

# Electronic Information Technologies and Resources: Use by University Faculty and Faculty Preferences for Related Library Services

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*With support provided by a grant from the Council on Library Resources, the SUNY University Center Libraries conducted a four-campus survey of faculty use of electronic information technologies and resources. The survey and analysis are the first such study including all academic disciplines and a broad range of faculty at several institutions joined in a consortial relationship. The survey's objectives were to determine the availability to faculty of equipment and network connections necessary for access to electronic information resources, to measure use and frequency of use of these resources, to report locations from which faculty access electronic information, and to elicit faculty perceptions of obstacles to the use of electronic technologies and library services which might stimulate use of such resources. The findings reveal that there are inequities in access to electronic technologies among the disciplines; that the most common obstacle to use of electronic information for faculty is lack of knowledge about resources; and that there is strong interest in initiating various library transactions via e-mail or a campuswide information system (CWIS). The survey results present clear mandates related to information services, training, the allocation of funds for networking, and access to electronic information resources for libraries.*



The four graduate University Centers of the State University of New York (Albany, Binghamton, Buffalo, and Stony Brook) have embarked on an ambitious initiative in cooperation and planned collection interdependence to provide faculty and students of the four separate institutions with the widest range of materials for their teaching and research. Because academic research libraries have witnessed a decade of declining purchasing power of the acquisitions

budget and a loss of staff as well as the burgeoning development of electronic information, the four institutions have developed both local and cooperative strategies for sustaining key programs, expanding and networking electronic information resources, and maintaining access to key research publications.

## SUNY CENTER LIBRARIES COOPERATIVE INITIATIVES

In 1990 the directors of the four library systems adopted a policy document,

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"Strategic Directions for Cooperation among the SUNY University Center Libraries," that was to shape their future efforts.<sup>1</sup> During 1989/90, the four libraries installed fax machines and scanning equipment as part of a cooperative Title II-D grant to test the capacity of these technologies and a document delivery program to support expanded resource-sharing agreements.<sup>2</sup> In 1991 the four campuses received a cooperative planning award from the Council on Library Resources (CLR).<sup>3</sup>

During the course of the two-year CLR grant, four studies were carried out on each campus to collect data from which access and delivery policies would be developed. Three of the studies were focused on the libraries' journal collections: a collection overlap study (which surprisingly revealed that approximately 40 percent of the collections were unique; that is, held at only one of the Center libraries); a periodicals use study; and an interlibrary loan survey (which demonstrated that 50 percent of our interlibrary loan needs could be satisfied by the collections of the Center libraries). The fourth study, reported here, was focused externally on faculty needs, attitudes, and expectations for library and information services.

The University Center library directors, as coprincipal investigators for the CLR grant, created a faculty needs assessment study team in November 1991 to design and conduct a focused study of faculty access to electronic technologies, their use of electronic information resources, and their expectations for libraries in a resource-sharing and networked environment. The team consisted of Judith Adams, director, Lockwood Library, University at Buffalo; Deborah Lines Andersen, a doctoral candidate in Information Science at the University at Albany; Sharon Bonk, then assistant director for User Services, University at Albany; Sue R. Faerman, assistant professor of Public Administration and Policy, University at Albany; and Thomas Galvin, CLR grant project research director and professor of Information Science and Policy, University at Albany. The study team created

the survey instrument and prepared the survey for distribution on all four campuses during September 1992.

At the time of the dissemination of the survey, fall 1992, the electronic environment of the Center libraries was beginning to extend beyond the library walls. Each library system had an online catalog with networked dial-in access. Selected Wilson journal indexes in electronic format had just become available on the online catalogs of two Center libraries. All four Center campuses had computer networks that provided access to the Internet, electronic mail, and other remote electronic resources. All four Center libraries offered access to many CD-ROM databases on computer workstations, but none of the campuses had provided distributed access to the CD-ROMs.

#### STUDY DESIGN

The study team reviewed the literature of user surveys to identify models or a survey instrument that could be adapted for its use.<sup>4</sup> They consulted with Susan Jurow, Association of Research Libraries Program Officer, and colleagues at Columbia University who recently had surveyed science faculty about library services.

