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# Networking in Pennsylvania: Technology and the School Library Media Center

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THE NATIONAL COMMISSION ON Libraries and Information Science defines networking as "a formal arrangement whereby materials, information, and services provided by a variety of types of libraries and/or other organizations are made available to all potential users (Woolls 1986, p. 44)." While many school libraries are currently involved in various types of informal resource sharing networks, the more formalized arrangements are just beginning to emerge.

Pennsylvania school libraries entered networking in the early 1980s with the birth of ACCESS PENNSYLVANIA, an agenda for information and knowledge through libraries. This agenda presented two challenges to the State Library of Pennsylvania involving school libraries. The first charge was to integrate online searching into the school library media curriculum. The second focused on bringing schools into the resource sharing network. The staff of the Division of School Library Media Services (SLMS) was given the responsibility to coordinate the efforts and create the networks needed to bring about the accomplishment of these two tasks.

## CHARGE ONE: ONLINE SEARCHING

In 1982, SLMS initiated a series of workshops designed to assist school librarians in becoming computer literate. These activities helped the participants overcome their fear of microcomputers and become aware of the impact technology could have on school library services.

During this same time period, the Pennsylvania Department of Education (PDE) was operating a resource center which conducted online searches for Pennsylvania educators on a no-cost basis. When school districts were required to participate in long-range research-based planning, the demand for these services began to escalate dramatically. However, the staff at the state level was decreasing each year. On

the one hand there were school librarians eager to get involved in technology, while on the other the demand for online services from the state was becoming more difficult to meet. A further analysis revealed that many school libraries were experiencing difficulty in maintaining collections which were truly responsive to their students' needs. As a result, SLMS staff determined that a statewide network of school libraries with access to online databases could address these needs. Therefore, LIN-TEL (Linking Information Needs—Technology, Education, Libraries) was created (Epler 1987).

Potential LIN-TEL members had to be identified as easily as possible, so a review was made of the Title IV-B files to locate schools that purchased microcomputer equipment which could be used for online searching. In addition, the rosters of the microcomputer workshops were cross-referenced in an attempt to identify school librarians who would be willing to get involved in the project. Contacts were then made with these two groups so that the LIN-TEL network could be initiated as quickly as possible.

The local educational agencies had to make certain commitments in order to participate in LIN-TEL. First they had to agree to provide all the necessary hardware. While many schools did not hesitate to agree to buy the needed equipment, some were reluctant to place phone lines in the school library. However, they consented once they understood that access to online databases located at remote locations was impossible without phone lines. In addition, the local educational agencies had to agree to allow the librarian to attend training workshops and user meetings as deemed necessary by the SLMS staff.

The State Library agreed to pay all expenses for training school librarians for online searching. This included travel, lodging, food, instructors, and training materials. After the school librarians were trained, they each received passwords to access BRS (Bibliographic Retrieval Services) and an account for online charges. The individual LIN-TEL members had to agree to attend the training sessions, conduct searches as part of the school library services, and to integrate online searching as part of the school library media curriculum.

A great deal of attention was given to establishing the support system for the LIN-TEL members. Three-day training sessions were conducted to teach members how to search online and how to use database guides. Each member was given a packet of searching assignments designed to develop searching competency from simple to more complex. After each assignment was completed, the participant had to mail all of the output to the SLMS staff. These were corrected by SLMS online searching specialists, recommendations were made to improve the searching results, and the assignments were mailed back to the participants. Sometimes telephone calls were made if it was necessary to discuss strategies and ideas in greater depth. And, in a few cases, further training had to be planned for the searcher.

A LIN-TEL newsletter, which includes helpful searching hints, training announcements, success stories, and lots of how-to information, is published several times annually. Two user meetings are conducted annually where participants receive advanced training, preview various related products, and develop online searching curriculum.

Members can contact one another through the electronic mail system which is part of BRS. Occasionally, SLMS conducts a contest by placing messages on the mail system and awarding additional searching monies to the first several respondents. This has encouraged school librarians to check their mail boxes each day.

