DOCUMENT RESUME

ED 356 802 IR 054 551

AUTHOR Currier, Heidi F.
TITLE Computer Use and Factors Related to Computer Use in Large Independent Secondary School Libraries.
PUB DATE Dec 92
NOTE 78p.; Master's Research Paper, Kent State University.
PUB TYPE Dissertations/Theses - Masters Theses (042) -- Tests/Evaluation Instruments (160)

EDRS PRICE MF01/PC04 Plus Postage.
DESCRIPTORS Comparative Analysis; Computer Literacy; *Computer Uses in Education; Educational Finance; High Schools; *Librarians; *Library Automation; Library Statistics; Library Surveys; *Private Schools; Questionnaires; *School Libraries; School Size
IDENTIFIERS T Test

ABSTRACT

Survey results about the use of computers in independent secondary school libraries are reported, and factors related to the presence of computers are identified. Data are from 104 librarians responding to a questionnaire sent to a sample of 136 large (over 400 students) independent secondary schools. Data are analyzed descriptively to show the extent to which independent secondary school libraries are using computers and for what purposes, as well as to compare different types of schools (such as boarding and day parochial) in these areas. Data are also analyzed inferentially to test for relationships between factors of type of school, budget, and extent of the librarian's education with respect to computers and the presence (number) of computers in the library. The t-test is used to test for significant differences between the means of day and boarding school libraries on several variables. Findings indicate that these independent schools are using at least as many computers as are libraries in other studies. Ninety-three percent fit the profile of high service libraries. Fifteen tables present findings, and five appendixes contain materials used in the study, including the survey form, as well as a table of t-test results. (Contains 41 references.) (SLD)

COMPUTER USE AND FACTORS RELATED TO COMPUTER USE IN LARGE INDEPENDENT SECONDARY SCHOOL LIBRARIES

A Master's Research Paper submitted to the
Kent State University School of Library and Information
Science in partial fulfillment of the requirements
for the degree Master of Library Science

by

Heidi F. Currier

December, 1992

A Survey of Computer Use and Factors Related To Computer Use in Large Independent Secondary School Libraries

This study reports survey results about the use of computers in independent secondary school libraries and attempts to identify factors related to the presence of computers. The data is from 104 librarians responding to a questionnaire sent to a sample of 136 large (over 400 students) independent secondary schools. Data is analyzed descriptively to show to what extent independent secondary school libraries are using computers and for what purposes, as well as to compare different types of schools (boarding, day, parochial) in these areas. Data is also analyzed inferentially to test for relationships between factors of type of school, budget, and extent of the librarian's education with respect to computers and the presence (number) of computers in the library.

The t-test is used to test for significant differences between the means of day and boarding school libraries on several variables.

Master's Research Paper by

Heidi F. Currier

B.S., Wellesley College, 1970
M.A. Ed., Claremont Graduate School, 1972

Approved by

Adviser_____ Date _____

TABLE OF CONTENTS

LIST OF TABLES

INTRODUCTION

High school libraries, and school libraries in general, have evolved since the "modern" school library developed early in this century. Half of all public schools had central libraries in 1962, 84% in 1974 (Craver 1984, 268). As the school library became a separate entity with not only a physical identity, but also a specialized purpose in the educational process, the role of the school librarian also evolved from

> volunteer, quasi-professional...to...a fully qualified professional who manages a sizeable collection of print and nonprint materials, supervises staff members, teaches library skills, provides reading guidance and reference services and is fully trained in the production and maintenance of audio-visual materials (Craver 1984, 268).

Personal computers are often the centerpiece of information technology in schools. In the past fifteen years the personal computer has dramatically changed the school library and the role of the school librarian, and the revolution continues. In *Information Power*, a set of essentially qualitative guidelines for the school library media center, librarians are challenged to "provide leadership and expertise in the use of information and instructional technologies" (American Library Association 1988, 10). These computer and related technologies offer an opportunity and a challenge to school librarians who, Craver feels, will have to become "interface specialists" establishing policies and taking an active role in designing curricula which benefit from computers. Computers hold the promise of providing students with access to a wider and more current variety of resources than ever before possible, but they are costly and require specialized skills to use.

Information technologies would also include microfiche readers/printers and even photocopying machines, but the focus here is on computers and related technology such as online searching, modems and CD-ROM applications.

A distinction must be made between computers in schools and computers in school libraries. In a *School Library Journal* article from February 1985, Kenton Pattie , a Vice President for International Communications Industries Association, noted that 85% of public schools had microcomputers, but most were not in libraries (Pattie, 39). Schlessinger conducted three surveys of microcomputers in Texas public schools, in 1982, 1987, and 1990. The percentage of schools holding microcomputers rose steadily from 74.3% in 1982 to 93.3% in 1986 and 96.3 %in 1990. At the same time, the percentage of schools with microcomputers in the school library also increased, from 19% in 1982 and 42% in 1986 to 66.7 % in 1990. The use of microcomputers in the school library also evolved over time from "drill and skill" exercises to library management and finally functions such as circulation, cataloging, and reference (Schlessinger, 390-1). Also, one can infer from these statistics that computers in the school library are not necessarily the first step in the process of bringing computers into schools.

The program for the annual conference of the Ohio Educational Media Association in August, 1991 attests to the place of computers in schools. A Technology Showcase was the centerpiece of the Preliminary Program, and 31% (27 out of 85) of the sessions offered dealt with computer technologies. There is additional evidence of the increasing use of microcomputers in school libraries. The November, 1991 Conference of Secondary School Librarians featured four sessions

on multimedia and hyper-scripting, and Apple and IBM made presentations of their multimedia packages (SSLI, 1991).

There has been an increase in journal titles dealing with computers and computer software and an increase in articles on computers in periodicals (Clyde 1983, 1). In 1974 there were three journals devoted to the educational use of computers, and they were all devoted to computers in the classroom (Cory, 29). Today the major journals serving school libraries have regular features and articles dealing with computer technology. In 1984 *School Library Media Quarterly* initiated a regular column , "Curriculum Connections Technology", which explores the connection between technology, the classroom and library media centers. *School Library Journal*, in its biennial survey of school library expenditures, included information on the use of technology (computers) for the first time in its 1985-1986 survey.

School libraries being built or renovated take into account the presence and use of computers. Computers were a primary consideration in the planning of the new Ohrstrom Library at St. Paul's School in Concord, New Hampshire - voted one of the "Best of 1991" by *Time Magazine*. The school's director of computer services reviewed plans to insure that necessary "conduits, wiring and outlets needed for phones, computers and other electrical equipment" were included. The aim was to insure maximum flexibility for the creative use of new technologies well into the future (Wyatt & Cassels-Brown, 36,37).

With a few exceptions, school libraries have begun to use computer technology in the last ten years and at an increasing rate over the last five. One exception is

Albuquerque, New Mexico School District which has had automated ordering, cataloging and processing in the school libraries since 1963. Another pioneer in this area is the state of Pennsylvania, which coordinated ACCESS PENNSYLVANIA in the early 1980's. This project created a statewide network of school libraries with online access to a union catalog. In 1979, Pennsylvania also had the first high school library in the country to use DIALOG: Radnor High School (Fiebert 1987, 19). But in general "prior to 1980 few educators, library media specialists or lay persons had direct contact with computers" (Eisenberg 1990,139).

Trends in the Use of Microcomputers in School Libraries

In the inaugural appearance of *Book Report*'s computer column "The Computing Librarian" in 1989, Mary Alice Anderson examined the status of computers in libraries in 1989. She traced the evolution of computer use in her library from basically clerical tasks such as circulation (with floppy disk) and book management in the early 1980's, to hard disk circulation and electronic card catalogs. The next step was CD-ROM access to indexes such as *InfoTrac* and *Reader's Guide* and to full-text and laser disc applications such as encyclopedias. Students were able to access information from online databases such as DIALOG, and offline databases using instructional software. In 1989, "hypermedia, stacked or networked CD-ROMs, CD-WORM and Level IV interactive video disks" were on the horizon (Anderson 1989, 30). Also in 1989, there were over 3,500 educational subscribers to DIALOG, and Online, Inc. sponsored a national conference "Databases in Schools '89" (Berger 1989, 40).

These trends signal a change in perceptions of the school library media center. "The library/media center is beginning to rival the computer lab as a locus of

educational technology". Sessions on school library automation have been in great demand at the American Association of School Librarians conference for the past three years according to the coordinator for program support (McCarthy 1990, 26).

Much of the literature deals with public school programs, and certainly ACCESS PENNSYLVANIA made the public system in Pennsylvania a leader in the use of computer technologies in schools. There is a lack of publicized research on computers in independent school libraries, though localized surveys indicate there are computers in these libraries. There are differences between public and independent schools, especially in the area of funding and administrative organization. Independent schools are separate entities, not part of a district, and decisions are made at a school level. In addition, students may be more homogeneous in terms of ability. However, it may be that trends in public schools are mirrored in independent schools. Independent school libraries were chosen as the population for this project. Types of independent schools include: coeducational, single-sex, boarding, day, and parochial (*Peterson's Guide* 1991-1992, Preface).

This study will address two aspects of computer use in large independent secondary school libraries. In a descriptive way, to what extent are these libraries using microcomputers and for what purposes? Secondly, is it possible to isolate factors that correlate with the presence of microcomputers. Future studies may use this information to find out why some schools use computers more/less than others. Although there are numerous articles and testimonies to the use of microcomputers in schools and school libraries, there is little in the way of systematic and quantitative research.

LITERATURE REVIEW

The focus of this study is on descriptive and quantitative research in the area of computers in school libraries. Specifically of interest are studies that include or deal exclusively with independent schools, and studies that isolate factors thought to be related to the presence of computers in school libraries.

General Surveys

A national survey of school library media centers in general, which spawned the report *Information Power*, was conducted by The Center for Education Statistics of the U.S. Department of Education in 1985-1986. This survey included 4500 public schools and 1700 private schools. For the first time, the survey gathered data on services and technology in the school library media center. Analysis included only public school data. Quantitative data describing "high service" programs were given ("high service" was defined as a program scoring at least one standard deviation above the mean in services offered). For high schools with enrollments between 500 and 1000 (most similar to the sample used in this study) "high service" programs in the 75th percentile had: 1 full-time professional staff member, 19 computer titles, and 1 microcomputer under supervision of the library media center. "High service" programs in the 95th percentile had: 2 full-time professional staff members, 286 computer titles, and 8 microcomputers under supervision of the library media center (*Information Power* 1988, 122).

