

Show Me Connection:

How School Library Media Center Services Impact Student Achievement

2002-2003

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Introduction

This study was undertaken to measure the impact of School Library Media Center Services on Missouri schools' student achievement, specifically on MAP scores. In addition, there was a desire to share the findings of this project with school decision-makers—school boards, superintendents, principals, teachers, and library media specialists.

In 1993, the Library Research Service of the Colorado State Library published a landmark study, **The Impact of School Library Media Centers on Academic Achievement**. By 2002, it was widely known that successor studies had been completed in Alaska, Pennsylvania, Oregon, Texas, Iowa, Massachusetts, and Colorado.

In 2002, DESE and the Missouri State Library contracted for this study with a team of Missouri researchers from Quantitative Resources. This young team was committed and interested in:

- determining the affect that School Library Media Center Services have on student achievement.
- identifying the specific components of School Library Media Center Services and Library Media Center Specialists that positively affect student achievement.
- determining if other external factors affect student achievement.
- comparing Missouri data with other states' research.

Executive Summary

The Weighted Average Missouri MAP index scores from the Missouri Assessment Program (MAP) rose with the availability of School Library Media Center Services. The relationship between the School Library Media Center Services and student achievement was not negated by other school or community demographics.

When other conditions were taken into account, the development of School Library Media Center Services alone accounted for up to 11% of the variation in the Weighted Average Missouri MAP index. Generally, its importance falls below that of demographic differences, which consistently demonstrated stronger effects at about 40% of the variation in the Weighted Average Map Index.

School & Community Differences

The impact of the development of School Library Media Center Services on student achievement cannot be negated by:

School differences, including:

- Free and reduced lunch rate,
- Percentage of black/African American; or
- Teacher education/certification.

Community differences, including:

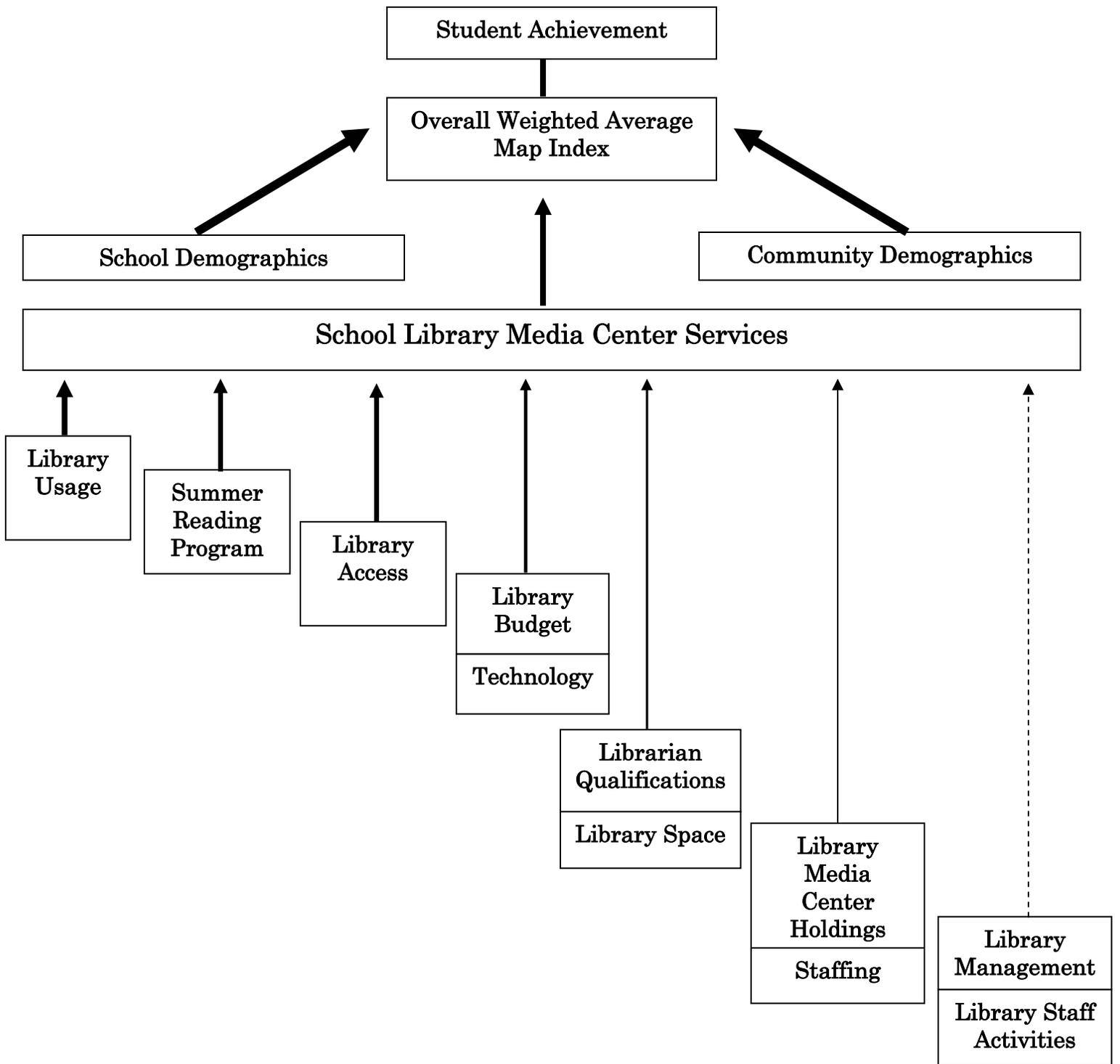
- Percent of poverty,
- Median household income; or
- Educational level attainment.

School Library Media Center Services

The following characteristics of School Library Media Center Services should be the focus of a school district or building that has a desire to impact student achievement:

- Library Usage
- Summer Reading Program
- Library Access

The complete effects of School Library Media Center Services on student achievement are summarized in Figure 1 on the following page.



Methodologies

Sample

Table 1: Sample by School Size

School Size	2002 Core Data		Questionnaire Results	
	#	%	#	%
Small (33-255 Students)	697	32.8%	119	15.6%
Medium (256-452 Students)	719	33.8%	271	35.5%
Large (453-2,557 Students)	712	33.5%	374	49.0%
Total	2,128	100.0%	764	100.0%
Not Determined	115		18	
Total	2,243		782	

Per Table 1, the total sample allows the questionnaire results to be at 95% confidence when assuming a margin of error of 2.83%.

Available Core Data

DESE provided a vast amount of school building level data, known as “core data.” The following is a brief description of what that data included. Much of this data was an integral part of the analysis of the effect of School Library Media Center Services on student achievement.

Student Data

These files included basic information on the student population for each school building in the state. They included total enrollment, number and percentage of males and females, and ethnicity of students (White, Black, Asian, Hispanic, Native American).

Other student information included the ratios of students to teachers and administrators, number and percentage of students receiving free or reduced school lunches, the attendance rate, and discipline data. The discipline data included variables such as number of incidents that involved alcohol, tobacco, drugs, a weapon, or a violent act, as well as computed incident rates per 100 students.

DESE also provided data that applied specifically to high schools. This data included number of dropouts, graduation rate, percentage of graduates taking the ACT, and the number and percentage of graduates scoring at or above the national average on the ACT. Also included was graduation follow-up data. The graduation follow-up tracks previous graduates one year after graduation. This data included the percentage of students who were enrolled in a four-year college/university, enrolled in a two-year program, employed, and/or serving in the military.

Teacher/Administrator Data

Data was provided on the average salary of teachers and administrators, the percentage of teachers with a masters degree or higher, and the average years of experience in the teacher's current district, in the state of Missouri, and in public education.

Librarian Data

Data included the number of full-time librarians in each school, the number of full-time clerical helpers, the librarians' average salary, as well as the librarians' average years of experience in their current school district, the State, and in public education.

Library Media Data

Probably the most important component of the core data was that concerning the School Library Media Center. The first section of the data included the number of students and staff served by the School Library Media Center, the square footage available for reading and reference, the square footage available for ancillary services, and the total number of seats available in the School Library Media Center.

The second section described the School Library Media Center's holdings. Included was the total number of holdings the School Library Media Center had in the following areas:

- Fiction
- Non-Fiction
- Magazines
- Newspapers
- Periodical Indexes
- Reference
- Visual Materials

The final component of the School Library Media Center data dealt with funding. Included were the funds used to purchase supplies, equipment, materials, and for miscellaneous purposes.

Census of Technology

The final aspect of core data used was the technology available in each school building as well as the usage of the technology by students, staff and administrators. The first part of this data determined if the school building had a connection to the Internet and if so, was that connection a dedicated or dial-up connection. It also provided the speed (bandwidth) of that connection. This section of the core data also contained the total number of computers in the school building, if and how many of the computers were connected to a Local Area Network (LAN), how many servers were in the building, and if the school was connected to a Wide Area Network (WAN). The data for the computers and the servers gave what operating system they were running and identified if the servers were running any of the following applications: e-mail, Internet, Internet filtering hardware/software, a firewall, File Transfer Protocol (FTP), and/or a Proxy Server.