They found no published report of investigations with similar objectives, assessing user needs rather than assessing satisfaction with current services, nor an appropriate survey instrument that could be adapted. The most influential article in the design of the study was Doris Schlichter and J. Michael Pember-ton's analysis of user surveys as planning tools in academic libraries.<sup>5</sup> In this article, the authors reviewed approximately twenty years of user studies and found that "despite their potential as strategic management tools, user surveys are rarely used to identify needed services."<sup>6</sup> They found that "most 'use studies' reported are primarily descriptive snapshots of how matters stand at the moment with little apparent view toward use in future directions and planning. This lack of rigorous attention to users' needs on the part of academic libraries is surprising in view of the

increasing emphasis on the customer-driven characteristic of private industry."<sup>7</sup> The study team's review concurred with that of Schlichter and Pemberton; that is, that most studies focused on user satisfaction with existing library services and that the surveys often reported conflicting information—high satisfaction but with low knowledge of library services.

The SUNY study was designed to assess faculty needs for access to computer equipment, databases, electronic information resources, and materials not in the library collections. Faculty were asked to respond about their equipment, patterns of use, preferences, specific needs through choice of multiple options, ranked priorities, and open-ended responses. One goal was to determine the present state of readiness of faculty to utilize electronic/networked information resources. The responses would be quantified by institution, rank, and discipline. The data could be used by each school to assess needs and address faculty comments at the discipline level so that specific actions could be taken by library administrations working with computing services professionals, by library public services faculty, and by library liaisons to academic departments. A key element in the design of the study was to ensure that the data collected could be used by librarians to review existing services and to plan new or complementary services at each campus, as well as appropriate joint resource-sharing projects and services.

#### SURVEY DEMOGRAPHICS AND RESPONSE RATE

The user population was all core teaching faculty, selected administrators and professional personnel, and clinical faculty on all four of the University Center campuses. A total of 3,713 questionnaires were distributed on the four campuses. The final response rate for the survey was 27 percent (1,007). Within the 27 percent, the individual campus responses varied: Albany, 24.6 percent; Binghamton, 26.8 percent; Buffalo, 30.7 percent; and Stony Brook, 26.1 percent.

The sample population was compared with the actual populations on the four campuses with respect to rank and discipline. A chi-square analysis indicated that the percentages of differences in the sample by rank and the population distributions across the three faculty ranks were nonsignificant. A chi-square analysis of the percentages of faculty by four broad categories of disciplines (Humanities, Social Sciences, Sciences, and Professional Schools) was significant: Professional Schools were slightly underrepresented and Sciences slightly overrepresented. However, the study team concluded that the differentials are minimal and that the survey sample adequately represents the population on the four campuses taken as a whole, for both rank and discipline.

#### SURVEY INSTRUMENT

The survey questionnaire was composed of four sections: Access to Electronic Technologies and Information Services; Access to Materials; Current and Future Expectations; and Information about the respondent, including a space for open-ended comments regarding the survey content or library services. The survey instrument was distributed to each campus with a cover letter from the campus library director indicating the significance of the study, the cooperative nature of the study, and the intended plans for the results. Interest in the survey and its results was high on the campuses, as indicated by the large number of faculty who requested a copy of the final report.

#### Survey Results

The results of the full survey (and a copy of the survey instrument) are presented in the 1993 report, *Electronic Access Technologies: A Faculty Needs Assessment*.<sup>8</sup> The report was distributed to the four Campus Policy Councils established as an integral element of the CLR grant activities, key grant personnel, vice presidents and provosts, chairs of the faculty senates, and the Council on Library Resources.

This article focuses exclusively on the section of the report of most interest and use to other academic libraries; that is, faculty access to, use of, and expectations related to electronic technologies and information services. The results, conclusions, and recommendations may be helpful to other libraries as they plan for the delivery of services, information access, and instructional initiatives related to electronic information.

### FACULTY ACCESS TO ELECTRONIC TECHNOLOGIES AND INFORMATION RESOURCES

The section of the survey dealing with faculty access to and patterns of use of electronic information technologies served four purposes:

- To survey availability to faculty of equipment and network connections necessary for access to electronic information;
- To measure faculty use and their frequency of use of information resources available through networks;
- To report the locations from which faculty access electronic information, that is, within the library or at remote sites such as campus office or home; and
- To elicit faculty perceptions of obstacles to the use of electronic technologies as well as to identify new services and other factors that might stimulate the use of such resources.

