote areas. In addition, 2 percent complained that library materials are disorganized. These responses may relate to the construction moves, temporary shelving, or misshelving. Some students commented that materials, especially journals on the lower level, should be reshelved faster and missing or mutilated articles should be replaced.

User Effectiveness (Questions 5, 7, 9, and 11)

A comparison of student status (class year) by user effectiveness in questions 5, 7, 9, and 11, shows that regardless of task or class year, when it comes to seeking and using library resources, approximately 65 percent of all students believe that they do it well. Surprisingly, there was no significant difference among class year and effectiveness as evidenced by the chi-square test where the value did not exceed the expected ratio for each of these questions. The phi coefficient, which measures the strength of a relationship, approximated the value of zero in each case, thereby demonstrating that there is no association or correlation between class year and students' perceived ability to search, identify, locate, select, and use library resources.

Before tabulating these results, class years were collapsed into three groups in order to create valid contingency tables where the cells had a value of at least five. Freshmen and sophomores were grouped under the status "lower" representing lower division undergraduates. Juniors and seniors were combined under the status "upper" representing upper division undergraduates. Master and Ph.D. candidates were grouped as "graduate" students. Faculty and others were not tabulated. Half of the total respondents were upper division undergraduates, while approximately

one-quarter were lower division undergraduates and the remaining quarter were graduate students. Thus, there was an adequate representation of each of the class years. The levels of effectiveness were collapsed into three categories: high (4 and 5), fair (3) and low (2 and 1). By comparing the degree of effectiveness, similar patterns emerge for each question. The ratios for each question are surprisingly constant, except for an increase of 20 percent in question 11 (effectiveness in using materials).

Students responded to question 5 ("rate your effectiveness in searching and using the resource(s) checked in question 4") with 65 percent rating their effectiveness high (good or excellent) compared with 25 percent fair, and 9 percent low (poor or needs training) (see table 4). Students responded to question 7 ("rate your effectiveness in identifying material(s) for your information need") with 70 percent rating their effectiveness high, compared with 23 percent fair, and 7 percent low (see table 5). Similarly, when students responded to question 9 ("rate your effectiveness in locating and selecting materials"), 66 percent rated their effectiveness high, compared with 24 percent fair, and 10 percent low (see table 6). Thus, in all three questions there appear only slight differences in the de-

TABLE 4
TABLE OF STATUS BY SEARCH EFFECTIVENESS

Question 5: "Overall, How Would You Rate Your Effectiveness in Searching and Using the Resource(s) Checked in Question 4?"

| | User Effectiveness in Searching | | | | | |
| | Low (1 and 2) | | Fair | High (4 and 5) | | |
Status (Class)	1 Need Help	2 Poor	3 Fair	4 Good	5 Excellent	Row Total
Graduate						
Frequency	5	8	19	65	39	136
Percentage	0.82	1.32	3.12	10.69	6.41	22.37
Row percentage	3.68	5.88	13.97	47.79	28.68	
Column percentage	19.23	26.67	12.50	23.55	31.45	
Upper						
Frequency	14	12	84	136	61	307
Percentage	2.30	1.97	13.82	22.37	10.03	50.49
Row percentage	4.56	3.91	27.36	44.30	19.87	
Column percentage	53.85	40.00	55.26	49.28	49.19	
Lower						
Frequency	7	10	49	75	24	165
Percentage	1.15	1.64	8.06	12.34	3.95	27.14
Row percentage	4.24	6.06	29.70	45.45	14.55	
Column percentage	25.92	33.33	32.24	27.17	19.35	
Column totals	26	30	152	276	124	608
Percentage	4.28	4.93	25.00	45.39	20.39	100
Combine column totals	1 and 2 (Low)		3 (Fair)	4 and 5 (High)		
Frequency	56		152	400		608
Percentage	9		25	66		100

| | Statistics for Table 4—Status by Search Effectiveness | | |
Statistic	DF	Value	Probability
Chi-square	8	17.894	0.022
Likelihood ratio chi-square	8	18.863	0.016
Phi coefficient		0.172	

gree of effectiveness in comparison to class status.