After the LIN-TEL network was in place about two years, it became obvious that a curriculum guide was needed in order to help school librarians integrate online searching into classroom discipline areas. A committee was formed and the resulting document, *PENNSYLVANIA ONLINE: A Curriculum Guide for School Library Media Centers* (1985), was published. This guide provides advice on online management, a scope and sequence of student competencies and expected outcomes, and sample lesson plans (Epler 1986). The document has proven to be invaluable to school librarians by providing them with the information they need to work with other faculty members and administrators involved in the integration process.

In order to recognize the students who were involved in the program, the "Outstanding Student Searcher Contest" was created. Each LIN-TEL site is encouraged to conduct an online searching contest at the local level and choose the best to enter into the statewide contest. The SLMS staff then reviews the entries and chooses the three outstanding searches. These students and their librarians are SLMS's guests at the Pennsylvania School Librarians Conference where a run-off contest is held. The students receive trophies, small cash awards, and certificates. The school librarians receive the honor of watching their students participate and listening to their students' speeches at the awards banquet. It is obvious that the students who participate in this contest have a different image of their school library and their school librarian than other students may hold. Their remarks indicate that they believe that their library is a place that is exciting and on the cutting edge of technology and that their librarian is responsible for turning them on to the power of all types of information resources.

Of course, interlibrary loan (ILL) is an important part of any online searching program. And, realizing that none of our school libraries had every journal cited in the databases which the students would be accessing, an ILL network was formed. Three universities—Mansfield, Clarion, and Millersville—each received small contracts to provide copies of journal articles that were requested by students. The universities believe that this will help to improve their image by building better relations with prospective students.

Each LIN-TEL site is required to keep logs of the searches conducted. Information such as the database searched, the topic of the search, online costs, and whether or not document retrieval was necessary is collected. The universities keep records of what types of articles were requested and the journals used. BRS provides SLMS with usage reports which indicate what databases were used, the costs involved in individual searches, and the running totals of each member. All of this data is helpful to SLMS staff in making managerial decisions.

Technology has now made it possible to provide alternatives to online searching. These include single disc databases, commercially produced database programs, locally produced databases, word processing programs, electronic bulletin boards, regional online databases, and compact laser discs (Wheeler 1987, pp. 28-32; Morabito 1986, pp. 6-19). Of course, each one of these have strengths and weaknesses which must be examined carefully before a decision is made regarding replacing online searching with an alternative. Careful consideration must be given to the philosophy, goals, and objectives of the curriculum in order to be certain that whatever method is used, the students will be able to develop the searching behaviors desired.

Recently, Constance Clayton, superintendent of the Philadelphia School District, has provided all thirty-eight city high schools with online searching equipment and funds to access online databases. This came about as a result of the State Library's inclusion of four of those schools in LIN-TEL. Clayton was so impressed by what online searching offered the four pilot schools that she felt all high school students deserved to have this type of resource at their fingertips. Currently, there are 188 LIN-TEL members, of which 66 represent schools that have institutionalized the concept after being on the state supported network for three years. The future of LIN-TEL depends largely upon its continued success, funding strategies, and the impact that emerging technologies may have on accessing information online.

## **CHARGE TWO: RESOURCE SHARING**

Resource sharing was much more difficult to achieve than integrating online searching into the school library media curriculum. Before the first pencil stroke could occur on the planning document, data needed to be gathered to determine the status of library media programs in Pennsylvania. Blanche Woolls and Scott Bruntjen were hired to assess the status of school library collections and the level of overlap. After these data were analyzed, the staff of the State Library met to develop a "wish list" of things that they hoped a resource-sharing program would achieve.

After careful consideration, the SLMS staff recognized that the project could have far-reaching impact on school library media programs. The project's objectives were identified as follows:

1. to improve each student's information-management skills;

2. to increase access to information by students and teachers;
3. to improve the management of the school library;
4. to promote effective use of resources in school, public, and academic libraries, by developing machine-readable records of high school catalogs;
5. to create a union catalog which contains information about school, public, and academic libraries;
6. to provide access to such a catalog in a cost-effective manner (Bocher 1985); and
7. to establish a network to share resources.