The "first comprehensive publicly released research about microcomputer hardware and software usage in U.S. libraries" was conducted by the R.R. Bowker

Company in mid-1984 (Mitchem, 426). Its purpose was to determine present and future use of microcomputers in five categories of libraries. The "high school" category included public, public junior, private and Catholic schools. Data revealed that 41.1% (13,689 of 33,306) of the high school libraries were using computers, and 33% anticipated purchasing computers in 1985-1986. There was an average of 3.6 computers per library (Mitchem, 426-428).

School Library Journal conducts regu'ar surveys of its membership as to expenditures in the school library media center. The sample is limited to subscribers to the journal, and includes all levels of schools, public and private. However, response by private schools has been poor and as a result data are scarce for this type of school library. Survey results were reported in October 1983, May 1985, June/July 1987, June 1989, and the most recent in August 1991. The survey for FY 1985-86 was the first to include information about the use of technology in the library media center. This data was descriptive, giving an idea of uses of technology (automated card catalog, cable tv/satellite transmission, telephone); funding (mean and median expenditures for software, online services, amount spent per pupil on microcomputer software) and how these averages vary by size of school, regional location, and grade level.

The next survey (1987) showed a trend toward the use of electronic forms of communication in the school library media center. The availability of microcomputers rose from a mean of 1.10 per school to a mean of 2.46 per school. The median also rose, to 1 microcomputer per school. (Miller & Moran 1987, 44). The greater increase in the mean as opposed to the median number reflects a small number of media centers that acquired a relatively large number of computers.

Another trend revealed was a "substantial increase in the use of microcomputers as a management and administrative tool" (Miller and Moran 1987, 44). Tracking overdues was the most popular use of microcomputers (38% of respondents), followed by inventory (25%), cataloging (22%), circulation (18%) and acquisitions (12%) (Miller & Moran 1987, 44). R.S. Talab studied computer use in Kansas school library media centers in 1985 and 1987. These studies will be discussed in more detail later, but her 1987 study showed 13% using computers for circulation, 12% for statistics, 10% for cataloging, 5% for acquisitions, 3% for bibliographic searching and 2% for communications (Talab 1987, 323).

The 1989-1990 *School Library Journal* survey data showed a slowdown in the trend of using microcomputers for library management, although microcomputer use for these functions in the library media center continued to increase. The average increase in use of microcomputers for six management functions from 1986 to 1988 was 20.3 %, compared to an increase of 2% for the same six functions from 1988 to 1990. Microcomputers were used by the following percentages of libraries for the stated management functions: overdues 69%, inventory 48%, cataloging 47%, circulation 46%, acquisitions 32%, budget and interlibrary loan 7% (Miller & Shontz 1991, 39). In terms of collections of microcomputer software, the mean (45) and median (10) for high school media centers were lower than for elementary and junior high/middle school media centers. Expenditures for microcomputer software for this level were also the lowest of all levels, with a mean of $623 and median of $342 (Miller & Shontz 1991, 35). Within the high school sample, however, expenditures for microcomputer software were highest for the largest schools (over 1000 students), suggesting that size may be a factor in computer use in high school libraries.

Ohio Studies

A 1990 survey of computers in Ohio public school libraries sponsored by OELMA (Ohio Educational Library Media Association) found that the microcomputer was being incorporated into school library media centers. However, there is a need for more information about new technologies. Specifically, the report cited a lack of statistics on the "number of districts with automated circulation systems, electronic catalogs, electronic reference tools, and access to electronic databases" (OELMA, 9). The survey, of 1000 randomly selected public school libraries, revealed that 69.6 % (all levels, n=279) have computers in the library/media center and that 14.5% (n=58) of the library/media centers are automated (OELMA, 15). No definition of "automated" was provided. Computers help with cataloging in 42% (n=154) of the school library/media centers. A small number, 15.8%, have access to a modem, and 25.1% have access to video discs (OELMA, 16). This data is for all levels of school library/media centers, no breakdown was given for high schools specifically.

An even more localized survey of the Northeast region members of OELMA found that 25% of those districts responding used CD-ROM, 25% had automated circulation systems, and 9% had an online catalog (Pandora & Sadowski, 3). An interesting statistic was that 52% of respondents had a modem - a high percentage compared to the previously cited OELMA study in which 15.8% had access to a modem (Pandora & Sadowski,3). The OELMA survey of 1000 Ohio public school libraries had a response rate of 41% (OELMA, 14), while the regional study was smaller in scope but neither sample size nor response rate was stated.

Schlessinger's surveys of computers in Texas public schools, referred to earlier, showed that 76.9% of the public high school libraries had microcomputers in 1990 (Schlessinger, 391).

Independent School Studies

Victoria Blair-Smith conducted local-area studies on online searching and automation in independent secondary school libraries. The most recent survey, completed in 1990, focused on fourteen Boston-area independent schools and gathered data as to the number of microcomputers, users and uses, use of modems and fax machines, and online databases. Again, the results are descriptive. Blair-Smith found that fourteen school libraries had a total of 46 computers, although five had none for student use. Six libraries had a modem and seven schools had fax (Blair-Smith 1/91, 2). In terms of library automation, 50% used computers for acquisitions/cataloging, 15% had computerized the card catalog, 15% computerized circulation and at least 50% offered online searching. Overdues were handled with a computer in 65% of the libraries. (Blair-Smith 1991, 5). Blair-Smith concluded that "automation in general and online searching in particular are (just barely!) mainstream activities" (Blair-Smith 1990, 1). She suggested looking at staff education as a factor in library automation. Lack of computer experience and financial problems were stumbling blocks to availability of microcomputers in libraries.

Online Services

Looking specifically at online services in schools, Averso and Mancall conducted a survey in mid-1986 to gather data on users, policies and resources. This was a descriptive study, which showed that online programs are most often at the high

school level, and that school library media centers have offered online service for an average of 2-3 years. The sample was identified through state school media supervisors, and therefore probably was restricted to public schools, although this is not explicitly stated. The median budget for online programs was $500/year, the mean was $800 indicating that a few schools have relatively large budgets. The authors concluded that "more attention should be paid to managing initiation and continuation of this essential new component in the school world" (Aversa and Mancall 1987, 17).

The Miller and Moran FY 1985-1986 survey of school libraries showed an increase over their previous study in expenditures for online services per school in all areas of the country except the Northeast. They concluded that these results "reveal the growing interest in teaching students and faculty how to do online searching." However, most schools still reported spending nothing in this area (Miller & Moran 1987, 41).

The Miller and Shontz study for 1989-1990 showed that 12% of respondents offered on-site database and CD-ROM services. While 24% of the schools responding had additional funds for microcomputer software, only 6% had additional funds for online services, and 9% for CD-ROM. The median expenditure for online resources in responding high schools was $1000 (Miller & Shontz 1991, 39).

Data for both of the above studies is from public schools due to the low rate of return for private schools.

Budget Data

The influence of budget is obvious because computers and related programs are expensive. The latest (1989-1990) *School Library Journal* survey emphasized the relationship between funds and computer technology. " No matter how the data are organized, it is obvious that although the microform and microcomputer software collections are still relatively small, most library media specialists are spending more each year on those collections" (Miller & Shontz, 38). In smaller schools (under 600), expenditures for AV materials exceeded expenditures for books. The data for private schools showed a mean of $308 spent on microcomputer software per year, and a median of $300 (Miller & Shontz, 38). Victoria Blair-Smith concluded from her small study that "financial problems preclude progress" in online searching (Blair-Smith 1990, 10). She found that the mean annual library budget was $16,858 with a range of $4,400 to $48,120 (Blair -Smith 1991,2). Lack of funds would certainly be an impediment to having computers in the library; availability of funds might or might not increase the probability of having them.

Funding

The issue of outside funding has become increasingly important because of shrinking or stagnant budgets coupled with the high cost of the new technologies. In the United States, the Gutman Library of the Harvard Graduate School of Education, with federal funds, has been collecting information from 10,000 educational institutions about the use of microcomputers for the past several years. However, this data is unreliable, especially in areas of expenditures for software. There are few accurate records about purchases because of copying of copyrighted software and equipment which comes from untraditional budget sources (Miller 1985, 335). Kenton Pattie, mentioned earlier, confirms this

assertion and says that most schools buying microcomputers have diverted funds from other areas or have "had to seek voluntary funds outside the budget." (Pattie 1985, 39).

The Miller and Moran 1985-1986 survey reported a mean of $3936 per year in federal funds for senior high schools (median $3125). Only two schools used their available federal funds for online services (Miller & Moran 1987, 39). Although a separate table for private schools was not provided due to the great number of non-responses, it was stated that private schools rely heavily on gifts and fund-raising for the purchase of any equipment and materials (Miller & Moran 1987,44).

Mancall, Aversa and Oesau found that 31% of the schools in their 1986 study used money from special grants to fund their online services, and 20% used money from the materials budget and institutional budget (Mancall, Aversal, Oesau, 38).

Librarian's Computer Literacy

The education of the librarian with respect to computers is a factor mentioned only briefly in studies. How are school librarians, many of whom received their education prior to the era of personal computers and who were in their libraries before computers, preparing themselves to work with this new tool? *Information Power* states that today's school library media specialist "should have a Masters in Library and Information Science with strong preparation in educational technology", which means he/she should be "well-versed in a wide range of technologies" from the traditional to the innovative (Barron & Bergen, 523). Weathers reported in 1990 that 50% of Catholic high school librarians had a MLS

(Weathers, 325). Mancall, Averse and Oesau, in their study of online usage in schools, found that in libraries with online services 70% of the librarians were state certified media specialists with masters degrees (Mancall, Averse, Oesau, 43).

In terms of computer-related education, as noted in the introduction, national , regional and local conferences of librarians are offering an increasing number of workshops/sessions related to new information technologies. In their 1985-1986 survey, Miller and Moran found that 78% of respondent librarians had inservice or workshops on microcomputers in the last two years (Miller & Moran 1987,44). This issue is not addressed in the later (1989-1990) survey. Victoria Blair-Smith mentions this as an area for further study.

Type of School

"Type of school" could be a factor in computer use. Most studies deal with public school libraries. A survey of the literature shows only localized studies of independent school libraries, such as Victoria Blair-Smith's survey of online usage in Boston independent schools.