The libraries learned that the availability of personal computers appears to

be nearly universal among the SUNY Centers faculty with more than 95 percent of the respondents reporting that they have a computer in either their home or office. However, a significantly lower percentage of respondents reports that their office computers are connected to the campus network or that they have communications capability from their home or office.

As table 1 shows, the percentage of office computers connected to the campus network drops to 66.5 percent, and only 53.4 percent of faculty have communications modems and software for their home computers. Thus, the survey reveals a need for improvement on all four campuses in regard to campus networking and connection of home computers to the campus network in order to facilitate availability and use of electronic resources.

Overall, faculty readiness to access electronic information technologies in terms of equipment is relatively high. However, there are significant differences in the availability of these resources among the disciplines, especially concerning equipment and connectivity in campus offices. Table 2 documents the comparative lack of computers, and especially the absence of connections to the campus network for the Humanities faculty as compared to faculty in the Social Sciences, Sciences, and Professional Schools.

Only 55.4 percent of faculty in the Humanities have a personal computer in

**TABLE 1**  
PERCENTAGE OF SUNY CENTERS SURVEY RESPONDENTS  
WITH ACCESS TO ELECTRONIC EQUIPMENT AT OFFICE AND HOME

	Office		Home	
	Yes	No	Yes	No
Personal computer	84.0	15.9	80.8	18.9
Communications modem/software	55.4	44.1	53.4	46.2
Connection to campus network	66.5	33.3	29.6	69.9
Printer	78.8	21.1	69.4	30.2
Fax machine	56.8	43.4	10.1	89.4
CD-ROM player connect to computer	9.6	90.2	2.3	97.2

Note: Percentages may not equal 100 percent in cases where respondents did not answer a particular question.

TABLE 2  
 PERCENTAGE OF FACULTY RESPONDENTS, BY DISCIPLINE,  
 WITH ACCESS TO ELECTRONIC EQUIPMENT AT THEIR OFFICE

	Humanities	Social Sciences	Sciences	Professional Schools
Personal computer	55.4	84.5	91.4	91.6
Communication modem/software	29.5	51.3	71.3	58.4
Connection to campus network	34.3	63.3	84.0	71.7
Printer	46.4	80.1	87.7	86.8
Fax machine	27.7	56.2	62.3	65.1
CD-ROM player connected to computer	4.8	6.6	14.8	11.1

their offices, while nearly 85 percent of faculty in the Social Sciences and over 90 percent of faculty in the Sciences and Professional Schools have this equipment in their campus offices. An even greater inequity exists in terms of the availability of connections to the campus networks. In the Humanities only 34.3 percent of faculty have connections to the campus networks, yet in the Social Sciences 63.3 percent of faculty are connected, and in the Professional Schools and Sciences access to the campus network is generally available with respectively 71.7 percent and 84 percent of faculty connected to the network. Although the outcome confirms what the researchers expected, it focuses attention on the resource problems Humanities faculty face.

Today Humanities scholarship and teaching present the same urgency for access to computer technologies and electronic information resources as is necessary in other fields. The recent study, *Computer Use among MLA Members* sponsored by the Modern Language Association, convincingly documents that trends in Humanities scholarship and publishing make access to electronic resources essential for both research and teaching.<sup>9</sup> Despite the urgent need, the effort and resources that would be required to provide universal access to networks throughout a campus is still prohibitive for many institutions, decanal units, or departments.

The strong need of SUNY Humanities scholars for computer technologies and

network access is indicated by the large percentage of Humanities faculty who have compensated for the lack of equipment in their campus offices by purchasing computer and necessary communications equipment for their homes. As table 3 reveals, regarding equipment at home, Humanities faculty are on a par with faculty in all other disciplines. Surprisingly, a significantly higher percentage of Humanities faculty, as compared to faculty in all other disciplines, own fax machines and CD-ROM players connected to computers.

