

Automation and the Learning Resources Center

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Introduction

IN RECENT YEARS many community college learning resources centers (LRCs) have found themselves in the unenviable position of needing to do more with less. Our patrons have become more sophisticated in their requirements for new and expanded services. At the same time, factors such as declines in enrollment, drying up of outside funding sources, increased staffing costs, and budget cutbacks have combined to exert severe pressure on learning resources programs. Faced with a situation in which even a modest expansion of services can seem an insurmountable task, many learning resources centers are looking to various forms of automation for a solution. Unfortunately, automation is not a panacea. Though new products and services seem to spring up and blossom overnight, none is a heal-all. Decisions about automation are difficult, costly, complex, and far-reaching in their effects.

In this atmosphere, information about automation in community college learning resources centers is a valuable commodity. The knowledge of what peers are doing can stimulate new ideas, save time and ease the decision-making process for those who need to automate services. Accordingly, the intent of this paper is to further an exchange of information about library automation in community colleges. It will present the results of a comprehensive survey of automation in community college learning resources centers undertaken in 1981. In an

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effort to provide current information about the status of automation in community college LRCs, it will also present the results of a 1984 telephone survey of current automation in LRC programs.

Methodology

When confronted with the question, "What is the status of automation in community college learning resources centers?" the common response is, "Let's go to the literature and find out." This question, and a literature search which yielded very little published information, provided the primary motive for a 1981 study on automation within U.S. community college learning resources centers.¹ This study used survey research methodology and included both a descriptive analysis of the data and inferential statistical tests to determine relationships among the data. The survey asked respondents to describe their current level of automation and to anticipate their future plans for automated services. The time frame for future expectations was three years.

Another literature review in 1984 showed that very little published information was available to describe the status of automation in community college LRCs. Since the 1981 study had indicated clearly that a large number of LRCs would be adopting automated services within the next three years, the authors used this assumption as a starting point in conducting the 1984 study. A different methodological approach was used to gather information. LRC personnel from colleges which had been identified as having automated services were contacted directly by telephone and an interview schedule was used to guide the phone conversation.

Overview of the 1981 Study

The primary purpose of the 1981 study was to investigate the status of automation in U.S. community college LRCs. A survey instrument was developed, validated and used to gather data in five specific categories: (1) current level of automation, (2) LRC organizational structure, (3) demographic information, (4) future plans for automated services, and (5) attitudes toward and perceived constraints on automated services.

The population for the study was drawn from the *1979 Community, Junior, and Technical College Directory*.² Restricting the population to only U.S. institutions, the directory provided a remaining population of approximately 1200 individual campuses from public

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and private colleges as well as technical institutions. A randomly selected sample of 349 institutions (approximately 30 percent) was drawn from this population. Initial and followup mailings of the survey instrument were completed in 1980. The second mailing, along with a telephone call to nonrespondents, resulted in a response rate of 87 percent.

The survey instrument was intentionally designed for ease of response. Respondents were asked to provide a yes/agree or no/disagree answer. Some questions were designed with several distinct ranges and respondents were asked to select an answer from one of these ranges. Research methodologists realize, of course, that the statistical procedures used and the interpretation that can be made from data are limited by both the size of the sample and by the type of questions used to gather the data.³ In this study, both descriptive and inferential statistical tests could be applied to the data.

Of special importance from the 1981 study was the finding that, with the exception of the functions of cataloging and equipment inventory, less than 15 percent of the respondents were using any form of automated service. However, when asked to look ahead three years and describe a future scenario, the picture changed remarkably (see table 1). From the standpoint of change between reported levels of automated service and future plans for automated service, the category of circulation was most noticeable. While 10.7 percent of the respondents indicated that automated circulation services were currently being used, 32.7 percent expected to have circulation automated within the next three years. This change reflected a difference of 22 percent.

Other descriptive statistics from the 1981 study showed that, while the reported level of automated services was generally quite low, LRC staff members were positive and receptive toward automation. Over 76 percent of the respondents agreed that their LRC should be involved in automation. Approximately 64 percent indicated that automated services were appropriate for LRC programs of their sizes. Budget, however, was seen as a major constraint on automated services. Of the respondents, 71 percent agreed that their recent budget situation had not allowed them to consider automation. The perception among respondents was that budgetary constraints would continue to exist in the future. Over 56 percent indicated that budgetary prospects for the future did not appear to allow them to consider automation. In regard to institutional priorities, 71 percent of the respondents shared the perception that institutional priorities did not place a high value on LRC automation.