The Miller and Shontz survey of 1989-1990 reported data from 26 private high school libraries. The mean size of microcomputer software collections was 33, the median, 15 (Miller & Shontz, 38), indicating a positive skew caused by one or more extremely large collections. The median amount of 15 would therefore be more typical of private high school library software collections. This is the only isolated data for private schools in the study, and reflects a very small sample (n=26 for high schools).

Within the population of independent schools there are different types, and the libraries may reflect the different missions of these schools. A major distinction in independent schools is between boarding and day schools. Boarding schools, by definition, provide a home as well as school environment for the students. A day school student can leave school and use his public or other area library for research; a boarding school student often cannot. According to Pauline Anderson, a well-known independent school librarian,

> Librarians in boarding or residential schools who are responsible for service to college-bound students seven days a week have a job that is larger in scope than those in day schools (Anderson 1985, xiii).

Catholic, or parochial, schools form another distinct group of independent schools. Milbrey Jones reported in the 1983 Bowker Annual on a 1979 survey of private school libraries which did not include data on computer availability and use, but is interesting because it compared Catholic schools to other private schools. According to this survey, 83% of all private schools had a centralized library in 1979, and the schools most likely to have a library were secondary schools and schools with over 300 pupils. Of those schools with libraries, the greatest percentage was Catholic schools and the smallest percentage was schools without religious affiliation (Jones, 352). This tendency is confirmed by statistics from a survey by Williams reported in 1990 in *Catholic Library World*. Williams found that 93% of Catholic schools had library media centers, compared with 75% for private schools in general (Weathers,324). Because Catholic schools may be more likely to have libraries does not mean they would be more likely to have computers in their libraries, but it is an interesting issue.

Factors Related to Computer Use : Correlational Analysis

The only study that correlated factors associated with library use of microcomputers was conducted by R.S. Talab in 1987. Referring to a 1981-82 study by Truett of Nebraska library media specialists which showed 23% had access to microcomputers, the author studied the same situation in Kansas in 1985 and found that 81% had access, though this was largely limited to word processing. Only 3% did online searching and 2% communications. Her later study was a follow-up to assess the situation two years later. A questionnaire was sent to a random sample of 213 Kansas public schools eliciting data on size and budgetary allotments for different types of materials and hardware, acquisition information, microcomputers, microfiche, online services, CD-ROM services and library automation (Talab 1989, 41). Talab found that the mean number of microcomputers in schools was 10 (not necessarily in the media center), and often the media center did not have sole use of the computer(s). Online use was restricted to 4% of the schools, and the mean number of CD-ROM products was 2. Talab computed Pearson correlation coefficients for budget and CD-ROM/online and budget and the presence of microcomputers in the LMC: all coefficients were under .3, indicating low relationships. She concluded that automation was still far away for many LMC's in Kansas, and that technology in the LMC was lagging behind classroom use (Talab 1989, 43). It is unclear whether this study dealt with all levels of LMC's (i.e., not just high schools) and it is possible that the factors that she isolated do not have a great impact on LMC technology taken individually, but possibly would in some combination.

Conclusion

Lathrop, in the Preface to her book *Online and CD-ROM Databases in School Libraries*, lists factors influencing technology in school libraries. She includes as a major influence the "dedication, vision, enthusiasm of the librarians themselves". (Lathrop 1989, xiii). Paula Montgomery , in a *Phi Delta Kappan* article on "Integrating Library, Media, Research, and Information Skills", wrote : "Personalities of the individuals involved can have an important impact on the program...the library media specialist is often the sole advocate for the library media program and that individual's personality can determine the way the program is perceived" (Montgomery, 532). For those in private education, Weathers speaks of the challenges of *Information Power*, and says "*Information Power* calls on the chief resource - a dedicated media specialist... to give *Information Power* life..." (Weathers, 179). Others cite the importance of "strong and visionary leadership at the top of the organization" (Cory, 42). Brophy, in *Catholic Library World*, says the role of the administrator in establishing online service can't be overemphasized (Brophy, 37). These traits are difficult if not impossible to quantify.

This study will look not only at the descriptive statistics of computers in high school libraries, but also try to quantify some factors which may influence the presence of computers in these libraries. Specifically, it will look at budget, type of school, and librarian's education with respect to computers and computer programs as factors that may have an effect on the extent to which this technology is incorporated in the library.

METHODOLOGY

Objectives

The issues addressed by this study will be the extent to which computers are used in large (over 400 students) independent secondary school libraries; for what purposes; and whether the factors of *type of school* (boarding; day; parochial), *budget*, and *librarian's education with respect to computers* correlate significantly with the number of computers in the library. This study will attempt to assess where large United States independent secondary schools are in terms of using computer technology and to identify some factors which correlate with the presence of computers.

Assumptions

It is assumed that computers are a useful and valuable tool in the school library, and that their presence reflects well on the quality of the library program. Studies have shown that students with access to online searching technologies, for instance, use more sources in writing their research papers and, subjectively and qualitatively, are more excited about the research process (Schmude 1989, 24). It is also assumed that the use of computers in school libraries will be a continuing trend - that it is not a question of whether school libraries will have them, but of when and how. *Information Power* supports these assumptions by confirming the importance of computers: "The revolution in information and instructional technologies provides unprecedented opportunities for improving access to information and ideas" (*Information Power* 1988, 37).

Research Design

This study has two facets - descriptive and correlational. Data was collected by means of a survey questionnaire sent to a random sample of large independent secondary schools in the United States.

Sample: In order to make the study feasible, the population was narrowed to schools with at least 400 students in grades 9-12. The basic list was selected from *Peterson's Guide to Independent Secondary Schools 1991-1992.* To insure equal numbers of boarding and day schools, stratified random samples were drawn using a random numbers table (Taken from Table XXXIII of Fisher, 1932). The total population of schools over 400, according to Peterson, is 202; therefore the appropriate sample size would be 136 according to Krejcie's and Morgan's "Determining Sample Size for Research Activities" (Powell 1985, 81). The final sample included a purposeful sample of 42 boarding schools (100% of those represented in Peterson's) and 94 day schools randomly selected from the 160 represented in Peterson's.

Threats to external validity: Because the population from which the sample was drawn was narrowed to schools with over 400 students in grades 9-12, the results of the study may not be generalizable to schools with smaller student populations and different grade levels. The survey done by Miller and Shontz and reported in *School Library Journal* (June-July, 1991) shows that the mean size of the microcomputer software collection is highest in schools (not necessarily secondary) of 700-999 students, falling off as schools get larger. There is a fairly steady increase from schools under 300 to 699. Although the actual mean or median numbers may be larger for larger schools, the trends may

be similar.

In order to increase the likelihood of a school responding, an attempt was made to address the questionnaire to the librarian by name. It was possible to locate the names of 49 of the librarians in the sample. In addition, a stamped return envelope was included, the questions were easy to answer and the questionnaire was as brief as possible. As an incentive to participate responding schools were entered into a raffle for a prize of a $25 gift certificate to a bookstore.

Instrument: Each of the selected 136 schools received a packet addressed to the librarian- by name, if possible. When the name was not available, the envelope was addressed to "Librarian". The packet consisted of: a cover letter on Kent State letterhead; the questionnaire; and a stamped, addressed return envelope. Examples of the cover letter and questionnaire are included in Appendix A and Appendix B, respectively. Schools returning the questionnaire were entered into a raffle for a $25 gift certificate to a book store.

The questionnaire elicited data about the school, the library, number of computers in the library and their uses, the librarian and number of courses (of varying kinds) the librarian has had relating to computer technology, number of software titles held and online databases used, library budget and other sources of funds. These data were mostly at the interval or ratio level, some were nominal. In addition there were four open-ended questions at the end of the questionnaire asking the librarians to rank the computer programs most used by themselves and by students, and to state their opinions about who or what was responsible for getting computers into their libraries and what their future plans were with regard to computers.

Procedure: The questionnaire was field-tested with a group of independent secondary school librarians from schools outside of the sample. This field test group of six independent high school libraries included four coeducational day schools, one single-sex day school and one coeducational boarding school. Feedback from this group was used to revise the questionnaire.

The finalized packet was mailed to 136 school librarians on February 27, 1992. Almost immediately questionnaires began to be returned. The first round of questionnaires brought a return of 87, or 63.9%. Because spring break, often an extended period for boarding schools, fell within the next month, reminder postcards were mailed to non-respondents at the beginning of April. An additional 11 questionnaires were returned following the reminder postcard. On April 27 a second round of questionnaires with cover letter was sent to a stratified random sample of 20 of the remaining 38 non-respondents. This sample included 10 boarding and 10 day schools. This second round brought 6 more questionnaires, for a total of 104 and a final return rate of 71.3%.

Some very high amounts in response to the budget question suggested that some librarians had given a figure which might include salaries. In order to clarify this, a letter with return postcard was sent to the eight librarians whose budget figures fell well beyond the normal range of responses asking them to clarify whether the figure they entered included salaries, and if so to give a budget figure exclusive of salaries (see Appendix D). All eight of the postcards were returned: six librarians indicated that the original budget amounts excluded salaries and two indicated new amounts exclusive of salaries.

Questionnaires were numbered, with the number corresponding to a master list of school names, so that non-respondents could be easily identified. As was stated in the cover letter, no school or personal names are used in reporting results of the study. Information being collected was not sensitive in nature and therefore did not justify the use of a blind method for identifying follow-up mailings.

Analysis: Data from returned questionnaires was entered into a Macintosh computer and analyzed using the Minitab Version 6.2 statistical analysis package. For the descriptive statistics, measures of central tendency (mean and median) are used to describe interval and ratio data such as number of computers, number of modems and budget. Measures of variability (standard deviation and range) are also computed. Nominal and ordinal data are described, for the most part, with base numbers and percentages. Not all respondents answered all questions. In order to indicate the number of respondents to each question, base numbers (n) are given in the tables. Questions with an unusually large number of non-respondents are pointed out and possible reasons discussed. Tables as well as narrative are used to summarize and display data.

Distinctions and comparisons are made between boarding and day schools, and in several cases parochial schools, in the analysis. Presentation of data is in sections: sample information, school information, library information, staff and the librarian, computers and peripherals in the library, uses of computers in the library, budget and funding.