In order to accomplish this list of objectives, information about the high school collections had to be recorded into a standard format which could be read electronically. This format is known as MARC—Machine Readable Cataloging. The process of changing current card catalog records to MARC is called retrospective conversion.

Schools across Pennsylvania were looking for ways to automate the many time-consuming library functions—such as cataloging and circulation—so that librarians could use their special skills to work directly with teachers and students. Therefore, it was vital that whatever process was chosen to bring school libraries into the resource-sharing network, school librarians would not have to spend endless hours at microcomputers keying in data about their collections for either the union catalog of holdings or for library management functions.

The vehicle chosen to access a union catalog needed to be easy to use and cost-effective. After looking at microfiche products it was determined that this was not the proper technology since:

1. most people do not like to use microfiche;
2. microfiche can only be searched in a linear fashion;
3. microfiche equipment cannot be used for other purposes;
4. it eliminates the power of the microcomputer to find information;
5. it does not permit interaction by the user;
6. other states had established precedents of moving toward electronic catalogs; and
7. publishers were moving toward the compact laser disc.

WORM (Write Once Read Many) was considered but was discarded since:

1. the pressing costs were prohibitive;
2. the equipment is extremely expensive;
3. it has less disc capacity than the CD-ROM (Compact Disc Read Only Memory);
4. the reliability was unpredictable; and
5. publishers were not using the large platters.

CDI (Compact Disc Interactive) was eliminated rapidly since we felt that the technology is an answer looking for a question rather than a solution for our problem.

A CD-ROM disc is 4.72 inches in diameter and is capable of holding 250,000 pages of information or 540 to 600 megabytes of user data. It was first developed for digital-audio playback. The CD-ROM disc is produced by replicating a master disc which is initially expensive. Replication, however, is inexpensive. CD-ROMs can be searched at the local level by using a microcomputer with a compact laser reader attached which eliminates the high costs of accessing such information online. And the equipment used to access the compact laser disc can be used for other library functions.

Before Pennsylvania issued its first vendor RFA (request for application), both retrospective conversion vendors and vendors of library management software packages were invited to Harrisburg for a meeting to discuss ACCESS PENNSYLVANIA. At this time, the staff of SLMS shared with the vendors the goals and objectives of the program as well as the criteria which vendors would have to meet in order to be able to participate in the project. This "cleared the air" and helped the vendors understand what Pennsylvania needed in order to achieve its goals. In addition, a panel of school librarians was given an opportunity to share their concerns regarding the inability of the software management packages, which were available at that time, to meet the needs of the average Pennsylvania school library.

Four RFAs were then announced: (1) a request for a consultant to serve as the project advisor, (2) a request for a vendor to accomplish the retrospective conversion activities, (3) a request for a vendor to produce the compact laser disc union catalog, and (4) a request for school, public, and academic libraries to participate by submitting their collections for inclusion in the union catalog.

After the RFAs were received and evaluated, Joseph Matthews and Joan Frey Williams (now with INLEX) were chosen as the project's first-year consultants. These people helped the SLMS staff examine the various technologies, design a quality control process, and develop evaluation tools to be applied when reading and ranking the proposals which were submitted by retrospective conversion vendors and producers of compact laser discs.

Brodart, Inc., Williamsport, Pennsylvania, was chosen as the vendor to do both the retrospective conversion and the production of the compact laser disc union catalog. The specifications which Brodart had to meet were extremely complex and very detailed. But the process which involved school libraries had to be very simple. Brodart drives to each participating school, helps the librarian pack up the shelflist, and takes it to their Williamsport plant. Their staff then inputs each school's data and creates a nine track MARC tape of that library's collection. Each school then receives a copy of their own nine track

MARC tape for use as input to their library management systems. Currently, both Follet and Winnebago have the capability of stripping records from the nine track MARC tapes, inserting bar codes, and transferring the necessary data to floppy discs which librarians can then use as input into their circulation systems. This results in the saving of hundreds of hours that librarians would ordinarily have to spend keying data into library management systems.