Graduate students had the highest percentage of high ratings in questions 5, 7, and 9 while lower division undergraduates had the highest percentage of fair and low ratings. Although there is not a statistically significant difference in the degree of effectiveness, it appears that graduate students are more confident in their skills to search and use library resources while lower division undergraduates appear less confident in their skills. Moreover, with approximately thirty-five percent of all respondents identifying their effectiveness as fair or low, a significant number of students appear to need help. Thus, it seems

important to this investigator to identify what students need to succeed so that the library can plan accordingly.

Question 11 ("Rate your effectiveness using the material(s) found") had the highest rating with 86 percent of all students rating their effectiveness high, compared with 11 percent fair and 3 percent low (see table 7). Apparently, once students have found materials, they seem confident in their ability to use them effectively. Statistically there was no significant difference among class status. Thus, assessing the responses to question 13 provides insight into what students expect in order to become more effective users of library resources.

TABLE 5
TABLE OF STATUS BY EFFECTIVENESS IN IDENTIFYING SOURCES

Question 7: "How Would You Rate Your Effectiveness in Identifying Material(s) for Your Information Need?"

| | User Effectiveness in Identifying Sources | | | | | |
| | Low (1 and 2) | | Fair | High (4 and 5) | | |
Status (Class Year)	1 Need Help	2 Poor	3 Fair	4 Good	5 Excellent	Row Total
Graduate						
Frequency	0	4	23	66	40	133
Percentage	0	0.70	4.02	11.54	6.99	23.25
Row percentage	0	3.01	17.29	49.62	30.08	
Column percentage	0	22.22	17.42	22.00	39.22	
Upper						
Frequency	12	9	66	158	44	289
Percentage	2.10	1.57	11.54	27.62	7.69	50.52
Row percentage	4.15	3.11	22.84	54.67	15.22	
Column percentage	60.00	50.00	50.00	52.67	43.14	
Lower						
Frequency	8	5	43	76	18	150
Percentage	1.40	0.87	7.52	13.29	3.15	26.22
Row percentage	5.33	3.33	28.67	50.67	12.00	
Column percentage	40.00	27.78	32.58	25.33	17.65	
Column totals	20	18	132	300	102	572
Percentage	3.50	3.15	23.08	52.45	17.83	100
Combine column totals	1 and 2 (Low)		3 (Fair)	4 and 5 (High)		
Frequency	38		132	402		572
Percentage	7		23	70		100

| | Statistics for Table 5—Status by Effectiveness Identifying Sources | | |
Statistic	DF	Value	Probability
Chi-square	8	26.153	0.001
Likelihood ratio chi-square	8	29.123	0.000
Phi coefficient		0.214	

TABLE 6
TABLE OF STATUS BY EFFECTIVENESS IN LOCATING & SELECTING SOURCES

Question 9: "How Would You Rate Your Effectiveness in Locating and Selecting Material(s)?"

| | User Effectiveness in Locating and Selecting Sources | | | | | |
| | Low (1 and 2) | | Fair | High (4 and 5) | | |
Status (Class Year)	1 Need Help	2 Poor	3 Fair	4 Good	5 Excellent	Row Total
Graduate						
Frequency	0	7	23	68	31	129
Percentage	0	1.23	4.05	11.97	5.46	22.71
Row percentage	0	5.43	17.83	52.71	24.03	
Column percentage	0	17.50	17.04	24.55	31.63	
Upper						
Frequency	11	19	64	141	49	284
Percentage	1.94	3.35	11.27	24.82	8.63	50
Row percentage	3.87	6.69	22.54	49.65	17.25	
Column percentage	64.71	47.50	47.41	50.90	50.00	
Lower						
Frequency	7	14	48	68	18	155
Percentage	1.24	2.46	8.45	11.97	3.17	27.29
Row percentage	4.52	9.03	30.97	43.87	11.61	
Column percentage	35.29	35.00	35.56	24.55	18.37	
Column totals	18	40	135	277	98	568
Percentage	3.17	7.04	23.77	48.77	17.25	100
Combine column totals	1 and 2 (Low)		3 (Fair)	4 and 5 (High)		
Frequency	58		135	375		568
Percentage	10		24	66		100

| | Statistics for Table 6—Status by Effectiveness in Locating and Selecting Sources | | |
Statistic	DF	Value	Probability
Chi-square	10	22.048	0.015
Likelihood ratio chi-square	10	25.616	0.004
Phi coefficient		0.197	