TABLE 1
PARTICIPANTS IN 1984 SURVEY BY TYPE OF AUTOMATED SYSTEM

<i>Vendor and Acronym</i>	<i>Name and Location of College</i>
CALS Services Group. Ltd. (CALS)	Elgin Community College Elgin, IL Illinois Valley Community College Oglesby, IL
C.L. Systems Incorporated (CLSI)	College of DuPage Glen Ellyn, IL Lansing Community College Lansing, MI Muscatine Community College Muscatine, IA North Shore Community College Beverly, MA
Electric Memory Incorporated (EMILS)	Chabot Community College Hayward, CA Waubensee Community College Sugar Grove, IL
Data Phase Systems, Incorporated	Illinois Central College East Peoria, IL John A. Logan Community College Carterville, IL
Gaylord Brothers, Inc. (GS-100)	Moorpark College Moorpark, CA South Mountain Community College Phoenix, AZ St. Clair County Community College Port Huron, MI

Analysis of the inferential statistics from the study revealed a number of significant relationships. Conclusions drawn from these relationships indicated that, typically, larger institutions or LRC programs showed a greater tendency to have used or to be planning for automated services in the LRC. They also tended to have more positive attitudes toward automated services. Those who had not been involved with automation or who were not planning future automation viewed budgets or institutional priorities as constraints to automation. While most respondents recognized a need for additional staff training, there was little fear of automation replacing personnel.

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Overview of the 1984 Study

The approach taken in gathering data for the 1984 study was to conduct a telephone survey of LRCs which were already known to be using automated services. Given the differences in methodology, it should be noted that the 1984 study was not simply an update of the earlier study. We knew from the earlier study that a large number of LRCs were actively involved in gathering data to support automation, conducting staff training or otherwise planning to implement automated services. We also observed a very strong difference between what LRCs were actually doing with respect to automated services and what they planned to be doing within the next three years. Thus we began with the assumption that there was indeed an increase in the number of community college LRCs which had installed automated services. Instead of simply measuring the level of activity, we chose an approach which would allow us to gather and synthesize narrative information and then report on patterns and relationships which might better describe the current status of automation in LRCs. Table 2 identifies those colleges (categorized by vendor) which participated in the survey. We used an appendix in Richard Boss's *The Library Manager's Guide to Automation* as a starting point to identify vendors of commercially available turnkey systems.⁴ Vendors were asked to provide a list of community college clients and we, in turn, attempted to contact colleges which would give a representative cross-section of automation experiences. Staff members were generous with their time and shared freely their experiences with automated services. (We wish to express our appreciation to those colleges which participated in the survey).

Factors Leading to Automation

Since the respondents to our 1984 survey had made the decisions necessary to become involved in a successful automation effort, we were interested in identifying those factors which had impelled them to move to their present level of automated service. A variety of considerations, when adapted to local situations, appears to have been influential. The presence or absence of equipment in the data processing department, the opportunity for cooperative ventures, the size of the materials collection, budget considerations, previous experience in data processing, and availability of local expertise in automation were all mentioned as determinants by the colleges interviewed.

In some cases, the decisive factors arose from the institutional environment and were external to the LRC itself. St. Clair College, for

TABLE 2
CURRENT AND FUTURE AUTOMATED SERVICES
REPORTED IN 1981 STUDY

<i>Service Functions</i>	<i>Percentage of Institutions Reporting Batch or Online Automated Services</i>	
	Current	Future
Cataloging & Technical Processing	25.9%	41.4%
Equipment Inventory	17.3%	29.0%
Interlibrary Loan	13.1%	26.5%
Circulation	10.7%	32.7%
Serials Holdings	9.3%	28.3%
Acquisitions	7.3%	25.9%
Media Production	3.4%	6.2%
Equipment Scheduling	1.7%	12.7%
Film Scheduling	1.4%	12.7%

example, reported that they were using a punched-card system when an institutional decision was made that the hardware upon which this system was based would no longer be supported.⁵ This situation, coupled with a very short lead time and limited resources, prompted St. Clair's choice of the GS-100 system. In addition, the college cited as advantages: simplicity of approach, the stability of Gaylord's reputation, the reasonable cost, and the company's responsibility for software performance without the need for local data processing expertise.