Copies of all tapes produced are also sent to the State Library and to the state's technology consultant, James Fogarty of Intermediate Unit 29 in Marlin, Pennsylvania. Fogarty, in concert with catalogers from Mansfield University, then checks the tapes to ascertain that they represent the established acceptable error rate of .01 percent. If this rate is exceeded, Brodart must rekey the entire shelflist involved. Brodart then delivers the shelflist to each school. Despite the fears of the school librarians as they saw their shelflists leave the premises, all shelflists were returned safely.

Fogarty's staff also provides telephone support; assistance in preparing system specifications; reviews new products, statewide training programs, and statistical analysis reports; and coordinates the additions, changes, and deletions to the database.

Brodart was also required to develop the software which would allow the CD-ROM to be searched by title, subject, author, location, or any word. The any word input capability adds tremendous power to the searching process since all fields in the record, with the exception of the notes field, are indexed. Therefore the searcher does not need to know the full title of an item or the author's full name in order to find materials. Key words can be used to find materials which ordinarily would be impossible to locate by using the typical card catalog.

The schools who joined the project the first year can certainly be considered "pioneers." Many of their concerns had to be satisfied with a "we are not sure" response. Now, however, an extensive support system exists to handle any and all questions.

Schools may submit applications to join the project in one of three ways. They may:

1. create a consortium that includes at least one public or nonpublic high school library together with a public and/or academic library which already has nine track MARC tapes;
2. join an already existing consortium; or
3. develop a consortium of at least two public school districts.

The project pays for the retrospective conversion of records from public and nonpublic high schools, combined junior/senior high schools, or the junior/senior collection from a K-12 library. Schools must submit an original and five copies of their applications by a preestablished date which is strictly adhered to by SLMS staff.

After the proposals from schools have been received, they are reviewed by a committee of State Library staff and outside readers. All applications are judged according to the following criteria:

1. **Joint preparation.** The application must show evidence that it was jointly prepared by all of the participating libraries. It is important that all libraries involved understand what commitments they are making in the areas of finance and resource sharing. It is more likely that libraries will not be "surprised" by anything if they participate as full partners in the preparation of the application.
2. **Resource sharing.** The application must include a plan to share materials among its members. This plan should be realistic and demonstrate a dedication to resource sharing by supporting the Interlibrary Loan Code of Pennsylvania.
3. **Delivery system.** The plan to deliver shared materials will be judged on efficiency and responsiveness to interlibrary loan requests. Time lines should be appropriate and conditions for meeting these time lines should be realistic.
4. **Goals and objectives.** The stated goals and objectives must include resource sharing, library management, how the CD-ROM disc will impact instruction, how the related information-management skills will be integrated into the curriculum, and how teachers will be serviced. These goals and objectives should clearly demonstrate that schools understand the full impact that the CD-ROM union catalog will have on their curriculum and their school library services.
5. **Multiyear plan.** The application must contain a multiyear plan which includes how the MARC records will be used by the schools for instruction and for library management activities. Schools receive generous time lines to have all equipment in place in order to access the CD-ROM disc and implement an automated library management system. This helps schools spread out their expenses over a two-year period.
6. **Database maintenance.** The application must contain a plan regarding how the schools will maintain the MARC database after the collections are converted. Currently many schools are merely sending their new shelflist cards to the technology center for updating. It may soon be possible to update records online. In addition, book vendors can provide their customers with nine track MARC tapes which will completely bypass the necessity of sending shelflist cards back and forth.
7. **Cataloging and technology experience.** Information about the local director's experience in cataloging and classifying library resources, as well as the director's computer experience must be included. This requirement was included for two reasons: (1) SLMS staff needed to have access to the school librarian who was familiar with the collection being converted rather than an administrator who would not