The similarity between the findings related to Humanities faculty in the SUNY Centers survey and the national survey conducted by the Modern Language Association during late 1990 and the first half of 1991 is noteworthy and tends to indicate the applicability of the findings of both surveys to other university communities. Fifty-six percent of the MLA membership responded to its survey ( $n=16,503$ ). Ninety percent of the MLA respondents report access to a computer, and 44 percent have equipment in both their office and home. More specifically, 74 percent of the MLA respondents indicate they have a computer at home (as compared to 78.9 percent of Humanities faculty in the SUNY Centers survey), and 61 percent have computer access at their office (as compared to 55.4 percent of Humanities faculty in the SUNY Centers survey). Regarding access to computer networks, 44 percent of the MLA respondents indicated they had such ac-

**TABLE 3**  
**PERCENTAGE OF FACULTY RESPONDENTS, BY DISCIPLINE,**  
**WITH ACCESS TO ELECTRONIC EQUIPMENT AT THEIR HOME**

	Humanities	Social Sciences	Sciences	Professional Schools
Personal computer	78.9	82.2	82.0	81.3
Communication modem/software	45.5	56.0	59.8	52.4
Connection to campus network	31.5	33.5	31.6	26.2
Printer	71.5	74.2	62.7	71.7
Fax machine	17.0	10.7	3.3	11.7
CD-ROM player connected to computer	4.2	1.3	2.9	1.8

cess, while about 10 percent fewer SUNY respondents in the Humanities said they had connection to the campus network. However, there is a sharp difference in the reported use of electronic mail, with 18.3 percent of MLA respondents reporting such activity while 41.9 percent of SUNY Centers Humanities faculty indicate daily or weekly use of electronic mail.<sup>10</sup> The approximate nine-months-to-one-year-later time frame of the SUNY Centers survey may account partially for this significantly larger percentage.

#### LEVELS AND LOCATIONS OF USE OF ELECTRONIC INFORMATION RESOURCES

The survey also queried faculty about the electronic information resources they presently use and how frequently they use them. Table 4 lists specific electronic resources and the percentages of faculty respondents reporting various levels of frequency of use.

The electronic resource presently used by the largest percentage of faculty respondents is the campus library online catalog. Most faculty report accessing the online catalog on a weekly or monthly basis. The next most widely used resource is electronic mail, which is utilized by nearly 75 percent of the respondents, and nearly half of them report using it on a daily basis. Electronic mail is obviously a most compelling and attractive resource for faculty. The survey showed moderate use of index/abstract databases loaded on the campus

library online catalog, despite quite limited offerings at the time of the survey. When the survey was taken, two of the four library online catalogs offered Wilson databases, and Medline was available via local networks on two campuses. All other electronic information resources received quite low use. Online catalogs of other libraries and CD-ROM databases available at specific stations in the library were used infrequently by slightly more than half of the respondents. Discipline-based electronic bulletin boards and listservs were used by a relatively low percentage of faculty, but the frequency of use by those faculty involved was quite high. Reported use of electronic journals, full-text databases, and statistical databases also was quite low.

Electronic networks provide opportunities for use of major information resources at locations remote from libraries—primarily offices and homes. Table 5 lists the various electronic information resources and the percentage of respondents who use these resources within the libraries or from the remote locations of office or home. Respondents could indicate use in one or both location categories.

Over half of the respondents use both the library online catalog and electronic mail from their offices or homes. At the time of the survey, the SUNY University Center libraries did not provide access to other library catalogs via either their online catalogs or a campuswide information system (CWIS). Many respondents indicating use of other libraries' online

**TABLE 4**  
 FREQUENCY OF USE OF ELECTRONIC INFORMATION RESOURCES,  
 PERCENTAGE OF RESPONDENTS REPORTING EACH LEVEL OF USE

Information Resource	Daily	Weekly	Monthly	Infrequently	Never
Campus library online catalog	12.4	38.6	25.3	14.2	7.7
Other libraries' online catalogs	1.6	7.4	13.4	28.4	47.0
Index/abstract databases on campus online catalog	2.9	15.1	20.6	29.3	29.4
Index/abstract databases via commercial vendor	1.3	6.0	6.5	15.6	68.4
Discipline-based electronic bulletin boards, listservs	13.0	7.6	4.4	13.4	58.9
Electronic journals, newsletters	3.3	6.8	4.0	14.7	68.0
Electronic mail	48.1	11.3	3.0	9.8	25.8
Full-text electronic databases	1.6	3.1	2.1	9.4	80.5
Statistical databases	.8	2.1	2.6	11.5	80.3
CD-ROM index/abstract databases in library	2.6	10.0	17.1	21.4	46.6