The second part of the technology data dealt with the usage of the technology by students, teachers, and administrators. Information showed whether students used satellite, cable TV, compressed video, interactive TV, or desktop technologies in order to participate in remote classes.

Other usage data identified the percentage of students, teachers, and administrators who use the following:

- educational software
- email
- web-browser
- EBSCO host or other periodical database
- electronic encyclopedia
- electronic/automated library catalog
- computer-generated presentations
- writing assignments
- research information collection

This data identified the percentage of teachers who use technology to:

- prepare lesson plans
- create and use spreadsheet/database (student records)
- track student performance
- assess student performance
- communicate with parents
- communicate with DESE
- deliver instruction and presentations

The third part of the technology data identified who, within the school building, was responsible for the leadership of teachers in the integration of technology into the curriculum. Was it the instructional technology specialist, the technology coordinator, the school administrator, the library/media specialist, the teachers themselves, outside vendors, or regional centers/Regional Professional Development Centers?

Another aspect of the technology data described what information was available for access outside of the school building via the Internet. The data identified if school schedules, homework assignments, report cards/attendance information, community information, and/or teacher/school information could be accessed via the Internet.

The final component of the technology data dealt with the types of feedback systems the school had available for parents and patrons. The data indicated the number of schools that used e-mail or listservs as types of feedback, if they had an automated absentee calling system, if they used voice mail, and if they had a homework hotline via telephone or email.

Questionnaire

The questionnaire of School Library Media Center Services focused on several areas that could have an impact on student achievement. These included:

1. Respondent Information

The questionnaire first required identifiers of the responding school—the name of the school building and the school district and the grade levels served. In addition, it required information about the individual respondent—his/her name, responsibility (one or more school buildings), certification, as well as telephone number, fax number and e-mail address. All of this information was required to assess the types of respondents and how well the overall state population was represented.

2. Library Management

The second part of the questionnaire included questions about the management of the participating school's library - the receipt, preparation, amount, and consistency of the library's budget, the ongoing communication with the public library, the existence of a library advisory committee, policies on copyright, collection development, materials selection, weeding, and reconsideration of challenged materials. In addition, this section of the questionnaire asked whether the school's library had a mission, defined goals and objectives, policies and procedures manual, and a district wide library or media coordinator. The final section of this part of the questionnaire inquired about the existence of a summer reading program, the collaboration with the public library's summer reading program, and the coordination of distance learning.

3. Library Staff

This part of the questionnaire contained items concerning the number of people and total person-hours worked by paid staff with different types of qualifications. It also asked whether the librarian and/or support staff had extended contracts and the types of activities that typically took place during that time period. This section of the questionnaire also requested the longevity, hours, and type (student or adult) of volunteers the library utilized weekly.

4. Service Hours of the School Library

The fourth part of the questionnaire contained items concerning the School Library Media Center's hours of operation – before, during, and after school in a typical school week and in a typical week during summer months. This section also asked questions about how a student typically spent their time in the library, structured or non-structured, doing what, as well as whether they had on-demand access.

5. Staff Activities

Perhaps the most fundamental questions examined by this study concentrated on how often the paid librarian engaged in particular activities. The questionnaire included a comprehensive list of staff activities divided into five categories. Hours per typical week spent by staff on activities were requested for each of these categories:

- Learning and Teaching
- Information Access and Delivery
- Program Administration
- Collaboration
- Leadership

This section of the questionnaire also asked the librarian's opinion of their success in embedding information literacy skills into the core curriculum as well as the level of support they received from the principal of their school building. The rationale for dividing their time in so many ways was to obtain specific insights into exactly what school library media specialists do that makes a difference in students' performance on achievement tests.

6. Library/Loan Use

The next part of the questionnaire solicited statistics concerning how often students and staff (e.g., administrators, teachers, others) interacted with School Library Media Center Staff for different purposes, including how much and what type (flexible, rigid) of library/information skills instruction occurred. This section also included the number and types of library visits, circulation of library materials as well as counts of materials loaned to other libraries and obtained from outside the library (e.g., interlibrary loans, intra-district loans).

7. Library Technology

Due to the data available in DESE's Census of Technology, the next section of the questionnaire collected a small amount of detailed information about library technology. Respondents were asked to identify the automated and online catalogs, access to other school databases, as well as the availability of telephones, faxes, video projectors, digital cameras, satellite dishes, and laptops. Respondents were further asked to identify if the school had a board adopted Internet Usage Policy.

8. Library Collection

This section of the questionnaire solicited an inventory of the collection that was not available in the DESE core data. This included the collection by format, including non-print items (e.g., software, and audio-visual materials), and the rapidly growing "electronic" sector (e.g., CD-ROM, laser discs, and online database subscriptions). This part of the questionnaire also inquired about access to the collection from outside the building, the system of collection evaluation, and the volume of collection purchases.

Data Aggregation

Once the questionnaire data and the core data was collected, cleaned, and aggregated, 11 key components of School Library Media Center Services were identified:

1. Librarian Qualifications
2. Library Access
3. Library Budget
4. Library Space
5. Library Staff Activities
6. Library Usage
7. Library Management
8. Library Media Center Holdings
9. Library Staffing
10. Summer Reading Program
11. Technology

The definitions of the 11 key components are described below.

1. Librarian Qualifications

The Librarian Qualifications composite was computed using data obtained from the questionnaire. The questionnaire asked a series of questions pertaining to the certification and the highest level of education the paid library staff had obtained. Using a weighting of education and certification, each factor was multiplied by the total number of person hours per week for each education level. They were then totaled and divided by the total enrollment to obtain a Librarian Qualifications composite per student. The weighting factor was calculated as outlined in Table 2:

Table 2: Weighting Factor for each Level of Education/Certification

Master's degree or higher with teacher and library science certification	9
Master's degree with teacher certification or other state credentials	6
Master's degree without teacher certification or other state credentials	3
Bachelor's degree with teacher and library science certification	6
Bachelor's degree with teacher certification	4
Bachelor's degree without teacher certification	2
Less than Bachelor's degree (No degree)	1

These weighting points were calculated as outlined below:

	Points	Times the sum of the next 3 columns	Any degree		Teacher certificate		Librarian certification	
			Yes	No	Yes	No	Yes	No
Masters	3		1	0	1	0	1	0
Bachelors	2		1	0	1	0	1	0
No degree	1		1	0	1	0	1	0

2. Library Access

Library Access was composed of five variables. The first three variables dealt with the hours of operation for the School Library Media Center, while the last two dealt with outside access of School Library Media Center information. Based on responses from the questionnaire, the total hours per week the School Library Media Center was open was calculated by adding the number of hours the School Library Media Center was open per week during regular school hours with the number of hours the School Library Media Center was open before school and after school. Another variable, the total number of hours the School Library Media Center was closed per week during school hours, was taken directly from the questionnaire.

The other two variables used in this section were Yes - No questions from the questionnaire. They were: "Are any of the library's licensed online databases accessible from teachers' home computers?" and "Are any of the library's licensed online databases accessible from students' home computers?" Each "yes" was counted as a one-point score.

3. Library Budget

Both the questionnaire and the core data supplied Library Budget data. In the questionnaire, each School Library Media Center Specialist was asked to provide their total budget and their total materials budget for the past three school years (1999-2000, 2000-2001, 2001-2002). For analysis purposes, averages for both total budget and total materials budget were computed and then divided by school enrollment to determine a per student level. This eliminated any bias based on school size, which could affect the total amount of budget each school received.

The core data provided Library Budget data for equipment, materials, and other purposes. These three budgets were added to obtain a total core data Library Budget and then divided by school enrollment to determine a per student Library Budget amount. Also calculated was the total materials budget and a per student materials budget variable.

4. Library Space

From the core data provided by DESE, several space variables were available for analysis. The square footage of reading and reference space as well as the square footage of ancillary services was provided. Core data also provided the total number of seats the library had available. Total square footage for the library was computed by adding the reading and research space and the ancillary space. This total square footage variable was then divided by the school enrollment to get a total square footage of Library Space per student. The total number of seats was divided by student enrollment to attain a seats per student factor.

5. Library Staff Activities

The questionnaire asked the respondents a myriad of questions concerning the number of personnel hours spent per week by the paid staff of the library on various activities. These questions were divided into five sections: Learning & Teaching, Information Access & Delivery, Program Administration, Collaboration, and Leadership. Each section contained several questions and those questions were multiplied by a factor between 0.1 and 0.4 based on importance. After multiplying the number of hours by each factor, the section totals were computed by summing the questions in each section. Table 3 shows the factors used in the computation.