Students' Expectations (Question 13)

Students' responses to question 13 ("What would help you to become more effective in using the resources of the University Library?") were coded into nine categories then identified, counted, and rank ordered by the investigator. Interestingly, students tend to recommend improvements in library resources, services, and staff, rather than identify areas for their own growth or improvement in skills. They tend to blame the library's resources and staff for their ineffective searches rather than identify their own inadequacies in using library resources.

Forty percent of the students believe that they could become more effective users of the library if the library had better organization and availability of materials, and more materials (see reasons one and three in table 8). Students seem more concerned with improvements in library resources than with improvements in their own skills. One student claimed, "You are asking the wrong question. I'm O.K., but the library needs to improve."

Thirty-five percent of the students claimed that the library needed to provide more training sessions and more staff assistance if students were to be-

TABLE 7
TABLE OF STATUS BY EFFECTIVENESS IN USING SOURCES FOUND

Question 11: "How Would You Rate Your Effectiveness in Using the Material(s) You Found?"

| | User Effectiveness in Using Sources Found | | | | | |
| | Low (1 and 2) | | Fair | High (4 and 5) | | |
Status (Class Year)	1 Need Help	2 Poor	3 Fair	4 Good	5 Excellent	Row Total
Graduate						
Frequency	2	1	10	75	39	127
Percentage	0.35	0.18	1.77	13.27	6.90	22.48
Row percentage	1.57	0.79	7.87	59.06	30.71	
Column percentage	25.00	9.09	16.13	22.26	26.53	
Upper						
Frequency	5	5	34	164	77	285
Percentage	0.88	0.88	6.02	29.03	13.63	50.44
Row percentage	1.75	1.75	11.93	57.54	27.02	
Column percentage	62.50	45.45	54.84	48.66	52.38	
Lower						
Frequency	1	5	18	98	31	153
Percentage	0.18	0.88	3.19	17.35	5.49	27.08
Row percentage	0.65	3.27	11.76	64.05	20.26	
Column percentage	12.50	45.45	29.03	29.08	21.09	
Column totals	8	11	62	337	147	565
Percentage	1.42	1.95	10.97	59.65	26.02	100
Combine column totals	1 and 2 (Low)		3 (Fair)	4 and 5 (High)		
Frequency	19		62	484		565
Percentage	3		11	86		100

| | Statistics for Table 7—Status by Effectiveness in Using Sources Found | | |
Statistic	DF	Value	Probability
Chi-square	8	8.469	0.389
Likelihood ratio chi-square	8	8.842	0.356
Phi coefficient		0.122	

come more effective users of library resources (see reasons two and four on table 8). One respondent said that the library should require a "mandatory reference course for newcomers—our gym facility mandates one—why shouldn't the library?" Some students would like classes tailored to their subject interests while others recommended general orientation sessions scheduled periodically so students can learn "everything" in the library and how to use it. Several students requested training sessions on HELIN and CD-ROM databases to learn search strategies. One student asked: "Why not publicize a schedule of training sessions or classes in the *Cigar* [the student newspaper] so students will know when the library is offering programs?"

The fourth highest request was to increase the staff and provide more staff assistance. Twelve percent of the students stated that the library was either understaffed or the present staff was not accessible enough for students. Some commented that during busy times, especially in the evening, there is never enough help at the reference desk. Others want staff assistance on each level, especially the lower level, to help students locate journals.

TABLE 8
RANK ORDER: EXPECTATIONS TO BECOME MORE EFFECTIVE USERS

Question 13: "What Would Help You Become More Effective in Using the Resources of the University Library?"