**TABLE 5**  
 LOCATION OF USE OF ELECTRONIC RESOURCES, PERCENTAGE OF  
 RESPONDENTS INDICATING THEY USE THE RESOURCE AT EACH LOCATION

Information Resource	At Library	At Office/Home
Campus library online catalog	71.2	51.1
Other libraries' online catalog	34.1	22.2
Index/abstract databases on campus online catalog	52.8	21.8
Index/abstract databases via commercial vendor	17.3	13.3
Discipline-based electronic bulletin boards, listservs	9.7	31.2
Electronic journals, newsletters	7.8	23.4
Electronic mail	17.3	60.6
Full-text electronic databases	9.3	10.1
Statistical databases	8.6	10.2
CD-ROM index/abstract data- bases available in library	43.8	6.3

catalogs from the library locations probably were referring to mediated use of the OCLC or RLIN bibliographic utilities. Also at the time of the survey, the SUNY University Center libraries did not provide computer stations for public access to electronic mail, electronic journals, or commercial index/abstract databases. Faculty indicating

use of such resources within the library were probably referring to mediated use with a librarian of commercial databases, searching Medline in the Health Sciences or Science libraries, and possibly use of networked resources such as electronic mail, listservs, and electronic journals at university micro-computer centers.

Analysis of responses tabulated by discipline and rank reveals some significant deviations from the aggregate results. Specifically, 10 percent to 20 percent more Humanities faculty report daily or weekly use of online catalogs of both local libraries and distant libraries than do their colleagues in other disciplines. Science faculty use the online catalogs the least of the disciplinary groups. Daily or weekly use of online catalogs as well as index/abstract databases mounted on the online catalog is in inverse correlation to rank; that is, the percentage of assistant professors who frequently use the catalog and especially index/abstract databases is between 10 and 15 percentage points higher than their full professor colleagues. Significantly more Science faculty use electronic listservs, bulletin boards, electronic journals, and electronic mail on a frequent basis than do faculty in other disciplines (ranging between 8 to 15 percentage points higher for Science faculty).

#### PERCEIVED OBSTACLES TO USE OF ELECTRONIC INFORMATION TECHNOLOGIES

The survey listed seven possible obstacles to faculty use of electronic resources and technologies and also provided an "other" category with the opportunity for respondents to write in additional obstacles. Table 6 lists the vari-

ous possible obstacles and the percentage of respondents in each discipline indicating applicability of each obstacle. Respondents were asked to indicate all obstacles they considered relevant.

Somewhat counter to expectations, the greatest obstacles perceived by faculty are lack of information about specific databases and lack of training. Considering the fiscal austerity that has characterized SUNY in recent years, it is surprising that lack of funds ranked a clear third significantly behind the other two, followed by the lack of hardware and software. There were no consistent responses in the open-ended "other" category of this question.

The survey followed the question on obstacles with a list of factors that might facilitate or increase use of electronic technologies and systems. Table 7 shows that across the disciplines information about databases and training in use of electronic mail and networks are the major factors that would stimulate use. Humanities faculty rank connections to networks and availability of equipment much higher than do the other disciplines. Disciplinary trends requiring the use of electronic technologies and resources seem to have established themselves prior to the time of the survey and were not a continuing factor exerting pressure on faculty to increase use of electronic resources.

TABLE 6  
OBSTACLES TO USE OF ELECTRONIC INFORMATION TECHNOLOGY  
AND RESOURCES BY DISCIPLINE, PERCENTAGE OF  
RESPONDENTS INDICATING OBSTACLE IS APPLICABLE

	Humanities	Social Sciences	Sciences	Professional Schools	Total
Lack hardware	41.0	27.9	13.1	24.6	25.6
Lack software	36.7	25.7	13.9	22.2	23.5
Lack training	59.0	53.1	32.8	49.9	48.5
Lack information on databases	60.2	73.0	60.2	54.2	61.5
Lack operating funds	44.0	44.7	41.4	35.3	40.7
Lack interest or need	12.7	9.7	15.2	7.8	11.0
Lack time	24.1	22.1	26.2	32.0	26.6
Other	12.7	8.4	6.1	6.6	7.8