Table 3: Factors Used for Library Staff Activities Composite

Learning and Teaching	Factor
Planning instructional units with teachers	0.4
Teaching cooperatively with teachers	0.4
Providing staff development (in-service training) to teachers or other school staff	0.1
Working one-to-one with students	0.1
Meetings with building or district committees/teams/task forces on the district curriculum	0.1
Meetings with building or district committees/teams/task forces on school improvement and standards	0.1
Information Access and Delivery	
Performing basic library activities (i.e., checking in and out, re-shelving, processing, retrieving)	0.1
Identifying materials for instructional units developed by teachers	0.1
Providing information skills instruction (i.e., citations, copyright, critical thinking, evaluation of online sources) to individuals or groups	0.4
Drawing in resources from other libraries in the district	0.1
Drawing in resources from libraries in the community	0.1
Providing reading incentive activities (i.e., book talks, story times, reader's advisory services, author visits)	0.1
Program Administration	
Managing library technology (computers, computer network, automation)	0.1
Administering electronic reading programs such as Accelerated Reader	0.1
Evaluating the effectiveness of the program and its collection	0.1
Informing teachers, students, and administrators of new materials, equipment and/or services	0.1
Managing inter-library loans	0.1
Meeting with the principal	0.0-0.4*
Attending faculty or staff meetings	0.0-0.4*
Collaboration	
Discussing library activities, instruction, and/or incentives with the community library	0.2
Working with teachers and students to select the collection	0.2
Communicating with building and district library staffs	0.2
Meeting with building and district library staff	0.2
Leadership	
Attending local/regional library association meetings	0.2
Serving on a MASL committee or in a leadership role	0.2
Attending continuing education training	0.2
Applying for awards or attending recognition events	0.2
Preparing and/or presenting to the district school board	0.2
Getting certified	0.2

Factors varied depending on the level of interest. In other words, those with a 0.4 factor were considered to be of more interest to the analysis due to the impact they were found to have in other studies.

*NOTE: Within the Program Administration section, two of the questions factor was based on the questionnaire. The factor used for “Meeting with the principal” was based on the responses from “How supportive is the school principal of the library program?” and the factor used for “Attending faculty or staff meetings” was based on responses from “How successful would you say you have been at establishing the integration of information literacy skills across the curriculum?” These calculations are outlined below:

Very Unsupportive Very Unsuccessful	0.0
Unsupportive Unsuccessful	0.1
Neither Supportive or Unsupportive Neither Successful or Unsuccessful	0.2
Supportive Successful	0.3
Very Supportive Very Successful	0.4

6. Library Usage

The final area dealt with the Usage of the School Library Media Center. The first component dealt with how the typical student spent their time while in the School Library Media Center. Combining several questionnaire responses, this component took into account the time spent in the library in a structured or non-structured schedule, what the student was doing while in the library (study hall, reading, research, other), and if students could access library information whenever needed. Each school was given one point if student time was structured and given another point if students could access library information whenever needed. A half point was added if the time was spent doing research or reading, but a half point was deducted if their time was spent in study hall. Two other variables that were used in the Library Usage section were the percentage of classes that visited the library through a flexible schedule versus a rigid schedule.

The remaining variables used in this area dealt with the usage of the School Library Media Center in a typical week. The following seven questions were asked for Students, Teachers, Administrators, Parents and Others, but for analysis purposes, only the student data was used.

- number of scheduled and unscheduled visits to the school library.
- number of scheduled and unscheduled visits to the school library by classes or other groups.
- number of scheduled or unscheduled information skills instruction contacts with individuals.
- number of scheduled or unscheduled information skills instruction contacts with classes or groups.
- total number of books and other materials checked out during the most recent full week.
- number of materials used in the library (estimate based on re-shelving count).

7. Library Management

The Library Management composite was calculated by giving each school points based on their answers to several questionnaire items. The maximum number of points was 8.99. Each school was given one point (1.00) if the respondent answered, “Yes” to any of the following questions:

- Does the school library program receive a budget?
- Is there on-going communication between your library staff and your local public library?
- Does your school library program have an active advisory committee?
- Does your library have a school board approved copyright policy?
- Do you have a library mission statement and defined goals and objectives?
- Do you have a library policy and procedures manual?
- Does your library have a school board approved collection development policy?

Each school was given one-third point (0.33) if their collection development policies addressed any of the following:

- Materials selection policy
- Weeding policy
- Reconsideration of challenged materials

And finally, each school was given a half point (0.50) if they had a part-time district library or media coordinator or were given one point (1.00) if they had a full-time district library or media coordinator.

8. Library Media Center Holdings

Library Media Center Holdings data from the questionnaire, as well as from core data, was used to create three variables that best describe the Library Media Center Holdings. The first variable calculated was total holdings per student. From the core data, the number of holdings were added together to get a total holdings value. That value was then divided by total enrollment to get the number of holdings the School Library Media Center had per student. The variables used to calculate total holdings were:

- Fiction
- Non-Fiction
- Magazines
- Newspapers
- Reference
- Visual Materials
- Periodical Indexes

The other variables used in analyzing holdings came from the questionnaire. The first was a Yes-No composite of whether the school library had at least one of the following catalogs in either print or electronic version:

- Elementary School Library Collection
- Children's Catalog
- Junior High School Catalog
- High School Catalog

The composite was either a 1.0 (if they had one or more) or a 0.0 (did not have any).

The second variable summed the total number of online licensed services to which the library subscribed. Each library was given one point (1.0) for each of the following to which they subscribed:

- Online periodical services (e.g, BigChalk, H.W. Wilson)
- Online resources/services other than periodical (e.g, Newsbank)
- CD ROM services (e.g, SIRS, Newsbank)
- Other electronic full text services (e.g, encyclopedias)

9. Library Staffing

The Library Staffing composite was computed using questionnaire data. By taking the total number of personnel hours per week reported by the questionnaire respondents for paid staff and dividing that number by total student enrollment, a variable was created at a per student level. The total personnel hours per week of paid staff per student again eliminated any bias based on school size.

10. Summer Reading Program

Using the response to the questionnaire, a school that had a Summer Reading Program, was given two points (2.00) and if the library or school worked cooperatively to promote student participation in a summer reading club at a local public library they were given another point (1.00). Therefore, each school was able to obtain three points. These two components were not equally weighted because the importance of a Summer Reading Program outweighed its coordination with the public library.

11. Technology

Using the Census of Technology data as well as data from the questionnaire, several variables were computed to measure each school's technology availability and usage. From the questionnaire, an online catalog services composite was computed. Each school was given one point (1.00) for each of the following:

- An automated district wide catalog
- An automated catalog accessible through the Internet
- Capability and/or access of an online catalog and any other school library databases
- Access to central library services

A standard information processing tools composite was also computed using questionnaire data. This composite was calculated by giving each school one point (1.00) for each of the following items in their library media center:

- A telephone
- A fax machine
- A CD ROM server
- A video projector
- A digital camera
- A satellite dish
- One or more laptops

The remaining variables used to measure each school's level of technology came from the core data. The first variable, percentage of student use of electronic information was calculated by taking the average percentage of students that:

- Use educational software
- Use email
- Web-browse
- Use EBSCO host or other periodical database
- Use electronic encyclopedia
- Use electronic/automated library catalog

The final seven variables computed to measure technology were calculated using a ratio to mean approach. Given the number of variables included in each of these seven, it was determined that, when using a simple mean approach, a school that performed very well in one aspect and very poorly in another aspect would look similar statistically to a school that performed average on the same two variables. Therefore, composites were calculated using the mean, but then they were recalculated as a ratio to the mean score for all schools. For example, if the mean score for an individual school on one composite was 1.00 and the mean score for that composite for all schools was 2.00, then that one school would have a ratio to mean of 0.50. The composites that were calculated using this method were:

- School information accessed via internet
- Feedback systems used
- Technology used for remote classes
- Computer network (Internet Connection, LAN, WAN)
- Internet connection speed
- Number of computers per student

Statistical Analysis

The statistical analyses included identifying the connections between School Library Media Center Services and student achievement in the sample, and determining the 'significance levels' that indicate the extent to which the sample represents the population. The following topics describe the types of analyses done.

1. Statistical Significance

A sample is a part of the population from which the data was drawn. A sample contains features of its population to some extent. A larger sample tends to contain features of its population to a larger extent. However, differences always exist, more or less, between a sample and its population. When making an assertion about the population based on its sample, the error of the assertion must be calculated and evaluated. Statistical significance is for that purpose.

Statistical significance is usually represented by the p-value, which is the probability of making errors in extending a result of a sample to its population. For example, if the correlation coefficient between two variables in a sample was 0.20 and the p-value was 0.08, then there is an 8% chance of making a mistake, if it is claimed that the two variables are also related in the population (i.e., there is 8% chance the two variables are not related at all in the population).

Since a p-value is the probability of making errors, the smaller the p-value, the more confident one can be to extend the result of a sample to its population. The two most commonly used significance levels to determine whether a sample statistic is 'statistically significant' are $p=0.05$ and $p=0.01$.

2. Hypothesis Testing

Hypothesis testing was used throughout all statistical analyses. When considering the statistical significance, a t-test or F-test was used to get the p-value that indicated the significance. For example, hypothesis testing was performed after running a multiple regression on the Weighted Average MAP index and some School Library Media Center Service variables. The null hypothesis was 'Weighted Average MAP index was not related to those School Library Media Center Service variables.' An F-test gives the p-value so that it can be determined whether or not the null hypothesis should be rejected if, for example, the p-value was small enough.