The Pearson product moment correlation is used to test for relationships between

some of the variables, such as budget and number of computers and years since receiving MLS and number of computers. To test for significant differences between means for boarding and day school libraries in several areas, the Minitab TWOT command is used. This analysis does a confidence interval and a t-test.

Chi square analysis is used to test for relationships between number of computer education opportunities used by librarians and number of computers in their libraries (defined by categories based on quartiles of the distribution of computers).

The final section is an analysis of responses to the four open-ended questions at the end of the questionnaire.

FINDINGS

DESCRIPTIVE STATISTICS

Sample Information

The survey was sent to 136 large (over 400 students in grades 9-12) independent secondary school libraries. Table 1 summarizes the categories of respondents in terms of numbers and percentages.

Table 1
Original Sample and Respondent Information

Type of School	*n*	%
	Original Sample	
Day	94	69.12
Boarding	42	30.88
Total	136	100.00
	Respondent Sample	
Day	69	66.35
Boarding	35	33.65
Total	104	100.00

The 42 boarding schools represent 100% of the boarding schools listed in the *Peterson's Guide* with a population of at least 400 in the high school. The 94 day schools are a random sample of the qualifying day schools in the guide. Because such a substantial proportion (43%) of the respondents was parochial schools, I have included separate statistics for this subgroup in many cases. Although the number of boarding and day schools will equal 100% of the sample, the parochial schools, which are all day schools, are a subgroup of the "day" category.

School Information

For responding schools the mean enrollment is 669.4, the median 600, and the range 400-1510. Because some high school libraries serve students in grades other than 9-12, the number of students served is sometimes larger than the number of students enrolled. For the total sample, the mean number of students served by the libraries is 727.5, the median 700 and the range 400-1510. Parochial schools tend to have larger enrollments (mean 762.2, median 710) and the largest enrollment reported , 1510, is by a parochial school. The mean and median number of students served by the library is largest for parochial schools (789.3, 737.5), followed by day schools (762.1, 700), and boarding schools (658.3, 590).

Library Information

Table 2 summarizes data received about the libraries, specifically hours and days of operation and staffing. Breakdowns are given for total sample, boarding, day and parochial schools. It would be expected that boarding school libraries would be open evenings and weekends to accomodate their students, and this is shown by higher mean (64.84 vs. 41.6) and median (65.75 vs. 40) number of hours of operation per week for boarding school libraries as compared to day school libraries. The standard deviation for boarding schools is 16.9 and for day schools 4.5. There is still a wide range in both types of schools however, of hours of operation : 32.5-63 for day schools and 38-96 for boarding schools. Data for parochial is very similar to the total day school sample.

The greater number of hours of operation in boarding school libraries would

probably include evening and weekend hours. The data bear this out : 77.12% of the boarding school libraries are open in the evening, compared to 1.45% of the day school libraries. Only one of the 44 parochial school libraries (2.27%) is open in the evening. Of the responding day schools, only one offers weekend hours, while 32 of the 35 boarding school libraries are open on the weekend. One parochial school library is open on Saturday and Sunday.

Table 2
Library Information

Group	*n*	*mean*	*median*	*SD*	*min.*	*max.*
			Hours open per week			
Total Sample	101	49.66	42.50	15.33	32.50	96
Day	66	41.61	40	4.54	32.50	63
Boarding	35	64.84	65.75	16.98	38	96
Parochial	43	40.68	40	3.55	32.50	50
			Number of full-time staff			
Total Sample	103	2.36	2	1.77	0	9
Day	69	1.87	2	1.22	0	6
Boarding	34	3.35	3	2.25	1	9
Parochial	45	1.71	1	1.05	0	6
			Number of part-time staff			
Total Sample	101	1.17	1.00	1.88	0	11
Day	68	.59	0.00	.82	0	4
Boarding	33	2.36	1.00	2.74	0	11
Parochial	44	.71	.55	1.00	0	5

The Staff

All libraries have a mean of 2.4 full-time staff and 1.2 part-time staff, with a range of 0-9 for full-time staff and 0-11 for part-time staff. Longer hours of operation in a boarding school library require more staff as shown by the data for full- and part-time staff in Table 2. The difference is most pronounced in number of part-time staff, where day schools have a mean of .59 and boarding schools a mean of 2.35. Parochial school libraries are most similar to the total day school library sample in staffing.

The Librarian

In the total sample of respondents 70% of the librarians have a MLS degree from an ALA- approved institution. Those with MLS degrees received their degrees as recently as 2 years ago and as long as 42 years ago. The mean number of years since receiving the MLS is 17.7. The more recent MLS recipients would be more likely to have had computer-oriented courses, since the topic of information technology in the library science curriculum is a relatively recent phenomenon. Of course, there are many ways to become computer literate outside of a MLS program.

Responding librarians have a mean of 3.22 years of part-time experience, 13.9 years of full-time experience and 9.9 years in their present position. Librarians in day, boarding and parochial schools do not differ significantly in these areas, except that librarians in boarding schools have been in their present position an average of 12.27 years as compared to 8.8 for day school librarians.

Table 3
Percentage of Librarians Involved in Computer Education

Type of educational opportunity	*n*	Number of courses			
		0-1	2-3	4-5	over 5
Full-term Courses	82	58.54	29.27	6.10	6.10
Workshops	90	27.78	33.33	14.44	24.44
Conference Sessions	83	21.69	21.69	22.89	33.73

Table 3 summarizes data for three different types of computer education opportunities: full-term courses, workshops and conference sessions. Because it is difficult to recall exact number of courses taken, librarians indicated the category that best described their experience: "0-1", "2-3", "4-5", or "over 5". Data is for the total respondent sample. Workshops and conference sessions are more frequently used than full-term courses as ways to learn about computers. One third of the sample, 33.73%, have attended over five conference sessions dealing with computers. It is impossible to know the content and quality of any of these educational opportunities, or to compare them in terms of benefits to the librarian, so no hard conclusions can be drawn from this data. It does show, however, that school librarians are taking advantage of continuing education opportunities in order to better utilize computers in their libraries. At least 41.46% of the librarians have taken more than one full-term computer course, at least 72.72% have taken more than one workshop, and at least 78.31% have attended more than one conference session dealing with computers.

Computers in the Library

Computers are almost universally found in this sample of large independent secondary school libraries. Ninety-nine schools responded to the question about the number of computers in the library, and of this number 93% have at least one computer in the library. Seven libraries, all day schools, report having no computers at all. Six of the libraries without computers are in parochial schools, and one is in a non-parochial day school. The modal number of computers in libraries is four, but the curve has a positive skew because a few libraries have a greater number of computers. One school reported 41 computers in its library, and as a result of this extreme value the median in each category is the more representative measure of number of computers. Because the 41 computers are in a boarding school library, the skew would affect the mean for the categories of "total sample" and "boarding schools", but not "day schools" or "parochial schools".

Table 4 shows the data for central tendency and variability of computers and modems in the respondent libraries. Data is summarized for total sample, boarding schools, day schools and parochial schools. Different types of schools do differ in availability of computers, with the mean and median number of computers in boarding school libraries twice that of day and parochial school libraries.

Most computers in these libraries are for student use. The mean number for student use is 4.2, as opposed to 1.8 for staff use only. Although the mean number of computers available for student use in boarding school libraries is higher than in day and parochial school libraries, the mean number for student use is twice the mean number for staff use only in all three types of schools.

Table 4
Computers in the Library

Group	*n*	*mean*	*median*	*SD*	*min.*	*max.*
			Total number of computers			
Total Sample	99	6.16	5	5.79	0	41
Day	66	4.37	4	3.34	0	14
Boarding	33	9.73	8	7.77	2	41
Parochial	44	4.21	4	3.27	0	12
			Number of computers for student use			
Total Sample	98	4.23	3	5.04	0	40
Day	66	3.12	2	2.88	0	11
Boarding	32	6.53	5	7.35	0	40
Parochial	44	2.84	2	2.37	0	8
			Number of computers for staff use			
Total Sample	98	1.88	2	1.77	0	9
Day	65	1.36	1	1.24	0	6
Boarding	33	2.90	2	2.19	0	9
Parochial	43	1.33	1	1.41	0	7
			Number of modems			
Total Sample	99	.78	1	1.00	0	7
Day	66	.53	0	.66	0	3
Boarding	33	1.30	1	1.38	0	7
Parochial	44	.48	0	.73	0	3

Forty-four school libraries, or 44% of respondents, have no modem. An almost equal number, 42 or 42%, have one modem and the remaining 13 libraries(14%) have from 2 to 7 modems. Table 4 shows that only boarding schools have a mean and median of even one modem.

Peripherals

In terms of peripherals, CD-ROM is more commonly used than online services or videodisc. Table 5 summarizes data for the number of computers used for online access, CD-ROM and videodisc for the total sample, boarding school libraries, day school libraries and parochial school libraries in terms of percentage of libraries using peripherals, central tendency and variability.

Table 5
Use of Peripherals

Group	*n*	% *using*	Number of computers used				
			mean	*median*	*SD*	*min.*	*max.*
			for CD-ROM				
Total Sample	96	73.96	1.52	1	1.69	0	9
Day	65	66.15	1.25	1	1.60	0	9
Boarding	31	90.32	2.10	2	1.76	0	7
Parochial	44	61.36	.93	1	.97	0	4
			for online access				
Total Sample	93	50.53	.62	1	.72	0	3
Day	62	38.71	.45	0	.64	0	3
Boarding	31	74.19	.97	1	.75	0	3
Parochial	42	26.19	.36	0	.69	0	3
			for videodisc				
Total Sample	89	12.36	.20	0	.68	0	4
Day	61	13.11	.20	0	.63	0	4
Boarding	28	10.71	.21	0	.79	0	4
Parochial	42	11.90	.14	0	.42	0	2

Computers are used more for CD-ROM applications in these libraries than for online or videodisc. A mean of .62 and a median of 1 computer is used for CD-ROM

over the total sample, which indicates that although CD-ROM exists in these libraries, there are usually not multiple stations. Use of computers for online services is indicated by 51% of the responding libraries, but only boarding schools among the subgroups are using computers for online services enough to reach a median of 1. A much higher percentage of boarding school libraries use CD-ROM and online than of day school libraries; parochial school libraries use peripherals of all types less than the total day school sample. The use of videodisc is minimal across all types of schools.