**TABLE 7**  
FACTORS THAT MIGHT INCREASE USE OF ELECTRONIC TECHNOLOGIES/SERVICES BY DISCIPLINE, PERCENTAGE OF RESPONDENTS INDICATING FACTOR IS APPLICABLE

	Humanities	Social Sciences	Sciences	Professional Schools	Total
Computer equipment in office/home	50.6	24.8	12.3	26.0	26.6
Connection to campus network	50.6	31.4	15.2	29.3	30.1
Access to data via campus network	51.8	40.3	26.6	39.2	38.9
Information about databases/resources	64.5	69.9	64.4	61.7	65.5
Training in use of equipment	41.0	35.0	20.1	36.8	33.1
Training in use of e-mail, networks	47.0	52.2	34.0	51.2	47.0
Funding	41.0	36.3	37.7	33.8	36.4
Disciplinary trends or requirements	14.5	5.3	11.9	10.8	10.5
Other	8.4	4.4	4.9	6.3	6.0

**TABLE 8**  
TYPES OF TRAINING PREFERRED BY FACULTY IN EACH DISCIPLINE, PERCENTAGE OF FACULTY INDICATING PREFERENCE FOR EACH TYPE

	Humanities	Social Sciences	Sciences	Professional Schools
Small group class/workshop	50.6	51.8	35.7	61.1
Printed manuals	42.2	57.5	63.1	51.5
Formal classes	6.0	5.3	4.1	6.3
One-on-one tutorials	39.2	29.2	15.6	26.3
Telephone assistance	41.0	34.1	24.2	29.3
Online tutorials	31.9	35.0	37.7	41.6
Assistance via e-mail	17.5	26.1	31.1	20.7

The survey results clearly indicate a need that libraries are uniquely positioned to develop and offer: services and electronic or print publications that provide ongoing effective information on specific databases and other electronic resources. Faculty training does not appear to be amenable to a single methodology since faculty in the various disciplines demonstrate noteworthy training preferences. However, as documented in table 8, formal classes are regarded by faculty in all disciplines as the least attractive training mode. There is a consistent preference evident for small-group classes or

workshops and printed manuals. A merger of workshops with printed documentation may be the most effective model.

#### EXPECTATIONS AND PREFERENCES FOR LIBRARY SERVICES IN A NETWORKED ENVIRONMENT

Survey respondents were asked several questions related to their preferences and/or expectations for library services and access to resources in a networked environment. One open-ended question asked respondents to list any

**TABLE 9**  
 DESIRED LIBRARY TRANSACTIONS THAT COULD BE INITIATED  
 BY COMPUTER FROM HOME OR OFFICE (Including Highest Priority)

	ILL	Reference Questions	Renew/ Recall	Document Delivery	Reserve	High Priority
Total	74.2	54.2	67.1	47.1	50.9	ILL
Humanities	77.7	59.6	72.3	43.4	60.2	RENEW
Social sciences	82.7	59.3	77.0	49.1	64.2	ILL
Sciences	64.3	41.4	58.6	41.0	41.0	ILL
Professional schools	75.7	56.6	65.3	52.1	46.4	ILL

electronic databases, CD-ROMs, or electronic journals/newsletters that they would like to use but to which they currently do not have access or adequate funding to support access. A common response to this question is typified by the following: "I don't know what to answer because I don't know what is available. Give me more information." Responses such as this reflect and accentuate the urgent need for information and user training. If the number of faculty requesting LEXIS and NEXIS are merged, LEXIS/NEXIS emerges as the most desired database. This is not surprising given the size and range of this resource as well as its provision of the full text of most materials. Current Contents is in second place. It is interesting that some low- or no-cost items already available appear as desired items, such as DIALOG, MLA, RLIN, and the U.S. Census data. The findings confirm lack of knowledge about current services and resources. However, the responses may also indicate that faculty prefer access to these databases via networks rather than using dedicated computer stations in libraries. Overall, the list of desired databases reveals no surprises to the librarians. It does provide documentation, however, of the electronic systems of which faculty are aware and that they presently think would be useful to them.