3. Bivariate Correlation

Bivariate correlation reveals how two variables are statistically related, with the assumption that other variables do not exist. Pearson's correlation coefficient (r) is a useful statistical indicator for the bivariate correlation. Since r is a statistical indicator, it is accompanied with a 'significance level' to tell whether the indicator value is statistically significant. The r -value is on the scale of -1.00 to +1.00. Negative values indicate that a decline in one variable is associated with an increase in another, while positive values indicate that two variables increase together. If $r=0.00$, then the two variables are not related. The value of r indicates the extent to which two variables change together. For example, if $r=0.40$ it implies that $0.40^2 = 0.16$ or 16% of the variance (sum of the squares of variability) is associated with the variance of another variable.

The square of r -value is called the coefficient of determination, denoted by R^2 . It gives the percent of the variance of a variable that is explained by another variable or a set of other variables (i.e., School Library Media Center Service variables and school demographic variables).

R^2 has a weakness in measuring the correlation between the Weighted Average MAP index and a set of School Library Media Center Service variables. R^2 increases as more variables are added to the independent variable set, no matter whether the added variables actually explain more variance of the Weighted Average MAP index. For this reason, the adjusted R^2 , denoted by R_a^2 , was used to take into account the number of variables involved. R_a^2 is more conservative and more accurate than R^2 in measuring the correlation between a variable and a set of other variables. Adjusted R^2 may not increase, sometimes it may decrease, as more variables are added to the independent variable set, which implies that the added variables do not have an additional contribution in explaining the changes of the Weighted Average MAP index on top of the initial independent variables.

4. Multiple Regressions

Multiple regressions were used in the project to test the correlation between a dependent variable Y (Weighted Average MAP index) and any set of variables. School Library Media Center Services was organized into eleven components. Most of the components were composed of two or more variables. The matrix of correlation coefficients provides correlation between the individual variables. It did not give the correlation between the dependent variable Y and a component that was composed of many variables. Therefore, multiple regression was used to find the correlation between Y and the component by reviewing the R^2 value and the significance of the regression.

5. Partial Correlation

Partial correlation reveals the correlation between variables when holding some other variables constant. Suppose the correlation between the Weighted Average Map Index and technology used in the library was $R^2=0.1$, which means 20% of the Weighted Average Map Index's variance is associated with the changes of technology used in the library while the other variables were not considered. This does not mean that if technology use in the library were doubled that the Weighted Average Map Index would increase by 10%. There may be other variables (such as technology used on campus, school budget, and average income of the community) that contribute to the Weighted Average Map Index. Partial correlation helps single out the effect of the interested variables.

Two methods were considered to reveal the partial correlation. These were the partial correlation coefficient method and the incremental partial correlation method. The incremental partial correlation method was chosen for the analyses in this project since it could provide more accurate statistics than the partial correlation coefficient method.

The partial correlation coefficient gives the effect of a variable when holding some other variables constant. The partial correlation coefficient was denoted by the symbol $R^2(Y, X_1 | X_2)$ which means the R^2 value between Y and X_1 when holding X_2 constant. It was calculated by the formula $R^2(Y, X_1 | X_2) = (SSR(X_1, X_2) - SSR(X_2)) / (SST(Y) - SSR(X_2))$.

The weakness of the partial correlation coefficient, similar to R^2 , was that it did not take the number of variables involved into account. It became more inaccurate when more variables were involved in the calculation of the partial coefficients. In this research, there were up to 63 variables in a model; therefore the incremental partial correlation method was used on the adjusted R^2 , as described below, to improve the accuracy.

Incremental partial correlation method

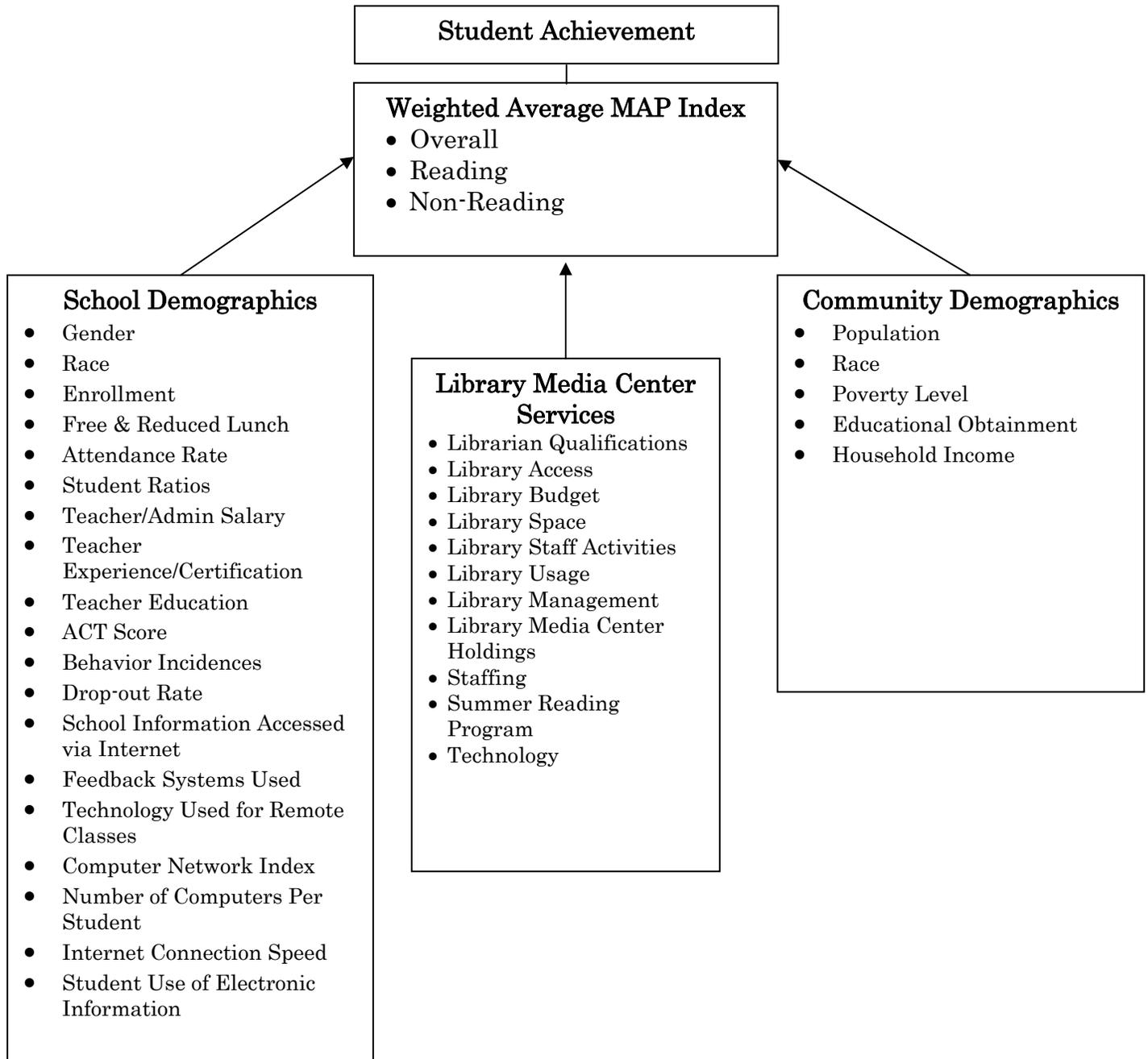
The incremental partial correlation, $R_I^2(Y, X_1 | X_2)$, measures the effect of variable set X_1 on the variable Y in addition to the effect of variable set X_2 on Y . The variable set X_2 was called the control variable set. $R_I^2(Y, X_1 | X_2) = R_a^2(Y, X_1 \text{ and } X_2) - R_a^2(Y, X_2)$, where $R_a^2(Y, X_1 \text{ and } X_2)$ was the adjusted R^2 between variable Y and the joint variable set (X_1, X_2) , $R_a^2(Y, X_2)$ was the adjusted R^2 between variable Y and the control variable set X_2 . The reason for using the adjusted R^2 in calculating $R_I^2(Y, X_1 | X_2)$ was to make the resultant incremental partial correlation more accurate when many variables were involved in the analyses.

Practically, the incremental partial correlation, $R_1^2(Y, X_1 | X_2)$, was worked out in the following way. Run the multiple regression model on the control set of independent variables X_2 . Then, add another set of variables X_1 to the independent variable set, run the regression model again. The difference of the adjusted R^2 values in the results of the two regressions indicate the additional explanation of the variance of Y by the add-in variables on top of the connection already set up between Y and the control set of independent variables. Since the adjusted R^2 did not always increase when more variables were added in, the incremental partial correlation could be negative, which implied that the added variables had no contribution on top of the original variables.