The College of DuPage had also reached a turning point as a user of institutional data processing services. They had moved from a punch-card system to a locally-developed online circulation system run on the institution's mainframe. As the LRC's collection of materials expanded and circulation activity increased, response time was degraded and operation of the library system as a shared application could no longer be supported.⁶ Here, the availability of sufficient local funding, the background of successful automation efforts, and the requirements of a large collection combined to indicate the need for a stable and proven approach, and culminated in a decision to purchase their own CLSI installation.⁷

In contrast, the decision to automate can also be seen as a matter entirely within the LRC itself. One of the primary reasons for Moorpark's having decided to adopt an automated system was the need to gain greater control of its inventory.⁸ It was felt the expense could be

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recovered by reducing the cost associated with overdue and delinquent materials. As one campus in the seven-campus Maricopa County Community College District, South Mountain Community College was the most recently constructed of the colleges contacted (only four years old). Its LRC also had the smallest collection—approximately 16,000 titles. For the LRC director at South Mountain, the decision to adopt the GS-100 system was clearly the first step toward a much more comprehensive automated system.⁹ Of the seven campuses, only South Mountain installed the system. But it is a new library with limited staffing and the GS-100 system was a cost-effective alternative. Given the small collection and an existing machine-readable bibliographic file for conversion, it was also a fairly easy task to install the system. Future plans call for districtwide planning leading toward a shared system for circulation, serials and public access catalog.

Among several of the LRC administrators interviewed, relationships with other institutions appear to have been very influential in initiating automation. Reciprocal loan agreements among peers seem to have established a climate in which individual members, regardless of size or previous experience, could become automated.

Consortium participation was also used as a vehicle through which automation could take place. The interview with the administrator of the Illinois Central College LRC revealed an example of this. At Illinois Central College, long-standing "gentleman's agreement" relating to resource sharing and reciprocal borrowing provided the framework for a cooperative automation project.¹⁰ Although Illinois Central had previously investigated local development and indeed had designed and tested a prototype system, it was the consortium alternative that has prevailed. A separate entity, the Resource-Sharing Alliance of West Central Illinois was established. This consortium consists of four library systems (from the Illinois network) which will share Data Phase software installed on centrally-located hardware. Although all costs of overhead as well as hardware and software expenses will be prorated among members, the agreement yields a reasonable charge for each of the eighteen participants. Although decision-making within the group has required some compromises by individual members for the good of the group, benefits have outweighed this constraint. Bill Lindgren, Director of Learning Resources at Illinois Central College, felt that the group approach provided not only cost savings, but it also made possible a more sophisticated system than would have been feasible locally, and made available more resources within a smaller geographic area. The power of this approach is attested to by the impressive array of

outside funding secured by the consortium, specifically major LSCA (Library Services and Construction Act) support beginning with the RFP (request for proposal), through purchase of the system. LSCA has also provided funding for a recent study on telecommunications alternatives.

Another midwestern consortium has just begun the process of installing hardware and software using CLSI. Referred to as Quad Linc, the consortium is composed of sixteen libraries and is noteworthy for two reasons: it is a large, bistate (Iowa and Illinois) consortium of multitype libraries, and it is the first CLSI consortium to use full MARC records. In addition to Blackhawk Community College in Moline, Illinois, Quad Linc also includes three colleges in the Eastern Iowa Community College District. The Iowa colleges are: Clinton Community College, Muscatine Community College, and Scott Community College. Tom Hanifan, Assistant Dean for Library Services at Muscatine Community College, noted that the motivation for libraries to participate in a consortium effort was quite different from one to another. In the case of public libraries, he felt the circulation function was of paramount importance. With his community college, he cited the need to deal with problems involving the card catalog.¹¹ One of the reasons given for using a full MARC record for building a bibliographic file was the possibility of moving to an online, public access catalog (OPAC) at a later date.

North Shore Community College also became involved in automation as a member of a consortium.¹² It is the only community college in a CLSI cluster of six members. Though the network is smaller than the one established in central Illinois, North Shore cites similar benefits from cooperation.