The strong interest faculty indicate regarding library transactions they would like to initiate via computer from their home or office is a good indication of the potential satisfaction and level of use of such services, if offered. Electronic mail

and/or a campuswide information system (CWIS) are the likely mediums for conducting such transactions. Faculty were given five kinds of library transactions plus an open-ended "other" option and they were asked to indicate all options they would like to initiate by computer and also to "star" their highest priority transaction. The five options given were "interlibrary loan requests," "reference questions, information queries," "renewals and recalls of library materials," "document delivery to my office," "requesting materials to be placed on reserve." Table 9 provides the percentages of faculty indicating a desire for each option. The last column notes the most frequent "highest priority" response.

It is immediately evident that large percentages of faculty desire the ability to initiate most of these transactions via computer from their home or office. Interlibrary loan clearly emerges as the highest priority, with renewals and recalls closely following. Reference questions and placing materials on reserve are about equal in demand as third choices. Currently, the option of document delivery is the least desired, but it is still mentioned by approximately 50 percent of the respondents.

#### MANDATES FOR LIBRARIES AND SUNY RESPONSES TO SURVEY FINDINGS

The survey findings present five clear mandates for libraries planning and initiating new or reconfigured services, systems, and organizational structures in a networked information environ-

ment. These mandates are presented as follows, accompanied by brief indications of initiatives and programs developed since the survey was disseminated by the SUNY Center libraries or through collaboration between the libraries and computing centers.

- The most common obstacle to the use of electronic information resources reported by faculty is a lack of knowledge about what is available. Libraries can respond to this need with relatively moderate resources.

Libraries should develop services and publications (electronic and/or print) to provide ongoing effective information on specific databases and other electronic resources. The libraries on one of the SUNY Center campuses now publish a regular column, titled "Electronic Highways," in the weekly faculty campus newspaper and a similar column in the Computer Center newsletter. Each column focuses on one electronic information resource or system and provides basic information and access procedures with the suggestion to contact specific library personnel for more detailed information and assistance. All of the campuses have campuswide information systems (CWIS) and/or gopher systems which point to and provide automatic connection to the catalogs of other libraries, electronic journals, and other electronic information resources. Two of the Center libraries produce an "Electric Library" newsletter.<sup>11</sup> Some of the libraries are including records in the online catalogs for electronic resources not owned by the library, but available via the Internet. Two campus libraries have Internet resource workstations for public use. The libraries on all four campuses offer Internet instructional classes and integrate Internet resources in subject-related instructional programs. All of the libraries prepare guides to Internet resources and integrate electronic information resources in subject-oriented guides.

- User training is considered by faculty to be a high-priority need. Libraries should integrate a variety of training options within their existing instructional programs and also collaborate

with the campus computer center in the development of widely available training on systems such as e-mail and file transfer protocols.

Faculty indicate that their use of electronic information resources and technologies would be increased by instruction or training in the use of electronic mail, networks and networked resources, and online databases. There are noteworthy training preferences among faculty in the various disciplines. A merger of workshops and printed manuals/materials may be the most effective common model. Because of the universal need for training on certain systems, such as e-mail, libraries should work with computer centers to develop training modules that can be offered to all students and faculty.

Various types of training programs have been developed and offered by the SUNY Center libraries. One library prepared a multiday Internet training course open to all campus faculty and administrative personnel. Another library has developed six-session Internet "clinics" for faculty and students. Librarians have integrated access to Internet resources, especially electronic journals and discussion lists, into many subject-related instructional classes.

- Faculty readiness, in terms of necessary equipment and interest, to access electronic information resources is almost universal. In addition, level of use of available electronic resources is quite high and growing. Libraries should allocate funds for networking of electronic resources and, where possible, initiate consortial arrangements to share the costs of networking.

High levels of use of library online catalogs and online index/abstract databases loaded on the catalog indicate that these resources are good targets for continued expansion and expenditure of increasingly scarce funds. Shared consortial programs for the joint licensing and networking of targeted databases may be a viable means to lower costs for each institution.