Reasons Given for Question #13 and Additional Comments	Frequency Count	%
1. Better organization and availability of materials (reshelve journals, replace missing volumes or mutilated journal articles)	111	28
2. More training, tours, classes, or more practice and skill in using library resources	90	23
3. Buy more materials—journals, books, videos	47	12
4. Need more staff and more staff help	46	12
5. Better signage, maps, guidelines, handouts or location (on computer)	45	11
6. Improve computer facilities—more access, printers, better databases and cross-references, including CD-ROMs and periodical holdings online, and combine HELIN and CD-ROM	36	9
7. Better and faster ILL or send HELIN materials	9	2
8. Better access to materials	7	2
9. More and better working copy machines	4	1
Totals	395	100

Better signage (i.e., maps, guidelines, handouts, and highlighting locations on the computer terminal) was requested by another 11 percent of the students. In fall 1990 investigators performed an evaluation of signs at the University Library. The investigators concluded that although they did not have enough data to make statistical inferences, signs could be more effective if simple, straightforward, and unambiguous in communicating location, especially for new users trying to find specific items. The investigators acknowledged that new signs were needed at URI and would be included with the construction project. They also recommended an evaluation of signage upon the completion of the construction project.[10] When an evaluation of signage is redone, users may show an increased satisfaction with the new signs in helping them to locate materials in the larger and better designed facility.

With the advent of the computer terminals in this newly refurbished facility, students seem to express a desire for better and faster access to materials. Thus, students requested more computer services in the library. Nine percent of the students indicated that they would like expanded computer facilities in the library. Students seem to expect the computers to both simplify and speed up their search process. After identifying books or serial citations, students complained about seeking materials: "I found what I needed in the computer, but now I have to find whether the library has them and where they are located." Students also complained about having to verify citations in the serial holdings "red book" for call numbers and then having to go to the basement to search for journals. They asked, "Why can't the red book be online?"

Some suggestions for improving computer facilities reveal both students' sophistication and their naivete with regard to the technology. Some students asked if HELIN and CD-ROM databases could be merged with one interface to provide access to all holdings on one computer, including serials and the full text of journal articles. Students wanted to know why the CD-ROM databases gave citations for journals that the URI Library did not own. Several students

requested more computer terminals on each level as well as printers. One student admitted that s/he wanted a printout of citations from HELIN because "I'm to lazy" to write them down. Furthermore, students asked for better database access with cross references and the ability to do online searching on the Internet using the HELIN terminals. Along with the expectation for improved computer facilities, students requested better and faster ILL, with online ILL access for items from the other academic libraries in HELIN. Some students complained that ILL requests take too long and if they need materials, then they have to drive to other libraries in Rhode Island to retrieve them. Students also complained that they were not notified of the status of ILL materials or of recall books.

Moreover, students requested better access to materials and better working copy machines. Some individuals asked for more creature comforts such as couches, less heat, and completion of the construction project. One student commented that s/he would become more effective using the library by "never join[ing] the Greek system . . . [then] I would have to use my brain more often." Another student claimed "less procrastination" would help. These isolated responses do not appear in the rank order in table 8. However, this investigator observed that students who procrastinate until the end of the semester in beginning their search for sources become easily frustrated with the library. Students expect to find library resources quickly with the use of computer databases or with the help of the staff. They also want to find the materials they need readily available on the shelf.

CONCLUSIONS

How effective are students in using university library resources? Based on students' perceived abilities to search and use university library resources, most students believe that they can use library resources effectively. While 86 percent of the total students perceive that they can use materials effectively,

only 60 percent, however, are satisfied with their search for information and the materials found. Why were 40 percent of the students dissatisfied with their search process and what do they need to become more productive users?

Students expect to find more materials on the shelf when they need them. They also recognize that they need more help in using the library, and thus requested training sessions or classes. They specifically identified the need to learn effective search strategies on HELIN and CD-ROM databases. Students would like more assistance from staff and more accessibility to staff. In addition, they would appreciate better signage to communicate not only location but also to provide guidance while searching. Students would like enhancements to computers for better access to collections by combining HELIN and CD-ROM databases with one interface, including serials holdings. One student seemed to say it all when s/he said that in order for students to become more effective users of library resources: "Get the library finished, fully staffed, and immensely funded."