Less than half, or 44%, of respondents have been using computers with software (not peripherals) for 6-10 years; only 1.2% have used computers for 11-15 years, and none for over 15 years. The newer technologies have appeared in these school libraries, for the most part, in the last five years.

Table 6
Percentage of Libraries Using Peripherals for Categories of Years

		Number of years			
Peripheral	n^a	0-5	6-10	11-15	over 15
CD-ROM	75	93.33	5.33	1.33	--
Online	53	73.59	24.53	1.89	--
videodisc	18	100	--	--	--

[a] *n* = the number of libraries in the total sample that indicated use of the peripheral.

Although CD-ROM use is more common than online in these libraries, data shows that online has been used for a longer time. Thirteen libraries report having online

service for 6-10 years, while only four schools have had CD-ROM services for this period of time.

Table 6 shows data for 'years of use' of peripherals. Because of the way the response categories were set up, it is impossible to tell whether those who marked the category "0-5" years were using CD-ROM at all. Each of the questions dealing with number of years of use (for software, CD-ROM, online and videodisc) had an unusually large number of non-responses, indicating confusion with the question and/or that the respondent did not provide this service. A separate "0" category would make this data more meaningful. Only the categories "6-10", "11-15" and "over 15" are meaningful because of this ambiguity.

Most respondents (86 of 104) left the videodisc question blank, which was interpreted as a "have none" response. Of the 18 marking a response, 6 reported "0" years of use, and 12 marked the "0-5" year category. Taken together these responses indicate that at least 88.4% of the libraries do *not* use videodisc.

Using Computers for Library Management

Table 7 details how responding libraries use computers in library management. Data is reported separately for total sample, boarding, day and parochial school libraries. Librarians use computers to do overdues, reports, cataloging and circulation more than other management functions. The least computerized functions are library skills , acquisitions and computerized catalog . Day school libraries use computers consistently less than do boarding school libraries for

each function except the computerized catalog, where the percentage for day schools is slightly higher. Parochial schools use computers to the greatest degree for acquisitions, reports, overdues and budgets.

Table 7
Use of Computers in Library Management

	% of libraries using computers for task					
Group	*n*	overdues	*n*	reports	*n*	cataloging
Total sample	104	72.12	104	76.92	103	69.90
Day	69	66.67	69	72.46	68	67.65
Boarding	35	82.86	35	85.71	35	74.29
Parochial	45	68.89	45	71.11	45	64.44
	n	circulation	*n*	budget	*n*	acquisitions
Total sample	101	51.49	102	45.10	104	35.58
Day	68	51.47	69	41.79	69	28.99
Boarding	33	52.52	35	51.43	35	48.57
Parochial	45	51.11	45	71.11	45	68.89
	n	library skills	*n*	computerized catalog		
Total sample	99	37.37	102	33.33		
Day	65	27.69	67	34.33		
Boarding	34	55.88	35	31.43		
Parochial	44	25.00	43	35.26		

Table 8 shows that, although fax machines in the library are not common, most libraries in all categories of schools have access to a fax machine. This may be seen as a necessary system component for timely delivery of articles and information from remote sites.

Table 8
Percentage of Libraries Using Fax Machines

Group	*n*	%
	In the library	
Total sample	100	19.00
Day	67	14.93
Boarding	33	27.27
Parochial	44	15.91
	Access to fax	
Total sample	95	89.40
Day	66	84.85
Boarding	29	100.00
Parochial	42	80.95

Software Holdings

Because of the difficulty of actually remembering or counting exact number of software and CD-ROM titles held, the data on holdings in these areas is categorized into four possible responses: "0-10", "11-20", "21-30", and "over 30". Although this data is general, feedback from the field test indicated that response rate for these questions would be higher if this format were used. Table 9 shows percentages of librarians responding in each of the four categories for software title and CD-ROM titles. Breakdowns are given for total sample, day school libraries, boarding school libraries and parochial school libraries. Most libraries of all types own 10 or fewer software titles. It is interesting that percentages decrease as number of titles increases, until the "over 30" category, when, for all types of schools except boarding, percentages are greater than for the "11-20" or "21-30" response. The percentage of libraries in each category beyond "0-10" CD-ROM titles decreases dramatically, and only one library in the whole sample

has over 20 titles.

Table 9
Percentage of Libraries Holding Computer Software

Group	*n*	Number of titles			
		0-10	11-20	21-30	over 30
		Software titles			
Total sample	96	67.71	12.50	5.21	13.54
Day	64	67.19	10.94	7.81	14.06
Boarding	32	71.87	15.62	--	12.50
Parochial	40	65.00	2.50	12.50	20.00
		CD-ROM titles			
Total sample	100	89.00	5.00	--	1.00
Day	67	97.01	2.99	--	--
Boarding	33	87.88	9.09	--	3.03
Parochial	44	95.45	4.54	--	--

Data are consistent for the different types of schools, with the exception of a relatively large percentage of parochial schools (12.5) owning "21-30" software titles, compared to 5.21% for the total sample, 7.81% for day schools, and 0% for boarding schools.

Respondents were asked to indicate the exact number of online database services used because it was felt that the number would be relatively small. Examples of systems given were DIALOG, BLS and CompuServe. As reported previously, 44% of the libraries have no modem, which means that the use of online databases must be limited. In fact, no library uses more than four online databases. Table 10 summarizes data for online database use for the total sample, day school

libraries, boarding school libraries and parochial school libraries.

Table 10
Percentage of Libraries Using Online Databases

Group	*n*	Number of databases				
		0	1	2	3	4
Total sample	95	52.63	33.68	8.42	3.16	2.11
Day	63	65.08	26.98	6.35	1.59	--
Boarding	32	28.12	46.88	12.50	6.25	6.25
Parochial	42	78.57	14.29	7.14	--	--

The majority of libraries in the total sample (52.63%,) indicated that they use no online databases. However, breaking the data down for type of school reveals a large difference in the use of online services. Whereas 72% of the boarding school libraries use at least one online database, only 34.92% of the day school libraries do. An overwhelming majority of parochial school libraries (78.57%) do not use online databases at this time, perhaps because of the cost.

For all school libraries regardless of type, 47% use at least one online database. Annual online costs reported reflect the differences in database use between boarding and day school libraries. Mean annual online costs for boarding school libraries is $878 (median $250) and for day school libraries $522 (median $0). This information may be misleading because there were many non-responses to this question: 16 out of 69 for day schools, and 13 of 35 for boarding schools. The large difference between the mean and median for both types of schools indicates that a few schools spend much greater amounts on online services, thereby positively skewing the curve.

Budget

Amounts reported for library budgets cover an extremely wide range from $2000 to $475,408. As noted previously, the eight schools that reported budgets greater than one standard deviation from the median were asked to clarify whether that amount included salaries and if so, to revise it to exclude salaries. Two of the eight schools submitted a revised (lower) figure, and six confirmed their original figure to be exclusive of salaries.

Table 11
Library Budget

		In dollars				
Group	*n*	*mean*	*median*	*SD*	*min.*	*max.*
Total Sample	86	30,946	15,950	57,009	2,000	475,408
Day	58	16,256	13,000	13,102	2,000	70,000
Boarding	28	61,377	35,000	91,899	7,670	475,408
Parochial	35	13,708	10,000	9,156	2,100	36,000

Table 11 describes library budget for the total sample, day school libraries, boarding school libraries and parochial school libraries. Eighteen librarians did not respond to the budget question, indicating that this may be a sensitive issue. Because of the few extreme amounts, median budget figures are in all cases lower than the mean, and give a more realistic picture of school library budgets overall. The positive skew is most noticeable in data for the total sample and boarding schools, which include the most extreme amounts of $475,408 and $225,000. Boarding school libraries have the greatest degree of variability in their budgets, as seen by the standard deviation of $91,899.

The majority of libraries, day and boarding, do not have a line-item in their budget for computer expenses. In day school libraries, 33% have a line-item for these expenses; 40% of boarding school libraries and 32% of the parochial school libraries report a line-item for computer expenses.

Funding for Computers

If funds for computers in the libraries are not a specific part of the budget, what alternative sources of funding are schools using? Five types of outside funding were investigated: block grants, computer company contributions, state funds, foundation grants, and school/community fundraising. Responses show that none of these alternative sources are tapped to a great extent by the surveyed schools.

Table 12 summarizes data on outside funding sources by percentages of school libraries using each of the five designated sources. Breakdowns are given for the total sample, day school libraries, boarding school libraries and parochial school libraries. Along with percentages, the total number (n) of respondents in each category is given. School/community fundraising is the most utilized source of outside monies for computers in all school libraries except boarding schools, which use block grants to a greater extent. Parochial school libraries make use of external funding sources for computers more than the total day or boarding school library sample.

Table 12
Percentage of Libraries Using Outside Funding Sources for Computers

Group	n	Source of funding: block grants	n	computer company contributions	n	state funds
Total sample	95	20.00	93	4.30	94	15.96
Day	62	19.35	62	4.84	63	19.05
Boarding	33	21.21	31	3.23	31	9.68
Parochial	39	28.20	39	5.12	40	25.00
	n	foundation grants	*n*	school/community fundraising		
Total sample	93	8.60	94	32.98		
Day	62	9.68	63	41.27		
Boarding	31	6.45	31	16.13		
Parochial	39	7.69	40	40.00		

Respondents were given an opportunity to identify "other" outside funding sources. Of the twenty librarians who marked this category, eight noted the use of federal funds (Chapter 2, in some cases). Other sources mentioned include: gifts or donors (4 libraries), trustees (2 libraries), technical advisory committees or computer department, alumni, endowment, and consortium (1 library each).

INFERENTIAL STATISTICS

One goal of this study is to examine relationships between the presence of computers in large independent secondary school libraries and the variables of library budget, type of school and education of the librarian with respect to computers. The descriptive statistics indicate that five of the six schools with

budgets that are over $72,959, or more than one standard deviation from the median of $15,950, fall in or above the third quartile for number of computers in the library. However, the library with the greatest number of computers, 41, has a budget of $35,000 - above the median but not more than one standard deviation from it. In addition, the range of budgets for libraries having ten or more computers is $10,000 to $475,408, so it appears that although libraries with large budgets frequently have a greater than average number of computers, not all libraries with a greater than average number of computers have a large budget. Table 13 shows the budget amounts for the 20 school libraries having 10 or more computers. The Pearson product moment correlation for number of computers in the library and library budget is 0.50, which for the sample size of 99 is very strong (*df* 97, $p < .001$) (from Table IV, Fisher, 1932).