The incremental partial correlation between the Weighted Average MAP index and each component of School Library Media Center Services variables, which was called internal incremental partial correlation, was calculated while holding the other components of School Library Media Center Services as the control variables in order to compare the affects of the School Library Media Center Services components on the Weighted Average Map Index. Also calculated was the incremental partial correlation between the Weighted Average Map Index and each of the components of the School Library Media Center Services given the community and school variations, which was called external incremental partial correlation, in order to reveal the affect of School Library Media Center Services components on the Weighted Average Map Index on top of the community and school variables. For these purposes, using adjusted R^2 would result in a more accurate comparison. The variables of School Library Media Center Services were grouped into 11 components with a different number of variables in each component. Some components had only one variable, while some had up to nine. If R^2 was used in calculating the partial correlation of each component of School Library Media Center Services on top of the community and school variations, then the component with nine variables would tend to show larger partial correlation than the component with one variable. Using the adjusted R^2 made the comparison of the partial contributions of the various components of School Library Media Center Services on an equal base.

Analysis

The following is a pictorial view of how the analysis will be reported to best display the impact of School Library Media Center Services, school demographics, and community demographics on student achievement as well as the relationship each has to the other:



Weighted Average MAP Index	
• Overall	
• Reading	
• Non-Reading	

The Weighted Average MAP index was determined using the statewide-standardized test, the Missouri Assessment Program (MAP), scores from 2002. The scores were evaluated in three areas:

- Overall = Reading + Non-Reading
- Reading
- Non-Reading = Social Studies, Communication Arts, Health/PE, Fine Arts, Mathematics, Science

It was necessary to compute the Weighted Average MAP Index because the MAP test was not administered to all grades in the same content areas. The Weighted Average MAP Index was the average MAP index, weighted by the number of reportable students by grade for the various content areas of the MAP test. This computation allowed analysis to be conducted on a composite reading score, non-reading score, and an overall score for each school. The results of this computation are displayed in Tables 4, 5, and 6 below:

Table 4: Overall Weighted Average MAP Index

YEAR	QUESTIONNAIRE MEAN SCORE	QUESTIONNAIRE MEDIAN SCORE	STD DEVIATION OF QUESTIONNAIRE
2000	203.02	203.91	19.86
2001	204.11	205.67	18.07
2002	212.56	202.75	20.94

Table 5: Reading Weighted Average MAP Index

YEAR	QUESTIONNAIRE MEAN SCORE	QUESTIONNAIRE MEDIAN SCORE	STD DEVIATION OF QUESTIONNAIRE
2000	203.90	204.70	25.67
2001	200.53	203.75	30.58
2002	216.76	206.30	32.03

Table 6: Non-Reading Weighted Average MAP Index

YEAR	QUESTIONNAIRE MEAN SCORE	QUESTIONNAIRE MEDIAN SCORE	STD DEVIATION OF QUESTIONNAIRE
2000	197.67	198.05	21.47
2001	201.18	200.59	18.41
2002	202.99	200.14	21.48

Once these were calculated, correlations were run to identify relationships between the three Weighted Average MAP Indexes. This assisted in assessing the connection of student achievement to School Library Media Center Services within each score, since the higher the correlation the less differences that need to be explained away.

Table 7: Correlation Coefficients (R) of Weighted Average MAP Index for 2002

	OVERALL		READING		NON-READING	
OVERALL	1.000	1.000	0.946	0.874	0.931	0.993
READING	0.946	0.874	1.000	1.000	0.775	0.815
NON-READING	0.931	0.993	0.775	0.815	1.000	1.000

The highlighted cells represent the responding schools, while the others cells represent the core data.

Table 7 displays the relationship between Reading and Non-Reading Weighted Average MAP Indexes, as well as to the Overall Weighted Average MAP Index. Due to the high correlation of the Reading Weighted Average MAP Index and the Non-Reading Weighted Average MAP Index to the Overall Weighted Average MAP Index displayed above, the relationship between Overall Weighted Average MAP Index and School Library Media Center Services will reveal the connection between student achievement and School Library Media Center Services. Therefore, all findings reported from this point forward will be based on the Overall Weighted Average MAP Index.

School Demographics

- | | |
|---|--|
| <ul style="list-style-type: none"> • Gender • Race • Enrollment • Free & Reduced Lunch • Attendance Rate • Student Ratios • Teacher/Admin Salary • Teacher Experience/Certification • Teacher Education • ACT Score | <ul style="list-style-type: none"> • Behavior Incidences • Drop-out Rate • School Information Accessed via Internet • Feedback Systems Used • Technology Used for Remote Classes • Computer Network Index • Number of Computers Per Student • Internet Connection Speed • Student Use of Electronic Information |
|---|--|

The demographics of the responding schools were analyzed to determine their role, if any, on the Weighted Average Map Index. Table 8 is a summary of the demographic data items identified as being worthy of analysis:

Table 8: Descriptive Statistics for School Demographic Data

	Mean	Median	Std. Dev
Total Enrollment	548	448	388
FRL Percentage	30.25%	29.03%	20.41%
% Male	51.36%	51.23%	2.85%
% Female	48.63%	48.77%	2.85%
% Black	10.54%	3.21%	17.89%
% White	85.82%	93.15%	18.93%
Attendance Rate	94.80%	94.90%	2.40%
Behavioral Incident Rate per 100 students	1.60	.99	1.80
Out of School Suspension Rate per 100 students	1.46	.85	1.56
ACT - Percent of Graduates Scoring at or Above National Average	33.00%	32.50%	11.91%
Dropout Rate	3.32%	2.85%	2.56%
Student/Administrator Ratio	327.79	322.00	110.10
Student/Teacher Ratio	14.55	14.64	2.55
Teacher Average Salary	\$37,072.19	\$36,700.01	\$5,951.00
Administrator Average Salary	\$63,556.07	\$63,500.00	\$14,198.29
Average Years of Teacher Experience Year	14.90	14.20	11.40
Percent of Teachers with a Masters Degree or Higher	51.44%	51.06%	16.63%
Percent of Teachers with Regular Certificates	98.21%	100.00%	3.79%
Standard Information Processing Tools	3.51	4.00	1.59
Percentage of Student Use of Electronic Information	.51	.52	.19
School Information Accessed via Internet (Ratio to Mean)	1.00	.97	.67
Feedback Systems Used (Ratio to Mean)	1.00	.81	1.08
Technology Used for Remote Classes (Ratio to Mean)	1.00	.00	1.86
Computer Network (Internet Connection, LAN, WAN) (Ratio to Mean)	1.00	1.07	.15
Internet Connection Speed (Ratio to Mean)	1.00	1.01	.23
Number of Computers per Student (Ratio to Mean)	1.00	.92	.81

From this data, a top ten demographic data list was determined using statistical significance. Table 9 displays the top ten and the significance they have to Weighted Average Map Index.

Table 9: Top Ten Demographic Data Correlations and Significance to Weighted Average Map Index	Pearson Correlation	Statistical Sig. (2-tailed)
School Information Accessed via the Internet	0.327	.000
Percent of Teachers with a Masters Degree or Higher	0.314	.000
Percent of Teachers with Regular Certificates	0.282	.000
% White	0.269	.000
Teacher Average Salary	0.262	.000
Student/Teacher Ratio	0.261	.000
Feedback Systems Used	0.242	.000
Attendance Rate	0.240	.000
% Black	-0.290	.000
Free & Reduced Lunch Percentage	-0.385	.000

Based on these findings, the free and reduced lunch rate has the highest correlation to Overall Weighted Average Map Index and should be investigated further to determine its true affect on Weighted Average Map Index. The variance of free and reduced lunch rate explains a 15% (-0.385^2) variance in Overall Weighted Average Map Index and because the significance was very low the sample data represents the total population.

Community Demographics

- Population
- Race
- Poverty level
- Educational obtainment
- Household income

The demographics of the counties represented by responding schools, via the 2000 County Census, were analyzed to determine their role, if any, on Weighted Average Map Index. Table 10 is a summary of the demographic data items identified for analysis:

	Mean	Median	Std. Dev
County Population	52,039	18,665	124,976
% White	93.79%	96.37%	7.73%
% Black	3.38%	.85%	7.04%
% Asian	1.05%	0.89%	0.80%
% Indian	0.50%	0.49%	0.38%
Median Household Income	\$31,962.40	\$30,865.50	\$6,757.01
% Below Poverty Level	14.49%	14.30%	4.96%
% Less than High School	23.32%	22.40%	6.70%
% High School Grads	39.83%	40.46%	5.47%
% Associate Degree	4.13%	3.90%	1.31%
% College Degree	9.05%	7.98%	3.82%
% Post College	4.55%	3.67%	2.52%

From this data, eight variables were determined to be correlated at a significant level. Table 11 displays those eight variables and the significance they have to the Weighted Average MAP Index.

	Pearson Correlation	Statistical Sig. (2-tailed)
% Below Poverty Level	-0.268	.000
Median Household Income	0.265	.000
% Less than High School	-0.246	.000
% College Degree	0.221	.000
% High School Grads	-0.205	.000
County Population	0.204	.000
% Associate Degree	0.197	.000
% Post College	0.164	.000

Based on these findings, the socioeconomic status of a county had the highest correlation to Overall Weighted Average MAP Index (explaining 7% of the variance). Three other items, all of which deal with level of educational obtainment, also had a high correlation to the Overall Weighted Average MAP Index (5% of the variance).