For Illinois Valley Community College and Elgin Community College, consortium membership provided not only the impetus toward automation but also led to the development of the system itself. Funding was awarded to the Northern Illinois Learning Resources Cooperative (NILRC) for the design, development and testing of an automated library system tailored specifically to the needs of community college LRCs.¹³ Elgin Community College functioned as the host institution for the project, which produced the CALS system. The system is noteworthy for a design phase which included a panel composed of consortium members who served as consultants to provide expertise in both library and data processing requirements. The system focused on a comprehensive approach to library automation and emphasized services (such as audiovisual scheduling) required by community college LRCs.

Hardware Options

Hardware and communications networks used by the respondents to our phone survey reflect the multiplicity of options available in today's marketplace. There are mainframe systems, minicomputers and micros; the computers can be dedicated or shared; and the host site can be remote, local or housed in the LRC.

The users of the Gaylord system are participants in a distributed processing system. This network consists of a central computer in Syracuse, N.Y. functioning as a mainframe to which users are connected by switched phone lines. Local installations consist of microcomputer systems which gather circulation transactions during the day. They then function as intelligent terminals, i.e., ones which can relieve the mainframe of some basic editing and processing functions, for data transmission to the central facility. Processing of user data is done with batch updates to the system each night.

Another library system installed on a mainframe computer is CALS, which uses IBM equipment and systems software. In this case, the library software package is installed on Elgin Community College's own mainframe, which is shared with other applications. The terminals used by the LRC for library processing are also available for other online applications within the institution. All functions of hardware maintenance and operation are performed through the college's data processing department. A similar technical environment exists at Illinois Valley College where CALS is being installed.¹⁴

In contrast, there are also turnkey packages on minicomputer-based systems. The CLSI systems employ dedicated minicomputers; they are not used for functions other than the library application, though there may be several libraries using the same system. The CLSI system at College of DuPage uses its own minicomputer which is housed in the college's data processing center and operated by the college's data processing staff. Maintenance on the system, however, is performed by CLSI under contract with the college. North Shore Community College is host to a CLSI system which is shared with five other users connected by leased phone lines. Similarly, Lansing Community College has expanded its CLSI system to provide service to two remote sites for the Lansing Public Library.¹⁵

The Data Phase minicomputer-based system chosen by the Resource-Sharing Alliance of West Central Illinois is housed at Illinois Central College and is shared among eighteen users. In contrast, John A. Logan Community College, as a member of another consortium using Data Phase equipment, is a satellite user of the hardware.¹⁶ The

equipment is located at the Shawnee Library system headquarters and the college is linked to the computer by a private phone line.

The EMILS system at Chabot College uses a minicomputer located in the learning resources center itself and is operated by the library staff.¹⁷ Waubensee Community College will install EMILS on a Hewlett Packard minicomputer which is housed in the data processing center and operated by data processing staff.¹⁸ Since Waubensee has other Hewlett Packard equipment, it is possible that the library equipment could be used as a backup in an emergency, but priority on the equipment resides with the LRC.

In general, these users seemed satisfied with the hardware used for automated library systems. The equipment seems to have demonstrated sufficient stability of performance that it is now a cause for anxiety among those dependent upon its operation. In fact, the College of DuPage particularly cited minimal downtime and good response time on its CLSI system. Among the users we interviewed, the areas of concern related to hardware were found in negotiating contracts for maintenance of the hardware or providing maintenance of the equipment. For example, both Lansing Community College and the College of DuPage indicated disappointment with the service procedure for their terminals, which entails boxing and shipping them to a regional service center and can result in a turnaround time of up to several weeks.

Conversion Strategies

It became clear during the interview process that community college LRCs had exhibited a wide diversity in their approach toward implementing automated services. Some institutions followed what might be considered the traditional approach of beginning with bibliographic control. This generally means building a bibliographic record, undertaking a conversion process to create a file of bibliographic data, and ending with the installation of an automated circulation system. Perhaps the best example of this was the procedure followed by the members of the Resource-Sharing Alliance. These institutions were participating in an automation project as members of a consortium, a structure which dictated the need for a systematic approach. Illinois Central, therefore, first performed a complete retrospective cataloging task using their OCLC archival tapes to convert to their CLSI system.

Although the College of DuPage established its system independently, the large size of its collection and the existence of a previously automated system also dictated a traditional approach. A complete

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bibliographic database was created before they began to use their CLSI circulation system. For ongoing conversion, College of DuPage uses a software link that allows immediate updating of their CLSI data file from OCLC entries.