Table 13
Budgets of Libraries With at Least 10 Computers

Number of Computers	Budget (In Dollars)
10	96,000
10	34,000
10	80,000
10	45,000
10	46,000
10	15,000
11	10,000
11	12,000
12	225,000
12	35,000
12	26,000
12	48,000

The relationship between budget and number of online databases is also quite strong. The correlation is .42, with df =97 and $p < .001$.

The Pearson product-moment correlation was also computed to test for a relationship between the number of computers in school libraries and the number of years since the librarian received the MLS. The correlation was very low, .044, indicating that the number of computers has little to do with how long ago the MLS was received. It is possible that librarians who received their degrees before courses dealing with the newer technologies were included in the program have filled in this knowledge gap with continuing education courses and "on the job" training. Data on workshop and conference sessions attended by the librarians in this sample supports this supposition.

T-tests were used to determine whether differences between the means for day and boarding schools on several variables are significant. All test statistics are given in Appendix E. The Minitab command used to do the analysis is TWOT. The "pooled" subcommand was used only in cases where standard deviations were similar for both groups. The t-test was used to compare boarding and day school library means for number of: computers, computers used by students, computers used by staff, modems, computers used for videodisc and online databases. A t-test was also done for budget amounts in both types of school libraries. With the exception of number of computers used for videodisc, all tests are statistically significant, with 95% confidence, at levels ranging from $p < .0005$ to $p < .027$. The test statistic for videodiscs is $t(43) = .10$, $p < .92$ (from Table III, Fisher, 1932).

Because the data for computer-related education was ordinal, a chi square analysis was used to test for possible relationship with number of computers in the library. The computer data is categorized into four groups corresponding to the quartiles of the data distribution. Quartile 1 includes 0-2 computers, quartile 2 includes 3-4, quartile 3 includes 5-6 computers, and quartile 4 includes 7-41 computers. The data for number of each type of educational opportunity taken is in 4 categories: "0-1", "2-3", "4-5" and "over 5". In order to avoid expected frequencies of less than five, categories were collapsed for both variables, resulting in a 2 X 2 table. The rows represent the two categories of number of courses dealing with computers (0-3; 4 or more) and the columns respresent the two categories of numbers of computers (0-4; 5-41).

A chi square analysis was done for each of the three types of educational opportunities listed (term, workshop and conference session) and number of computers in the library. None of the chi square statistics were significant beyond the .02 level. The statistic for computers and term courses was $\chi^2(1, N = 82) = 1.822$, $p < .20$. The chi square statistic for computers and workshops was [$\chi^2(1, N = 90) = .668$] and for computers and conference sessions [$\chi^2(1, N = 83) = .964$] .

A chi square analysis was also done to test for relationships between the three types of educational opportunities. Again, data was collapsed into two categories for each type: 0-3 courses, workshops or sessions; and 4 or more courses, workshops or sessions. The differences between actual and expected counts for term courses and workshops is not significant [$\chi^2(1, N = 77) = .457$]. The chi

square value for term courses and conference sessions is significant between the .02 and .01 level [χ^2 (1, N =73) = 4.193, $p < .02$].

There is also a significant relationship between the number of workshops and the number of conference sessions attended [χ^2 (1, N =80) = 11.141, $p < .001$] (from Table IV, Fisher, 1932).

The data does not support a significant relationship between a librarian's computer education experiences and the extent of computer use in the library. There is some evidence, however, that librarians who take advantage of certain types of computer education opportunities, such as conference sessions, are more likely to learn about computers through workshops and term courses as well.

OPEN-ENDED QUESTIONS

The questionnaire concluded with two questions asking librarians to rank the three uses of computers most beneficial to themselves and the three computer-provided programs most used by students, and two open-ended questions asking who or what was instrumental in getting computers into their library, and about future plans for computer use in the library. Only the final question was answered by librarians who did not have computers in their libraries.

Table 14 shows how responding librarians ranked the five most popular uses of computers, with cataloging and word processing receiving the greatest number of "first" rankings. Responses may have been biased, however, by the examples given in the instructions for the question, which were "e.g., to do word processing, cataloging, overdues, etc." This may have influenced respondents to choose these functions.

Table 14
Uses of Computers Ranked by Librarians

Use	Number of responses per ranking		
	1[a]	2	3
Cataloging	38	15	6
Word processing	17	11	28
Overdues	10	24	17
Circulation	9	13	2
Reference	5	1	8

[a] 1= most beneficial

The five computer programs most used by students, according to the observations of the librarians responding, are shown in Table 15, with the number of times each was cited for each rank.

Table 15
Computer Programs Most Used by Students

Program	Number of responses per ranking		
	1[a]	2	3
InfoTrac	22	5	2
Grolier's	6	5	5
Newsbank	5	2	3
Ebsco's Academic Abstracts	4	4	1
DIALOG	4	7	6

[a] 1=most used

InfoTrac received by far the greatest number of first rankings. However, 39

different programs were mentioned, showing the wide range of programs available and in use in independent secondary schools. As with the previous question, responses may have been biased by the instructions given, which listed as examples InfoTrac, Newsbank, DIALOG and Grolier's.

The great majority of librarians viewed themselves as the driving force behind computers in their libraries: librarians mentioned themselves 54 times in response to this question. Principals or headmasters were mentioned next most often (14 times) and money came in third with 10 mentions. It is interesting to note other factors listed, although less frequently : administration (8); former librarian (7); student needs, a new or remodeled library, technology or computer department (5 each); faculty, existing computers, trend (4 each); consortium/network and school's mission (3 each); professional organization, clerical need, sponsor, computer given as gift (2 each); and parents or parent-teacher group (1 each).

All respondents, regardless of whether they had computers in their libraries, were invited to share future plans regarding computer use. The addition or enlargement of CD-ROM programs was mentioned most often (41 times), followed by the establishment of a network (25 times) and addition of a computerized catalog (25 times). Six respondents indicated plans for a computerized circulation system, while 18 looked forward to *both* computerized catalog and circulation. The following were also mentioned as part of future plans : addition of modem and access to online databases (15 times); additional computers (10 times); use of computers for library management (7 times); and additional terminals (6 times). Five librarians in the group looked forward to a new or renovated library in the

near future. Librarians without specific plans for improved technology stated their future plans broadly : "dreams and fantasies" or to "grow and develop the perfect library-computer partnership".

CONCLUSION

The school libraries in this study are using at least as many computers as libraries in other studies cited. All except seven, or 93%, of the libraries responding to this survey fit into the 75th percentile of "high service" libraries as defined by the Center for Education Statistics study of 1985-1986, and 34% fall in the 95th percentile of "high service" programs (*Information Power* 1988,122). Computers in these libraries are being used by both students and staff. Special services provided for students are most likely to be CD-ROM based programs, although online access is provided by more than half of the libraries. In spite of the fact that more school libraries provide CD-ROM programs than online access, online access has been offered by a small percentage of libraries for 6-10 years, whereas almost all libraries with CD-ROM programs have used them for five years or less.

These libraries do not, in most cases, have multiple CD-ROM or online stations: the sample median is 1 computer for online access and 1 for CD-ROM, but the percentage of libraries offering these services is greater than that reported in the 1989-90 *School Library Journal* survey or the OELMA survey of Ohio public school libraries. Victoria Blair-Smith's sample is most similar to this one because it is made up of independent schools. It is much more localized in scope and includes all grade levels, but her percentage of libraries with online (40%) and computers in general (90%) is closest to the 93% that was found in this study.

Videodisc is still found rarely in independent secondary school libraries. A

greater percentage of day school libraries use it than of boarding school libraries.

As CD-ROM and online services are growing, so is the presence of fax machines in these libraries. Almost all libraries have access to a fax machine (90%), compared with only 12% in the 1989-90 *School Library Journal* survey or in Blair-Smith's survey (41%), but there is also a greater percentage of schools with fax machines in the library. Over 25% of the boarding school libraries in this sample have a fax machine. Fax is an important component of information retrieval from remote sites. As the use of CD-ROM and online reference proliferates, use of fax may also.

Librarian and Staff

The 1985-1986 Center for Education Statistics study identified libraries in the 95th percentile of the "high service" category as having 8 computers and 2 full-time professional staff (*Information Power*, 122). The mean and median number of full-time staff (professional and para-professional) in the school libraries in this sample is 2. Boarding schools have a higher mean and median (3), but their libraries are open an average of 50% more hours per week than libraries in day schools.

The relationship between computers and library staff is a two-way relationship. Computers can save staff time, especially with respect to management tasks. Nancy Everhart's MMI Model Library plan charted "time saved with computerization", which showed dramatic time savings using computers to do managerial tasks (Everhart, 12). Cataloging, word processing and tracking overdues are the most cited uses of computers by librarians in this sample. On the

other hand, computers used for student services require staff time and attention, especially in the area of online searching, which frequently must be done by staff or with staff supervision. The two computer programs most used by students, according to librarians in this survey are *InfoTrac* and online catalogs, which do not require much staff supervision. The third rank is DIALOG, which would probably require the help of staff.

Librarians' Use of Computers

The use of computers for library management is higher in every category for this sample than in cited studies. Twice the percentage of libraries in this sample have computerized catalogs as do the libraries in Blair-Smith's 1990 survey. As suggested by the 1989-90 *School Library Journal* survey, the trend in the use of computers for library management may be slowing down, but use is still increasing. Perhaps, as Craver predicts, "computers will take over the clerical tasks and allow librarians to function as professionals" (Craver, 281).

Software Holdings

The libraries in this sample report fewer microcomputer and CD-ROM software holdings than the means from *School Library Journal*'s 1989-90 survey. The median for private high schools in that survey was 33 (Miller & Shontz, 38), whereas in this sample 68% of the libraries have ten or fewer titles. An even greater percentage have ten or fewer CD-ROM titles. This suggests that libraries, usually with limited budgets, are carefully choosing a few programs to run on the library computers. This is supported by the fact that a few titles are mentioned again and again in the rankings of "most used" programs by students. Of libraries using online databases, the great majority use only one. This survey did not ask

for specifics about databases, only the number used; however DIALOG was the system most often named in responses to the open-ended question about programs most used by students.