The online catalog systems of three of the SUNY Center libraries have been

linked via NOTIS' PACLink system. The SUNY Express service now provides document delivery of journal articles among the four Center libraries via ARIEL within two days, and a twenty-four-hour turnaround time is often achieved. ARIEL is also used to transmit requests for materials among the Centers. Thus, national bibliographic utilities are bypassed. Student assistants can perform more functions because knowledge of only the local campus system is required. Another cooperative grant funded by the Council on Library Resources and SUNY will assess the cost effectiveness of consortial and commercial document supply.

The Centers also have embarked on ambitious database licensing and network arrangements. Several of the databases most frequently mentioned by faculty have been targets for joint licensing and networking. As of spring 1994, *ABI/Inform*, *Psychlit*, Wilson databases, *Dissertation Abstracts*, and *Quakeline* have each been loaded at one of the Centers and are available for searching on the online catalog systems at three of the Centers. In addition, CUNY has loaded *Newspaper Abstracts* and it is available at the SUNY Centers. A grant from the SUNY Central administration is supporting another project to load a number of databases at various locations and make them available at several SUNY college campuses via the online catalogs. One campus "shares" the *Current Contents* database with another non-SUNY local institution. These projects will demonstrate the viability of consortial networking arrangements, as well as demand-load and response time performance. It is hoped that these initial projects will be successful, and that they can be expanded to encompass the thirty-two SUNY college campuses, most of which now have online catalog systems.

- Faculty indicate the attractiveness of electronic mail as a mode of communication and their strong desire to initiate various library functions/services by this medium. Libraries should offer a variety of services to the aca-

demical community via e-mail or other computer systems.

The large percentage of faculty across the disciplines who use e-mail and their high frequency of use make this medium an optimum service venue. The establishment and widespread availability of such services should be a high priority for most academic libraries. The ability to initiate interlibrary loan transactions via e-mail or other computer systems may encourage faculty and students to use ILL more frequently to secure needed materials and, perhaps, to more readily accept a philosophy of resource sharing and access instead of ownership.

By the end of 1993, three of the Center library systems were offering some electronic mail services, including reference queries, interlibrary loan requests, and renewal transactions. The level of reference queries via e-mail remains quite low and presents only a minimal demand on reference staff. To date, the level of interlibrary loan and renewal requests transacted via e-mail is high and steady.

- Campuses must provide universal access to campus computer networks for the campus community. Everyone should have access to networked electronic resources because such resources are now central to all disciplines and research. Universal access is also necessary to justify significant resource allocation to networking and electronic resources. Libraries should use the findings of surveys such as this one as well as the needs of their campus community to lobby for universal access to networks on the campus.

The SUNY Center libraries have communicated the survey results to campus administrators, faculty senates, deans, and departments. The documented inequities in computer network accessibility among the various disciplines have been cited effectively to establish priorities for connecting faculty offices in certain departments to the campus networks. The survey findings also have been transmitted to the SUNY Central Administration to bolster proposals related to the joint networking initiatives

of the four Centers and beyond to additional SUNY institutions.

The SUNY experience clearly indicates that other institutions would find it well worth the time and cost to conduct a survey of user needs and expectations. Although other campuses may not have grant funds to cover all the costs, the resources required for such a survey are generally available on campuses. Faculty with expertise in survey research can advise on survey design and coding.

The librarians at the four SUNY University Centers have found the survey process and data gathered invaluable in focusing scarce personnel and acquisitions resources on efforts that have already reshaped and will continue to

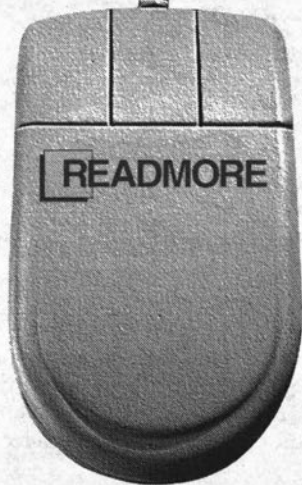
affect the direction of new services. The survey data have been useful in discussions and planning of both public and technical services units of the four libraries, in planning with campus computing staff, and in administrative decisions about campus resource allocations. Survey findings have also bolstered proposals to the SUNY Central Administration related to SUNY networking initiatives. In addition, at individual campuses, the data have been used in the preparation of grant applications for faculty development programs in the Humanities. The authors commend a needs analysis as a key tool in selecting among the many options for refining library network-based services.

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