School Library Media Center Services

The eleven components of School Library Media Center Services were analyzed to determine their role, if any, on Weighted Average Map Index. Table 12 is a summary of the 11 components, which shows the findings for each individual factor(s) of each of the 11 components:

Table 12: Descriptive Statistics for 11 Components of School Library Media Center Services	Mean	Median	Std. Dev
LIBRARIAN QUALIFICATIONS	.70	.64	.47
LIBRARY ACCESS			
Total Hours per Week Library was Open	38.38	40.00	21.60
Total Hours per Week Library was Closed During School Hours	1.38	.00	2.92
Total Hours per Week Library was Open During School Hours	33.10	35.00	15.43
Total Hours per Week Library was Open Before and After School	5.74	5.00	14.15
Are any of licensed online databases accessible from teachers' home computers?	.43	.00	.49
Are any of licensed online databases accessible from students' home computers?	.39	.00	.49
LIBRARY BUDGET			
Average Total Budget per Student	\$37.00	\$22.86	\$53.39
Average Total Materials Budget per Student	\$22.29	\$17.96	\$25.44
Total Core Data Library Budget per Student	\$13.70	\$6.47	\$66.61
Total Core Data Materials Budget per Student	\$12.04	\$5.48	\$66.45
Average Total Budget	\$17,503.73	\$11,000.33	\$22,555.93
Average Total Budget for Materials	\$11,075.97	\$7,846.00	\$13,107.05
Total Core Data Library Budget	\$6,113.87	\$2,730.00	\$14,965.23
Total Core Data Materials Budget	\$5,327.12	\$2,264.00	\$14,714.98
LIBRARY SPACE			
Library Media Center: Square Feet of Space per Student	6.27	5.49	3.78
Library Media Center: Number of Seats per Student	.13	.11	.09
STAFF ACTIVITIES (Number of Hours per Week)	12.19	9.40	19.18
Learning and Teaching	3.54	2.20	5.48
Information Access and Delivery	5.42	4.00	14.08
Program Administration	1.82	1.30	2.07
Collaboration	.86	.60	1.43
Leadership	.58	.40	.81

Table 13: Descriptive Statistics for 11 Components of School Library Media Center Services, Continued	Mean	Median	Std. Dev
LIBRARY USAGE			
Use of Time in Library (Structured/Non-Structured)	1.74	2.00	.64
BY STUDENTS			
In a typical week, what percent of the classes that visit the library were FLEXIBLY scheduled?	48%	40%	42%
In a typical week, what percent of the classes that visit the library were RIGIDLY scheduled?	60%	80%	40%
Number of scheduled and unscheduled visits to the school library	.56	.28	.74
Number of scheduled and unscheduled visits to the school library by classes or other groups	.12	.05	.24
Number of scheduled or unscheduled information skills instruction contacts with individuals	.15	.05	.28
Number of scheduled or unscheduled information skills instruction contacts with classes or groups	.07	.02	.20
Total number of books and other materials checked out during the most recent full week	1.40	1.23	1.35
Number of materials used in the library (estimate based on re-shelving count)	.65	.20	1.78
LIBRARY MANAGEMENT	6.96	6.99	1.16
LIBRARY MEDIA CENTER HOLDINGS			
Total Holdings per Student	28.85	23.27	22.89
Library has at Least One Catalog	.48	.00	.50
Number of Online Licensed Services	1.16	1.00	1.32
STAFFING			
Total Personnel Hours per Week of Paid Staff per Student	.06	.05	.07
SUMMER READING PROGRAM	.67	1.00	.81
TECHNOLOGY			
Online Catalog Services	1.76	2.00	1.27
Standard Information Processing Tools	3.51	4.00	1.59
Percentage of Student Use of Electronic Information	.51	.52	.19
Are library/media specialists responsible for leadership of teachers in integrating technology in the curriculum?	.50	.50	.50
Computer Network (Internet Connection, LAN, WAN) (Ratio to Mean)	1.00	1.07	.15
Number of Computers per Student (Ratio to Mean)	1.00	.92	.81

At this time, it is important to note that the sample data was complete for 241 of the respondents (all core data used and questionnaire responses available) for the variables of the 11 components included in the final analysis. The degree of connection to the Weighted Average MAP Index for each of the 11 components, as well as overall School Library Media Center Services, will be reported using the same format over the next few pages of this report.

Statistical Analysis of School Library Media Center Services

Correlation Coefficient

Table 14 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average MAP Index and overall School Library Media Center Services, based on the sample of 241 records with complete data.

The result was derived by running the multiple regression models with Overall Weighted Average Map Index as the dependent variable and the 40 School Library Media Center Service factors as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 14: Correlation between Weighted Average MAP Index and Overall School Library Media Center Services

R^2	Adjusted R^2	Significance
0.272	0.126	0.003

The adjusted R^2 shows that 12.6% of the variance of Weighted Average MAP Index was associated with the changes of School Library Media Center Services variables in the sample of the 241 schools. The correlation was very significant since the significance value was far below .05. Therefore, it was safe to claim that the student achievement, represented by Weighted Average MAP Index, was connected to School Library Media Center Services.

Partial Correlation Analysis

The value of adjusted R^2 , 0.126, indicated that a 12.6% association existed between the variance of Weighted Average MAP Index and the variance of the 40 School Library Media Center Services variables. However, it did not mean the 12.6% associated variance of Weighted Average MAP Index was caused entirely by School Library Media Center Services. There were other variables that might have caused Weighted Average MAP Index to vary, such as the school demographic variables and community demographic variables. The 12.6% variance of Weighted Average MAP Index associated with School Library Media Center Services could be partially or even fully be caused by some Non-School Library Media Center Services variables that were correlated with some School Library Media Center Services variables. The partial correlation analysis helped differentiate the affect of School Library Media Center Services on Weighted Average MAP Index from other factors.

Table 15 gives the “external” partial adjusted R^2 associated with the School Library Media Center Services variables, which was the incremental partial correlation between Weighted Average MAP Index and the School Library Media Center Services after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were external of the School Library Media Center Services. The control variables included all the Non-School Library Media Center Services variables: ten school demographic variables, eight community demographic variables, and seven general technology variables.

Table 15: External Partial Correlation with School Library Media Center Services

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	School Library Media Center Services	0.507	0.106

The value of incremental partial R_a^2 , 0.106, gave the percent of Weighted Average Map Index variance that was explained with the presence of the School Library Media Center Services variables on top of the all Non-School Library Media Center Services variables. In other words, School Library Media Center Services variables explained up to 10.6% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of School Library Media Center Services

The analysis showed that School Library Media Center Services, represented by all of the variables included in the 11 components, was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index. The partial correlation analysis revealed that 10.6% of the variance in Weighted Average Map Index was not related to the Non-School Library Media Center Services demographic factors, but was related to School Library Media Center Services.

The next few pages of the report share the findings for each of the 11 components of School Library Media Center Services to determine their correlation to Overall Weighted Average Map Index. The 11 components were:

1. Librarian Qualifications
2. Library Access
3. Library Budget
4. Library Space
5. Library Staff Activities
6. Library Usage
7. Library Management
8. Library Media Center Holdings
9. Library Staffing
10. Summer Reading Program
11. Technology

Librarian Qualifications

Librarian Qualifications was a component of School Library Media Center Services. As explained in the section Data Aggregation, the Librarian Qualifications component was computed by aggregating the relevant questions of the questionnaire. The questionnaire asked a series of questions pertaining to the highest level of education and certification the paid library staff had obtained. The component was composed of one variable for a librarians' education and experience weighted by the work hours. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 16 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Librarian Qualifications component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with Overall Weighted Average Map Index as the dependent variable and Librarian Qualifications as the independent variable. R^2 indicates to what extent the independent variable was related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 16: Correlation between Weighted Average Map Index and Librarian Qualifications

R^2	Adjusted R^2	Significance
0.021	0.017	0.025

The adjusted R^2 was 0.017 which shows that 1.7% of the variance of Weighted Average Map Index was associated with the changes of the Librarian Qualifications component in the sample. It was significant (p-value = 0.025) according to the 5% benchmark for the significance level.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.017, indicates that a 1.7% association existed between the variance of the Weighted Average Map Index and the variance of the Librarian Qualifications variable. However, it did not mean that the 1.7% associated variance of the Weighted Average Map Index was all caused by Librarian Qualifications. There were other variables that may have caused Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Librarian Qualifications on the Weighted Average Map Index from the other factors.