Budget

The mean library budget for day schools in this sample is about the same as for Blair-Smith's Boston-area sample, which included boarding and day schools. The mean budget for boarding school libraries in this sample is significantly higher than the mean for day school libraries; the mean budget for parochial school libraries is below the mean but above the median for all day schools. Although it is unclear whether funding for computers and computer-related services comes directly from the library budget, the data from this study support a strong correlation between budget and number of computers in the library, as well as between budget and the number of online databases used. This is not necessarily a causal relationship, but libraries in this sample with the largest budgets do have more than the mean or median number of computers .

Outside Sources of Funding

On the other hand, a large budget is not always correlated with computer technology in independent high school libraries. There are also libraries with budgets that fall below the median that have more than the mean number of computers. It is possible that these libraries use outside sources of funding . *School Library Journal*'s 1985-1986 survey noted that private schools rely heavily on gifts and fund-raising for additional library funds (Miller & Moran, 39). This study does not support that idea. Of the five sources named, only "school-community fundraising" is used by over 30% of any subgroup of the sample.

There are other outside sources, such as federal funds, which were not investigated in this study, but which are being used by schools to purchase computer technology.

It is also possible that funds for computers and computer services come from another area within the school, such as the computer or technology department. Mancall et al. found that 20% of the schools in their study of online use got the money for online services from the materials or instructional budget (Mancall '86, 38).

Type of School

The differences between day and boarding school libraries in many areas are interesting and statistically significant, but not surprising. As noted by Pauline Anderson previously, boarding schools have a broader mission in terms of providing a 24-hour-a-day environment for their students. The practical significance, then, of the differences between boarding and day school libraries in mean number of computers, computers used for CD-ROM and online, number of online databases, and mean library budget may not be great. The difference between a mean of one computer with CD-ROM and two is not that significant given that students in boarding schools may not have access to the public and academic libraries that day school students might.

However, if computers and the services they provide, especially online access and database searching, are viewed as tools for library skills instruction, the distinctions between independent boarding and day schools diminish. Almost all independent schools, and certainly those in this sample, are college preparatory.

Pauline Anderson in 1985 stated that independent school librarians will incorporate in their libraries "...progressive technologies - now existing and as they come along - that will broaden the access to information and knowledge, advance the skills and technical competencies of users and enhance the learning process" (Anderson 1985, 4). A recently released pamphlet from the Association of Independent School Librarians lists several services that the school community can expect from the library. Three services are directly related to the use of computers: "judicious use of the new technologies to expand the on-site information base..., participation in library networks... and the use of electronic systems to integrate basic services..." (AISL, 1992,4). In turn, the librarian can expect from the school, in addition to adequate funding for equipment and staff, "conduits and wiring to accomodate the new technologies, both developed and undeveloped" (AISL 1992, 6). These guidelines show that *all* independent school libraries in the 1990's are expected to provide computer-assisted access to information.

Independent high school students should be familiar with technologies which they will encounter in academic libraries. It is not simply a matter of providing them access to information they need for their high school work but of teaching information retrieval skills they will use in college. Craver's study of access to online searching by college-bound high school seniors confirms the positive impact that such access has on the use of academic libraries by the students (Craver 1989, 167). As independent secondary schools teach students subject matter to prepare them for college, so should the libraries teach bibliographic skills, including those required by computer technology, to prepare them for the college experience. Although day school students may have access to libraries

other than their school library, they may not use them. It is the responsibility of all independent secondary schools to provide access to remote sources of information and instruction in how to use it.

Factors Related to Computers in Independent Secondary School Libraries

Finally, unlike Talab's 1987 study of Kansas school media centers, a significant relationship was found between budget and the number of computers and budget and the number of online databases. As always seems to be the case, money is important. However, it is not the only factor, as shown by the libraries with average budgets that manage to have an above average number of computers.

In terms of the impetus behind progress in library technology, a factor mentioned again and again in the literature, and most often by respondents to this survey, is the "dedication, vision and enthusiasm of the librarians themselves..." (Lathrop, xiii). It is difficult, if not impossible, to quantify these qualities. It doesn't matter how long ago the librarian received his/her MLS; if it was before computers were on the scene, the librarian will take continuing education courses, workshops, attend conference sessions, or learn about computers by working with them. This study did not confirm a relationship between particular types of computer-related education experiences and the number of computers in the library. Again, there are myriad ways to learn about computers and it appears that librarians take advantage of many different opportunities to increase their knowledge of the new technologies.

Although the influence of the librarian is important, and perhaps most important,

it is not enough by itself, as indicated by the responses to the "future plans" item on the questionnaire. Several librarians wanted more computers or CD-ROMs or online databases, but lacked money, space or staff. A combination of factors is necessary for technology to be in place. Contributing factors are administrative support, particularly of the headmaster, faculty support, funds, leadership by a computer/technology department, even support from or vision provided by professional organizations such as ALA.

With different combinations of contributing factors, and led by interested and committed librarians, independent secondary school libraries are increasingly incorporating computers into their libraries to help with library management and to provide student access to an ever-widening variety of information.

Suggestions For Further Research

A question that was touched on but not clearly answered by this study is that of how computers in school libraries are funded. We know that computer technology is expensive, and we also know that schools do not usually have the resources to increase library budgets enough to cover these costs. It would be interesting to know how librarians with modest budgets manage to provide the modern services made possible by computers.

Because it is so difficult to quantify some of the factors which seem to be related to getting technology into school libraries, the case study method might be a good way to learn why some libraries have computers to a greater degree than others. The open-ended questions from this study yielded rich subjective data on some factors that librarians feel are important in getting computers into their libraries. More in-depth interviews and observations could add to these suggestions and perhaps show how combinations of factors work together to permit or prevent the use of new technologies.

A third area of exploration suggested by this study is the ways in which librarians learn about computers. What are the most used and effective ways that librarians can and do become knowledgeable about how computers can best serve them and their students?

Finally, it would be interesting to know, since computers seem to be commonplace in independent secondary school libraries now, in what ways they function best

and in what ways they have not functioned well. There must be many programs initiated with high hopes that have not lived up to expectations. It appears from this study that fewer software and CD-ROM titles are being held by these libraries; perhaps there are a select few that are used a great deal making it unnecessary to have a large collection. Computers have been in place in school libraries for a long enough time to do some follow-up studies to determine what works and what doesn't.

REFERENCE LIST

American Association of School Librarians and the Association for Educational Communications and Technology. (1988) .*Information power: guidelines for school library media programs.* Chicago: American Library Association and Washington, D.C.: Association for Educational Communications and Technology.

Anderson, Mary Alice. (1989). Computers in libraries: where are we in 1989? *Book Report* (September/October): 30.

Anderson, Pauline H. (1985). *Library media leadership in academic secondary schools.* Hamden, CT : Library Professional Publications.

Association of Independent School Librarians. (1992). *Focus on Independent School Libraries in the 1990's.* (Pamphlet available from Mark Hillsamer, St. Alban's School, Washington, DC 20016).

Aversa, Elizabeth Smith, & Mancall, J. (1987). Online users in schools: a status report. *Online* (May) : 15-18.

Barron, Daniel, & Bergen, Timothy J. (1992). Information power : the restructured school library for the nineties. *Phi Delta Kappan,* (March): 521-525.

Berger, Pam. (1989). On-line databases and CD-ROM. *Media and Methods* (November/December): 40-41.

Blair-Smith, Vicki. (1989). Online searching and automation in independent secondary schools: a partial survey of Boston area schools. (October 30). Copy of survey questionnaire supplied by the author.

_____. (1990). Online searching in independent secondary school libraries: survey results. Supplied by the author.

Clyde, Laurel, & Joyce, Joan D. (1983). Computers and school libraries: an annotated bibliography. *Occasional Monographs* 1. [Machine-readable data file]. Silver Platter(Distributor). ERIC(Producer). ED 252 201.

Cory, Sheila. (1991). Technology in schools : who'll provide the leadership? *Computers in the schools, 8,* 27-43.

Craver, Kathleen W. (1984). The future of school library media centers: a look at the impact of technology upon library media program development. *School Library Media Quarterly* (Summer): 266-283.

_____. (1989). The impact on the school library of online access to academic libraries : implications for the future. Catholic Library World, 60, 164-168.

Eisenberg, Michael B. (1990). Technology and the library media program: focus on potential and purpose. *School Library Media Quarterly , 18,* 139-164.

Everhart, Nancy. (1987). MMI model library. *Small Computers in Libraries,* (March) 10-15.

Fiebert, Elyse Evans. (1987). Online at Radnor High. *Online* (May), 19-21.

Fisher. (1932). *Statistical Methods for Research Workers.* Edinburgh : Oliver and Boyd, Ltd.

Jones, Milbrey L. (1983). NCES survey of private school library media centers, 1979. In Joanne O'Hare (Ed.) *Bowker Annual of Library and Book Trade Information* 28th ed. (pp. 352-355). New York : R.R. Bowker Co.

Lathrop, Ann. (1989). Online information retrieval as a research tool in secondary school libraries. In Ann Lathrop (Ed.), *Online and CD-ROM databases in school libraries.* (pp. 287-303). Englewood, CO: Libraries Unlimited.

_____. (1989). *Online and CD-ROM databases in school libraries.* Englewood, CO: Libraries Unlimited.

Mancall, Jacqueline, Aversa, Elizabeth, & Oesau, Diane. (1987). [Online providers in the school environment. A survey of practice and policy]. Copy of survey provided by the authors.

McCarthy, Robert. (1990). The new library/media center. *Electronic Learning 9 ,* 24-28.

Miller, Inabeth. (1985). A house of bricks. *Invited Papers: Elementary/Secondary Education Data Redesign Project.* (October): 335. [Machine-readable data file]. Silver Platter (Distributor), ERIC (Producer), ED 272 556.

Miller, Marilyn L., & Moran, Barbara. (1987). Expenditures for resources in school library media centers FY '85-'86. *School Library Journal* (June/July), 37-45.

Miller, Marilyn L., & Shontz, Marilyn. (1991). Expenditures for resources in school library media centers FY '89-'90. *School Library Journal* (August):,32-42.

Mitchem, Terri. (1985) The Bowker national library microcomputer use study, 1984. In Julia Moore (Ed.), *Bowker Annual of Library and Book Trade Information* 30th ed. (pp.426-434). New York : R.R. Bowker Co.