At Illinois Valley Community College the library replaced the card catalog with a COM (computer-output microform) catalog nearly a decade ago. The data file which is used to produce this catalog formed the basis for a conversion to the bibliographic database of the CALS system.

In the absence of any data files from prior automated systems, or with smaller collections, some colleges have chosen other options. Chabot College, for example, first installed the circulation software for its EMILS system, and then converted its collection "on the fly," creating an abbreviated record as part of the circulation process.

At Elgin Community College, though conversion proceeded from bibliographic control to later circulation, a unique procedure was created for gathering the bibliographic data. Elgin Community College did not have usable data from its previous batch, punched-card circulation system, nor was it then an OCLC user. Elgin's LRC used the card catalog division of the Library of Congress as a supplier of cards, so it seemed logical to turn to this agency for help in obtaining MARC format data for conversion to the CALS system. Although LC had not previously offered this service to library users, the suggestion was met with helpful enthusiasm. A protocol was worked out whereby Elgin submitted tapes containing the Library of Congress card numbers (LCCNs) of the desired materials. LC matched these against their files and returned tapes containing the full MARC record. The price agreed upon at that time was seven cents per delivered record. This process has operated smoothly with excellent turnaround time and has yielded a hit rate of over 80 percent. LC is currently offering this service to other interested users.

Users of the Gaylord system can begin their conversion process with help from a microfiche file provided by the vendor. This file contains bibliographic records for items already entered into the system. By selecting control numbers from the microfiche file for items which match those in the collection, the librarian has access to the basic data needed for conversion. Or alternatively, library customers may choose, as did Moorpark, to convert manually with the help of a series of screens formatted for input.

Current Issues and Conclusions

Participants in the telephone survey suggested a number of issues which were of current interest and concern to them. Cost factors were mentioned, in particular concerns about the impact of copyrighting the OCLC database, and the rising cost of telecommunications. There was a certain realistic awareness of the continuing burden of the costs of automation. Due to the reliability and stability of today's equipment, problems with hardware were not stressed in the interviews. Software difficulties remain, and users identified specific problem areas within their software packages. However, perhaps as a result of increasing experience in automation, users revealed growing acceptance and understanding of vendors' difficulties in maintaining and enhancing complex software. Users of library software are becoming literate and discriminating consumers, whose concerns reflect the need to work with their vendors in a partnership to which they have made a significant commitment. It is therefore not surprising that issues relating to communication were of particular interest to those we interviewed.

It was apparent in the 1981 study and reinforced in the 1984 study that community college LRCs do not have the breadth of staffing to include specialists in library automation. This means that LRC automaters are essentially dependent upon their vendors for expertise. Several users emphasized that companies must be aware of the importance of putting knowledgeable people in the field. In addition, users stressed the necessity for direct interaction with problem-solvers in the vendor's organization; where access is restricted, they reported frustration and dissatisfaction. Several users emphasized the need for regular newsletters from their vendors and were interested in participating in users' groups. They also stressed the importance of training procedures and the essential need for good user manuals.

Communication not only between vendors and users but also throughout the population of users of automation was emphasized as well. It was identified as a recommendation in the 1981 study and appeared very evident in 1984 as well that there is a need for vehicles such as professional organizations, publications, conferences, and workshops to enhance the exchange of experience in automation activities.

Throughout the interview process the diversity of approach demonstrated by the respondents was striking. There was variety not only in the organizational approach to automation and the hardware and software selected, but even in the choice of service functions deemed essential to automate. Though all of the institutions contacted are now

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automating their circulation process, some did so only after first establishing bibliographic control through membership in an automated cataloging service. Others consider this process of secondary importance or not needed at all. To some users, online database searching represented a simple, inexpensive means of taking a first step into automated services; and others, even with considerable automation experience, did not incorporate searches into their services. Perhaps automation in the community college environment is a process characterized by a less precise vision of what is necessary and what procedures are required than is the case in other academic libraries. It seems that problems arising from our relative inexperience in automation, our isolation from our peers, our smaller size and more limited resources are counterbalanced by a greater degree of freedom and flexibility in decision-making and an ability to experiment and make use of serendipitous solutions. It was clear from our survey that users followed automation paths that were directly related to individual campus needs. While many different patterns were apparent, users were unanimous in describing their experiences as successful. Insofar as their automation efforts reflected a diversity and responsiveness to local needs, they exemplified one of the unique strengths of the community college movement.

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