Table 17 gives the “internal” partial adjusted R^2 with the Librarian Qualifications component, which was the incremental partial correlation between Weighted Average Map Index and Librarian Qualifications after the affect of the other ten School Library Media Center Services components were considered. It was called “internal” because the control variables were all within the School Library Media Center Services. The value of incremental partial $R_a^2 = 0.001$ indicates that Librarian Qualifications explained up to 0.1% of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 17: Internal Partial Correlation with Librarian Qualifications

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Qualifications	0.127	Librarian Qualifications	0.126	0.001

Table 18 gives the “external” partial adjusted R^2 associated with the Librarian Qualifications component, which was the incremental partial correlation between the Weighted Average Map Index and Librarian Qualifications after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 18: External Partial Correlation with Librarian Qualifications

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	Librarian Qualifications	0.399	-0.002

The negative 0.002 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that no additional Weighted Average Map Index variance was explained with the presence of the Librarian Qualifications component on top of the Non-School Library Media Center Services variables. In other words, the Librarian Qualifications component did not explain any more Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Librarian Qualifications

This analysis shows that the Librarian Qualifications component was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. However, on top of the other School Library Media Center Services variables, the Library Qualifications component explained up to 0.1% of the variance of Weighted Average Map Index that was not explained by the other School Library Media Center Services variables. And on top of the Non-School Library Media Center Services variables, the Librarian Qualifications component did not explain any variance of the Weighted Average Map Index that was not explained by the Non-School Library Media Center Services variables.

Library Access

Library Access was a component of School Library Media Center Services. As explained in the section Data Aggregation, the Library Access component was composed of five variables. The first three variables dealt with the hours of operation for the Library Media Center, while the other two dealt with outside or on-line access of School Library Media Center information. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 19 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Library Access component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with Overall Weighted Average Map Index as the dependent variable and five Library Access variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 19: Correlation between Weighted Average Map Index and Library Access

R^2	Adjusted R^2	Significance
0.053	0.033	0.025

The adjusted R^2 was 0.033 which shows that 3.3% of the variance of the Weighted Average Map Index was associated with the changes of Library Access in the sample. It was significant (p -value = 0.025) according to the 5% benchmark for the significant level.

Because Library Access contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 20 shows the correlation coefficient of each of the five variables in this category with the Weighted Average Map Index.

Table 20: Correlation Coefficient for five variables of Library Access	R	Sig. (2-tailed)
Are any of your licensed online databases accessible from students' home computers?	.142	.028
Total Hours per Week Library was Closed During School Hours	.128	.048
Are any of your licensed online databases accessible from teachers' home computers?	.123	.057
Total Hours per Week Library was Open During School Hours	-.079	.219
Total Hours per Week Library was Open Before and After School	-.016	.804

The first variable had the strongest correlation with the Weighted Average Map Index ($R^2=0.142$) and it was significant. The second variable was also significant and correlated to the Weighted Average Map Index ($R^2=0.128$). However, the positive correlation for the second variable was suspicious. After further analysis it was determined that there could have been some misunderstanding in some of the respondent’s calculations for the total number of hours the library was closed per week. The average number of hours the library was closed per week was 1.37 and the majority of the respondents (65%) stated that the library was never closed during regular school hours. Because of these suspicions, the data was used in the final analysis, but was not used in the detail of the findings. The other variables were not significant and ignored.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.033, indicates that a 3.3% association between the variance of Weighted Average Map Index and the variance of the Library Access component exists. However, it does not mean that the 3.3% associated variance of Weighted Average Map Index was all caused by Library Access. There were other variables that may have caused Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Library Access on the Weighted Average Map Index from the other factors.

Table 21 gives the “internal” partial adjusted R^2 with Library Access, which was the incremental partial correlation between the Weighted Average Map Index and Library Access after the affect of other 35 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value 0.018 of the incremental partial R_a^2 indicates that Library Access could explain up to 1.8% of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 21: Internal Partial Correlation with Library Access

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Access	0.108	Library Access	0.126	0.018

Table 22 gives the “external” partial adjusted R^2 associated with Library Access, which was the incremental partial correlation between the Weighted Average Map Index and Library Access after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 22: External Partial Correlation with Library Access

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Library Access	0.409	0.008

The value 0.008 of the incremental partial R_a² indicates the additional percent of the Weighted Average Map Index variance that was explained with the presence of Library Access on top of the Non-School Library Media Center Services variables. In other words, Library Access could explain up to 0.8% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Access

The analysis shows that the Library Access component was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the other School Library Media Center Services variables, the Library Access variables could explain up to 1.8% of the Weighted Average Map Index variance. And on top of the Non-School Library Media Center Services variables, Library Access could explain up to 0.8% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Library Budget

Library Budget was a component of School Library Media Center Services. As explained in the section Data Aggregation, the Library Budget component was composed of six variables concerning money allocated to the libraries. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 23 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Library Budget component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with Overall Weighted Average Map Index as the dependent variable and the six Library Budget variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 23: Correlation between Weighted Average Map Index and Library Budget

R^2	Adjusted R^2	Significance
0.052	0.028	0.048

The adjusted R^2 was 0.028 which shows that 2.8% of the variance of Weighted Average Map Index was associated with the changes of Library Budget in the sample. It was significant (p -value = 0.048) according to the 5% benchmark for the significant level.

Because the Library Budget component contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 25 shows the correlation coefficient of each of the six variables in this component with the Weighted Average Map Index.

Table 24: Correlation Coefficient for 6 variables of Library Budget	R	Sig. (2-tailed)
Total Core Data Library Budget	-.153	.018
Total Core Data Library Budget per Student	-.102	.115
Average Total Budget for Materials	.060	.352
Average Total Materials Budget per Student	.059	.363
Average Total Budget per Student	-.042	.520
Average Total Budget	.013	.837

Of the six variables only the first variable was significant, although it was negatively correlated to the Weighted Average Map Index.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.028, indicates that there exists a 2.8% association between the variance of Weighted Average Map Index and the variance of the Library Budget. However, it did not mean that the 2.8% associated variance of the Weighted Average Map Index was all caused by the Library Budget. There were other variables that may have caused Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Library Budget on the Weighted Average Map Index from the other factors.

Table 25 gives the “internal” partial adjusted R^2 with the Library Budget, which was the incremental partial correlation between the Weighted Average Map Index and the Library Budget after the affect of the other 34 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value 0.000 of the incremental partial R_a^2 indicates that the Library Budget explains none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 25: Internal Partial Correlation with Library Budget

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Budget	0.126	Library Budget	0.126	0.000

Table 26 gives the “external” partial adjusted R^2 associated with the Library Budget, which was the incremental partial correlation between the Weighted Average Map Index and the Library Budget component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 26: External Partial Correlation with Library Budget

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Library Budget	0.434	0.033

The value 0.033 of the incremental partial R_a² indicates the additional percent of the Weighted Average Map Index variance that was explained with the presence of Library Budget on top of the Non-School Library Media Center Services variables. In other words, Library Budget could explain up to 3.3% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Budget

The analysis shows that the Library Budget component was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the other School Library Media Center Services variables, the Library Budget component did not explain any Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables. But on top of the Non-School Library Media Center Services variables, the Library Budget could explain up to 3.3% of Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Library Space

Library Space was a component of School Library Media Center Services. As explained in the section Data Aggregation, the Library Space component was composed of two variables concerning the availability of seats and square footage on a per student basis. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 27 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Library Space component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and two Library Space variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 27: Correlation between Weighted Average Map Index and Library Space

R^2	Adjusted R^2	Significance
0.015	0.007	0.164

The adjusted R^2 was 0.007 which shows that 0.7% of the variance of the Weighted Average Map Index was associated with the changes of Library Space in the sample. It was not significant since p -value = 0.164. This is way above the 5% benchmark for the significance level.

Because Library Space contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 28 shows the correlation coefficient of each of the two variables in Library Space with the Weighted Average Map Index.

Table 28: Correlation Coefficient for 2 variables of Library Space	R	Sig. (2-tailed)
Number of Seats per Student	-.107	.096
Square Feet of Space per Student	-.103	.110

These variables were not significant at the 5% level and they were only slightly correlated with the Weighted Average Map Index.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.007, indicates that there exists 0.7% association between the variance of the Weighted Average Map Index and the variance of the Library Space component in the sample. However, it did not mean that the 0.7% associated variance of Weighted Average Map Index was all caused by Library Space. There were other variables that may have caused the Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Library Space on the Weighted Average Map Index from the other factors.

Table 29 gives the “internal” partial adjusted R^2 with Library Space, which was the incremental partial correlation between the Weighted Average Map Index and Library Space after the affect of the other 38 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value -0.007 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Space could explain none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 29: Internal Partial Correlation with Library Space

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Library Space	0.133	Library Space	0.126	-0.007

Table 30 gives the “external” partial adjusted R^2 associated with Library Space, which was the incremental partial correlation between the Weighted Average Map Index and the Library Space component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of School Library Media Center Services.

Table 30: External Partial Correlation with Library Space

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	Library Space	0.424	0.023

The value 0.023 of the incremental partial R_a^2 indicates the additional percent of the Weighted Average Map Index variance that was explained with the presence of Library Space on top of the Non-School Library Media Center Services variables. In other words, Library Space could explain up to 2.3% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Space

The analysis shows that the Library Space component was not significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the Non-School Library Media Center Services variables, the Library Space could explain up to 2.3% of Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables. But on top of the other School Library Media Center Services variables, the Library Space component did not explain any of the Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables.