Montgomery, Paula Kay. (1992). Integrating library, media, research, and information skills. *Phi Delta Kappan* (March), 529-532.

Ohio Educational Library Media Association. (1991). *Two studies of personnel and programs.* (Survey Series).

Pandora, Cherie & Sadowski, Linda. (1992). Northeast region conducts survey. *OELMA President's Newletter, 7,* 3.

Pattie, Kenton. (1985). Industry viewpoint: getting wired in. *School Library Journal* (February), 39.

Peterson's guide to independent secondary schools 1991-1992. 12th edition. Princeton, New Jersey: Peterson's Guides.

Powell, Ronald R. (1985). *Basic research methods for librarians.* Norwood, N.J.: Ablex Publishing Co.

Ryan, Barbara F., Joiner, Brian L. & Ryan, Thomas A. (1985). *MINITAB handbook.* 2nd edition. Boston : PWS-Kent Publishing Co.

Schlessinger, June H. (1991). Microcomputers in public schools and school libraries. *Journal of Youth Services* (Summer), 389-395.

Schmude, Margaret J. (1989). Online serendipity. *The Book Report* (Sept./Oct.):,23-25.

Society of School Librarians International. (1991). What works in the '90's : revitalizing the school library. *Comments/presentations from the Sixth Annual Conference of SSLI.*

Talab, R.S. (1987). A survey of microcomuter software acquisition and usage of Kansas school library media specialists. *International Journal of Instructional Media, 14,* 320-325.

_____ (1989). Survey of Kansas school library/media specialists use of automated information retrieval for instruction and management. *Ohio Media Spectrum, 41,* 40-43.

Weathers, Barbara. (1989). Information Power: implications for Catholic school library media specialists. *Catholic Library World, 60,* 177-179.

_____ (1990). Information Power: transforming document and the statistics that make it necessary. *Catholic Library World, 62,* 321-325.

Wyatt, Graham, & Cassels-Brown, Rosemarie. (1992). A new library for St. Paul's School. *School Library Journal,* (February), 35-37.

APPENDIX A
Cover Letter

Dear (Librarian's name),

I am an assistant Upper School librarian at The Columbus Academy, as well as a student in the Kent State University School of Library Science. I believe that one of the most exciting apsects of librarianship today is the use of computer technology in the library. My husband and I have been associated with independent schools - boarding and day- for twenty years, so I am especially interested in the extent to which independent secondary school libraries are incorporating computers and what might be the "driving force" behind the presence of computers in the library: is it budget, an excited and knowledgeable librarian, the type of school, or a combination of factors? I am conducting a survey of 136 independent secondary school libraries to gather data on these questions.

Please take a few minutes to complete this questionnaire. Most items require only simple counting and numerical answers, there is no ranking and only two open-ended responses. Use the enclosed STAMPED envelope to return the questionnaire to me as soon as possible. Your returned questionnaire will entitle you to a chance to win a $25 gift certificate to a bookstore. You will also receive

a summary of results which I hope will be of interest to you professionally and which you may be able to use to show your headmaster how well you're doing compared to other schools, or to convince him/her that you really need support to move ahead with computers.

Your questionnaire is coded so that I can send follow-ups if necessary, share results with you, and enter respondents in the raffle; **no school or personal names will be used in the study or in the reporting of results so your anonymity and that of your school is assured.**

Taking part in this survey is entirely up to you, and no one will hold it against you if you decide not to participate. If you do take part, you may withdraw at any time. If you want to know more about this research project, please call me at (614) 231-6529 or my adviser Dr. Carl Franklin at (614) 292-7746. The project has been approved by Kent State University. If you have any questions about Kent State University's rules for research, please call Dr. Adriaan deVries: (216) 672-2070.

Thank you. I know you are all very busy and I appreciate your taking the time to help me out and contribute to the research of our profession.

Sincerely,

APPENDIX B
Questionnaire

MICROCOMPUTERS IN INDEPENDENT SECONDARY SCHOOL LIBRARIES
A survey of schools with over 400 students
Spring 1992

SCHOOL INFORMATION

1. Type of school (check all that apply):
___ boarding
___ day
___ coeducational
___ single-sex
___ parochial
other (specify):
_____
_____

2. Total enrollment (grades 9-12): ____

LIBRARY INFORMATION

3. Number of students served (may be greater than answer to # 2): _____

4. Hours of operation - list hours when your library is open:

	DAY	EVENING
Monday	____	____
Tuesday	____	____
Wednesday	____	____
Thursday	____	____
Friday	____	____
Saturday	____	____
Sunday	____	____

5. Number of full-time staff:
professional (MLS) ____
other degreed professional (e.g., media specialist certification) ____
para-professional ____

6. Number of part-time staff:
professional (MLS) ____
other degreed professional (e.g., media specialist certification) ____
para-professional ____

over to page 71

7. Head Librarian:

Do you have an ALA-accredited master's degree?	____
If so, when did you receive your degree?	____
Number of years experience as a part-time librarian	____
Number of years experience as a full-time librarian	____
Number of years in this library	____

Mark the category that best represents the number of computer education experiences that you have had:

	0-1	2-3	4-5	over 5
full term courses	____	____	____	____
workshops	____	____	____	____
conference sessions	____	____	____	____
other (explain)	_____			

COMPUTERS IN THE LIBRARY (Please mark even if "0")

8. Please indicate the number of the following in your library:

computers (total)	____
dumb terminals (keyboard and monitor only)	____
computers used by students	____
computers used only by library staff	____
modems	____

go on to page 3

9. For the following categories indicate the number of computers in your library used for the function and the number of years the service has been offered (e.g., there are 2 computers used for CD-ROM programs and this service has been offered for 6-10 years). Please mark even if "0".

	#	YEARS IN USE 0-5	6-10	11-15	over 15
disk software (e.g., word processing, math programs, etc.)	____	____	____	____	____
online access (e.g., DIALOG)	____	____	____	____	____
CD-ROM (e.g., encyclopedia, InfoTrac)	____	____	____		
videodisk	____	____	____	____	

10. Please indicate below whether you use computers for the specified purposes (Yes/No) and the period of time computers have been used for each purpose:

	Y/N	YEARS IN USE 0-5	6-10	11-15	over 15
Library management					
circulation	____	____	____	____	____
cataloging	____	____	____	____	____
acquisitions	____	____	____	____	____
overdues	____	____	____	____	____
reports	____	____	____	____	____
budgets	____	____	____	____	____
other (specify)		_____			
		_____			
Computerized catalog	____	____	____	____	____
Library skills instruction	____	____	____	____	____

over to page 4

11. Do you have a fax machine? (Y/N) ____

Do you have access to a fax machine? (Y/N) ____

	0-10	11-20	21-30	over 30
12. How many computer software titles do you own? (e.g., PrintShop) Give exact number if possible.	____	____	____	____
13. How many CD-ROM titles do you own/subscribe to? (e.g., InfoTrac) Give exact number if possible.	____	____	____	____

14. How many online database services do you use? (e.g., DIALOG, BLS, CompuServe) ____

FUNDING

15. What is your annual library budget? ____

16. What are your annual online costs? ____

17. Do you have a line-item in your budget for computer expenses? ____

18. Do you use outside sources of funding for computers? (Mark those that you use)

block grants ____
computer company contributions ____
state funds ____
foundation grants ____
school/community fundraising ____
other (specify) _____
_____

go on to page 5

IF YOU DO NOT HAVE COMPUTERS IN YOUR LIBRARY, PLEASE SKIP TO QUESTION # 22.

19. Based on your experience, please rank the 3 most beneficial uses of the computer in your library to you as the librarian (#1 being most beneficial): (e.g., to do word processing, cataloging, overdues, etc.)

1. _____
2. _____
3. _____

20. Based on your observations and experience please rank the top 3 computer-provided programs most used by students (#1 being most used). Be specific. (e.g., InfoTrac, NewsBank, online catalog, DIALOG database searching, Grolier's electronic encyclopedia, etc.) If you have fewer than 3 programs, rank first and second, or first only.

1. _____
2. _____
3. _____

21. Please comment on who/what was instrumental, in your opinion, in getting computers into your library.

_____
_____
_____
_____

22. What future plans do you have, if any, for computer use in your library?

_____
_____
_____
_____

THANK YOU !!!!

APPENDIX C
Follow-Up Postcard

Toward the end of February I sent you a survey about computer use in your library, but I haven't heard from you. If you still have the questionnaire, I would really appreciate it if you would take a few minutes to fill it out - your input is important.

Thank You,

2340 Bexley Park Road
Columbus, OH 43209

APPENDIX D
Budget Clarification Letter

25 April, 1992

Dear Librarian,

Thank you for returning the questionnaire I sent to you about computer use in your library. I need to clarify the question about your annual budget, as I did not make it clear that I wanted the figure for operating budget exclusive of salaries. Yours was one of several amounts that were considerably beyond the normal curve of responses, so I am double-checking to be sure the figure I work with does not include salaries.

This is important data for my study as I want to correlate operating budget with computer use and it is crucial that data for budget be consistent.

I have enclosed a post card on which you can indicate your annual budget figure exclusive of salaries (if necessary).

Thank You,

Heidi F. Currier, student
Kent State University
School of Library and Information Science

APPENDIX E

Results of T-tests Comparing Boarding and Day School Means

Variable	Test Statistic (95% confidence)
Number of computers	$t(38) = -3.78$, $p = .0005$
Number of computers used by students	$t(35) = -2.53$, $p = .016$
Number of computers used by staff	$t(42) = -3.73$, $p = .0006$
Number of modems	$t(39) = -3.05$, $p = .004$
Number of computers used for online access	$t(52) = -3.27$, $p = .0019$
-----(pooled)	$t(91) = -3.44$, $p = .0009$
Number of computers used for CD-ROM	$t(54) = -2.28$, $p = .027$
------(pooled)	$t(94) = -2.36$, $p = .02$
Number of computers used for videodisk	$t(43) = -.10$, $p = .92$
------(nooled)	$t(87) = -2.59$, $p = .91$
Budget	$t(27) = -2.59$, $p = .015$
Number of online databases	$t(43) = -3.32$, $p = .0019$

Significance levels taken from Table II of Fisher, Statistical Methods for Research Workers published by Oliver and Boyd, Ltd., Edinburgh.