- understand cataloging, and (2) in order to design the training necessary it is important to know the level of computer sophistication that each school librarian has been able to attain.
8. Collection development policies. The application must contain a copy of each school's collection development policy which includes how materials are selected for the collection, procedures used to challenge materials, weeding procedures, and other criteria used to measure responsiveness of the collection to the curriculum. Information about the date when each school's collection development policy was school board approved must also be supplied. This criteria has helped administrators to understand the importance of establishing good school library policies and practices. Many policies have recently undergone extensive revision in order to reflect the current services and practices of school libraries.
  9. Inventories and weeding. Information which includes the dates when the collection of each library was last inventoried and weeded must be supplied. Points are deducted for each year before the current year that any of the collections were weeded. It was surprising to find out that some school administrators did not understand the importance of keeping collections current. This criterion has helped many school librarians receive extra time to perform the functions involved in doing inventory and weeding. In addition, it is heartwarming to see the "junk" coming off the shelves of our school libraries.
  10. Shelflist conditions. Forty points are awarded if each school library in the consortium has reviewed its shelflist to ensure that each card contains at least main entry, complete title, publication date, and publisher. Eight points are deducted for each school library that has not met these criteria. These criteria do place an extra burden on the school librarian but when shelflists reflect at least this minimal information, costs decrease dramatically and fewer duplicates are found in the union catalog.
  11. Other activities. The application should contain information about other activities, resources, services, and/or facilities which will contribute to the overall goals of the project. This criterion gives schools an opportunity to brag about the good things that are already happening in their libraries and provides the RFA readers with insight into the basic philosophy of that particular school library.
  12. Budget. Budget information by individual library as well as a total for the consortium must be supplied. However, forms are provided to make this task more manageable. This information is needed so that SLMS will be able to make total project budget calculations as rapidly and accurately as possible.

The State Library compensates the vendors directly for retrospective conversion and union catalog costs. Participating libraries may contract with the same vendor to have collections not included in the

applications converted into MARC format. Schools may also choose to pay for their own retrospective costs thereby getting into the project without having to submit an application. They must, however, abide by all of the requirements established for project members. No project funds are available to purchase equipment or library management software. While no funds are spent to convert the collections of non-school libraries, the State Library pays the costs involved in stripping their MARC records from tapes previously created and adding them to the union catalog on CD-ROM disc. The project was funded as follows:

Year 1: \$200,000 LSCA	
Year 2: \$200,000 LSCA	\$200,000 State Monies
Year 3: \$200,000 LSCA	\$350,000 State Monies
Year 4: \$250,000 LSCA	\$500,000 State Monies

The 1987 CD-ROM disc holds 1,000,532 unique records from more than 200 school, public, and academic libraries. By September 1988 another 120 library collections will have been added to the database.

The hardware that is used is a microcomputer interfaced with a CD-ROM disc drive, a hard disc drive, a monitor, and a printer. It is recommended that it also have the capability of interfacing with a modem for future operations. The computer should be MS-DOS compatible and there should be enough expansion slots to allow the peripherals to connect. The computer should have 640K of memory and the hard disc drive should have a minimum capacity of 20 megabytes. There should be at least one floppy disc drive and a printer port. And, of course a printer with a parallel device. The monitor may be monochrome or CGA color. The CD-ROM laser disc drives utilize a 4.72 inch laser disc which are in the Sony/Phillips format. Because of the increased size of the database, two CD-ROMs are now needed to hold all the data. Therefore, two CD-ROM drives must be connected to the microcomputer.

During 1987, the ACCESS PENNSYLVANIA members will be involved in sending electronic mail messages through the statewide PENN\*LINK system. They will be able to contact one another, technology specialist Fogarty, or the staff of the School Library Media Division. In addition, interlibrary loan requests can be made easily by calling up a form, filling in the required information, and sending the ILL request to the appropriate mailbox. While this component is only in the pilot stage, it is anticipated that the data gathered as a result will provide valuable input to ascertain if this system can handle the anticipated traffic flow of interlibrary loan requests.

ACCESS PENNSYLVANIA members also have the capability of downloading records from the CD-ROM disc for use in creating bibliographies and moving records into their library management systems. Other magnetic media activities are currently under investigation and will be made part of the system when the technology permits.