The library construction was completed and a ribbon-cutting ceremony was held in September 1993. Now it appears that the other two pieces are needed to fulfill students' expectations in this state-of-the-art-facility: a fully staffed library and an increased budget to improve holdings. Whether the library can maintain its current level of services with a reduced staff and a diminished budget is doubtful. The dilemma of increased expectations for more technology, materials, training, and staff, without an increase in budget, remains a problem. Requests for expanded library instruction and more user services may require a shift in personnel. The current level of individual instruction provided at point-of-need requires more reference staff than is currently available to teach students on a one-to-one basis. Recent studies indicate that in order for academic reference services to work, academic libraries need organizational change and rethinking of reference services.[11]

It is apparent that if students are to improve their effectiveness, they need more instruction to become more skilled using library resources. In order for this to occur, the library needs more public services staff and a rethinking of reference services. It is recommended that the library assess its current reference services and instruction program in light of students' curriculum needs and skills. Furthermore, it is recommended that the library identify what training sessions are needed in order for students to improve their skills and adequately complete their research assignments.

A reassessment of current library staff and services could help identify programming, staffing, and budgeting needs to expand programs in public services. Workshops and training sessions on search strategies using HELIN and CD-ROM databases are recommended in addition to the current freshmen orientation sessions for Writing 101. Hands-on workshops for CD-ROM database searching by subject could help both faculty and students become better acquainted with the new library resources and the technology as well as relieve library anxiety. Whether this can become a reality at the University of Rhode Island is uncertain, unless the public services staff wants to assess current services and offer expanded programs. Also, the university needs to make a continued commitment to the library budget in order to enhance materials collection and to replace unfilled staff positions.

EPILOGUE

One year after this study, the budget and staff levels at the University Library remain the same, but future plans are ongoing for evaluating library services. As a result of this study, the investigator and the head of Reference Services are preparing to offer and to assess CD-ROM workshops and hands-on training sessions to evaluate students' search strategies. Both participant evaluation surveys and observation methods will be used to evaluate students' success in searching. This joint investigation is in direct response to students' requests in this study for training in CD-ROM database searching. Thus, with another study the library can continue to evaluate, plan, and improve services at the University Library to better serve the information needs of the university community.

REFERENCE AND NOTES

1. Doris Schlichter and J. Michael Pemberton, "The Emperor's New Clothes?: Problems of the User Survey as a Planning Tool in Academic Libraries," *College & Research Libraries* 53 (May 1992): 40.
2. Lowell A. Martin, "User Studies and Library Planning," *Library Trends* 24 (Jan. 1976): 483–96.
3. Ole R. Holsti, *Content Analysis for the Social Sciences and Humanities*, (Reading, Mass.: Addison-Wesley, 1969), 40.
4. Douglas L. Zweizig, "Measuring Library Use," *Drexel Library Quarterly* 13 (July 1977): 3–15.
5. Assistance provided by Alison Maxell, graduate assistant at the Graduate School of Library and Information Studies, University of Rhode Island in 1993; currently director of the North Attleboro Public Library, North Attleboro, Massachusetts.
6. Assistance with program for PC/SAS provided by Gale Eaton, associate professor, Graduate School of Library and Information Studies, University of Rhode Island.
7. Holsti, *Content Analysis*, 14.
8. Ibid., 30.
9. Peter Hernon and Charles R. McClure, *Evaluation and Library Decision Making*, (Norwood, N.J.: Ablex, 1990), 224.
10. Gale Eaton, Michael Vocino, and Melanie Taylor, "Evaluating Signs in a University Library," *Collection Management* 16 (1992): 81–101.
11. See David W. Lewis, "Making Academic Reference Services Work," *College & Research Libraries* 55 (Sept. 1994): 445–56.