RMG Consultants, Inc. were hired to act as the project's consultants for 1987. They recorded the events which have taken place, analyzed the needs of the project for the future, made recommendations for the management of the project, produced a final report to be used as a project history, and produced an executive summary for wider dissemination.

The impact of the CD-ROM union catalog has been dramatic. One isolated school district, whose nearest public library is fifty-two miles away, indicated that in October 1985, the year before they joined the project, their circulation was 702 items. However, in October 1986 their circulation had jumped to 2,620. This is an indication that students were finding information that they could not or would not find before.

Schools are beginning to pay for their own retrospective costs which is enabling the project to move ahead faster than anticipated. And the leverage of dollars has been phenomenal as indicated by the figures that follow:

*Capital Outlay by Schools During  
the First Two Years*

Online Catalog Hardware	\$3,891.37
Circulation Hardware	\$2,491.37
Circulation Software & Supplies	\$2,419.95
Per School Cost	\$8,802.69
161 High Schools	\$1,417,233.10

The school librarians who are involved in the project are extremely pleased by what participation has done for their image at the local level. Students are excited about using the compact laser disc and teachers are thrilled that they can quickly find all the resources they need for the classroom. But what is even more pleasing is that the project has caught the attention of the school superintendents and administrators. School librarians are reporting that they are now the focus of much more attention by their administrators and feel that this will have an extremely positive impact on budgetary and staffing decision-making.

The State Library provided one year subscriptions to other compact laser discs for all of its members. Some received copies of Silver Platter's *ERIC* database, others were given Grolier's *American Encyclopedia*, while larger libraries received Bowker's *Books in Print*. This will permit libraries to use these compact laser disc databases for a period of one year to determine the usefulness of the product for meeting the services of its library.

Union collection development is also an idea whose time has come. Schools could band together and purchase books and journals which have limited appeal or are too expensive for just one school to buy. This does not mean that core collections will become unresponsive but rather that careful planning and cooperative purchasing will provide many more resources to the students in the participating schools. In effect, the

walls of the school libraries can be extended to all those outside its location.

The average school library in Pennsylvania has a collection of 11,500 resources. Schools participating in the CD-ROM union catalog can provide their students access to 1,000,532 items—an advantage that all Pennsylvania students must be provided in order to avoid a “have” “have not” situation in education.

Recently, the State Board of Pennsylvania has mandated that each school must provide thirty hours of library media instruction on all three organizational levels—elementary, junior/middle, and senior high school. The compact laser disc has helped school librarians demonstrate to teachers how instruction can be effectively integrated in classroom areas. In this manner, students view information-management skills as part of their subject areas rather than something called “library science” thereby helping to make them independent library users.

This project appears to have an unlimited future. It is anticipated that the collections of the state universities, the district library centers, and the State Library will be added to the database in the near future. It is also evident that the barriers which previously existed regarding resource sharing among various types of libraries are a thing of the past. Librarians are cooperating in many more activities than they ever did before the birth of the CD-ROM union catalog.

Universities are taking advantage of the resource-sharing network by including information about their university in the materials that they send to the schools. Students are responding by seeking further information about the programs these institutions are offering.

Such a project, however, would be impossible without strong leadership from the state level. It is imperative that those responsible for school library programs at the state level take an active role in helping school libraries capture the power of the new and emerging technologies. By providing statewide contracts, more pressure can be applied to reduce costs, provide vendor continuity, and maintain a high level of quality control. Pennsylvania has estimated that the project, if done at the local level without state leadership, if completed at all, would have cost the taxpayers three times what has been spent to date to produce a workable, highly searchable, union catalog.

## CONCLUSION

Students need the information and librarians are willing to participate. School administrators are also willing to provide the necessary dollars provided that they can see the benefits that their participation will produce for their students.

Just imagine a school library that can provide its students access to an on-site collection; online database searching; a union catalog of school, public, and academic libraries; and the capability of loaning

whatever materials they need. It is not a dream—it is possible. What is needed is a catalyst to pull everything together—i.e., state leadership. Risk taking is dangerous for anyone, but the benefits are worth it.

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