Library Staff Activities

Library Staff Activities, as a component of School Library Media Center Services, included the number of hours spent per week by the paid staff of the library on various activities. This component contained five variables. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 31 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the component of Library Staff Activities, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and the five Library Staff Activities variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 31: Correlation between Weighted Average Map Index and Library Staff Activities

R^2	Adjusted R^2	Significance
0.021	0.000	0.414

The adjusted R^2 was 0.000, which shows that none of the variance of the Weighted Average Map Index was associated with the changes of Library Staff Activities in the sample. The high p-value, 0.414, also shows that Library Staff Activities were not related to the Weighted Average Map Index.

Because Library Staff Activities contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 32 shows the correlation coefficient for each of the five variables in this category with the Weighted Average Map Index.

	R	Sig. (2-tailed)
Information Access and Delivery	.080	.219
Program Administration	-.048	.460
Leadership	-.047	.471
Collaboration	-.025	.703
Learning and Teaching	.015	.822

None of the five variables were statistically significant.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.000, and the significance value, 0.414, indicate that the Weighted Average Map Index was not related to Library Media Center Staff Activities in the sample. The following partial correlation analyses show the affect of the Library Staff Activities component on the Weighted Average Map Index on top of the other factors.

Table 33 gives the “internal” partial adjusted R^2 with Library Staff Activities, which was the incremental partial correlation between the Weighted Average Map Index and Library Staff Activities after the affect of the other 35 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within the School Library Media Center Services. The value -0.012 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that the Library Staff Activities explains none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 33: Internal Partial Correlation with Library Staff Activities

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Staff Activities	0.138	Library Staff Activities	0.126	-0.012

Table 34 gives the “external” partial adjusted R^2 associated with Library Staff Activities, which was the incremental partial correlation between the Weighted Average Map Index and the Library Staff Activities component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 34: External Partial Correlation with Library Staff Activities

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	Library Staff Activities	0.399	-0.002

The value -0.002 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Staff Activities could explain none of the Weighted Average Map Index variance on top of the Non-School Library Media Center Services variables. In other words, Library Staff Activities could explain none of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Staff Activities

This analysis shows that the Library Staff Activities component was not significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. And this component did not explain any variance of Weighted Average Map Index that was not explained by either Non-School Library Media Center Services variables or the other School Library Media Center Services variables.

Library Usage

Library Usage was a component of School Library Media Center Services. As explained in section Data Aggregation, the Library Usage component included the library use time of typical students. This component contained nine variables. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 35 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Library Usage component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and the nine Library Usage variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 35: Correlation between Weighted Average Map Index and Library Usage

R^2	Adjusted R^2	Significance
0.131	0.097	0.000

The adjusted R^2 was 0.097 which shows that 9.7% of the variance of Weighted Average Map Index was associated with the changes of Library Usage in the sample. The correlation was very significant since the p-value = 0.000.

Because Library Usage contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 36 shows the correlation coefficient of each of the nine variables in this category with the Weighted Average Map Index.

Table 36: Correlation Coefficient for nine variables of Library Usage

	R	Sig. (2-tailed)
Total number of books and other materials checked out during the most recent full week	.220	.001
In a typical week, what percent of the classes that visit the library were FLEXIBLY scheduled?	-.198	.002
In a typical week, what percent of the classes that visit the library were RIGIDLY scheduled?	.192	.003
Number of scheduled and unscheduled visits to the school library by classes or other groups	.091	.159
Number of scheduled and unscheduled visits to the school library	-.088	.172
Number of scheduled or unscheduled information skills instruction contacts with individuals	-.073	.259
Number of scheduled or unscheduled information skills instruction contacts with classes or groups	-.021	.742
Number of materials used in the library (estimate based on re-shelving count)	-.020	.755
Use of Time in Library (Structured/Non-Structured)	-.006	.931

The top three variables were statistically significant. The total number of books and materials checked out had a positive correlation to the Weighted Average Map Index. Having rigidly scheduled classes reflected a positive correlation to the Weighted Average Map Index, while flexibly scheduled classes had a negative correlation.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.097, indicates that there exists a 9.7% association between the variance of the Weighted Average Map Index and the variance of Library Usage in the sample. However, it did not mean that the 9.7% associated variance of the Weighted Average Map Index was all caused by Library Usage. There were other variables that may have caused Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Library Usage on Weighted Average Map Index from the other factors.

Table 37 gives the “internal” partial adjusted R^2 with Library Usage, which was the incremental partial correlation between the Weighted Average Map Index and the Library Usage component after the affect of the other 31 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value 0.036 of the incremental partial R_a^2 indicates that Library Usage could explain up to 3.6% of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 37: Internal Partial Correlation with Library Usage

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Library Usage	0.090	Library Usage	0.126	0.036

Table 38 gives the “external” partial adjusted R^2 associated with Library Usage, which was the incremental partial correlation between the Weighted Average Map Index and the Library Usage component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of School Library Media Center Services.

Table 38: External Partial Correlation with Library Usage

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Library Usage	0.482	0.081

The value 0.081 of the incremental partial R_a² indicates the additional percent of the Weighted Average Map Index variance that was explained with the presence of Library Usage on top of the Non-School Library Media Center Services variables. In other words, Library Usage could explain up to 8.1% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Usage

This analysis shows that the Library Usage component was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. And on top of the other School Library Media Center Services variables, the Library Usage component could explain up to 3.6% of the Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables. And on top of the Non-School Library Media Center Services variables, the Library Usage component could explain up to 8.1% of Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Library Management

Library Management was a component of School Library Media Center Services. As explained in the section Data Aggregation, this component contained one variable. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 39 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the component of Library Management, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and Library Management as the independent variable. R^2 indicates to what extent the independent variable was related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 39: Correlation between Weighted Average Map Index and Library Management

R^2	Adjusted R^2	Significance
0.004	0.000	0.324

The adjusted R^2 was 0.000 which shows that none of the variance of the Weighted Average Map Index was associated with the changes of Library Management in the sample. The high p-value, 0.324, also shows that Library Management was not related to the Weighted Average Map Index.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.000, and the significance value, 0.324, indicate that the Weighted Average Map Index was not related to Library Management in the sample. The following partial correlation analyses show the affect of the component Library Management on the Weighted Average Map Index on top of the other factors.

Table 40 gives the “internal” partial adjusted R^2 with Library Management, which was the incremental partial correlation between the Weighted Average Map Index and Library Management after the affect of the other 39 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within the Library Media Center Services. The value -0.003 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Management could explain none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 40: Internal Partial Correlation with Library Management

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
All School Library Media Center Services except Management	0.129	Library Management	0.126	-0.003

Table 41 gives the “external” partial adjusted R² associated with Library Management, which was the incremental partial correlation between the Weighted Average Map Index and the Library Management component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 41: External Partial Correlation with Library Management

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Library Management	0.399	-0.002

The value -0.002 of the incremental partial R_a² indicates, as discussed in the section Statistical Analysis, that Library Management explains none of the Weighted Average Map Index variance on top of the Non-School Library Media Center Services variables. In other words, Library Management could explain none of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Media Center Management

This analysis shows that the component of Library Management was not significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. And this component did not explain any variance of Weighted Average Map Index that was not explained by either Non-School Library Media Center Services variables or the other School Library Media Center Services variables.

Library Media Center Holdings

Library Media Center Holdings, was a component of School Library Media Center Services. This component was composed of three variables as explained in the Data Aggregation section. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 42 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Library Media Center Holdings component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and the three Library Media Center Holdings variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 42: Correlation between Weighted Average Map Index and Library Media Center Holdings

R^2	Adjusted R^2	Significance
0.017	0.005	0.247

The adjusted R^2 was 0.005 which shows that 0.5% of the variance of the Weighted Average Map Index was associated with the changes of Library Media Center Holdings in the sample. And that the correlation was not significant since the p-value was large at 0.247.

Because Library Media Center Holdings contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 43 shows the correlation coefficient of each of the three variables in this category with the Weighted Average Map Index.

Table 43: Correlation Coefficient for three variables of Library Media Center Holdings

	R	Sig. (2-tailed)
Number of Online licensed Services	.118	.068
Total Holdings per Student	-.056	.384
Library has at Least One Catalog	-.029	.655

None of the variables were statistically significant.

Partial Correlation Analysis

The value of the adjusted R^2 was 0.005. The correlation was not significant since the p -value = 0.247, which indicates that the Weighted Average Map Index was not related to Library Media Center Holdings. The following partial correlation analyses show the affect of the component Library Media Center Holdings on the Weighted Average Map Index on top of the other factors.

Table 44 gives the “internal” partial adjusted R^2 with Library Media Center Holdings, which was the incremental partial correlation between Weighted Average Map Index and Library Media Center Holdings after the affect of the other 37 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value -0.013 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Media Center Holdings could explain none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 44: Internal Partial Correlation with Library Media Center Holdings

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Library Media Center Holdings	0.139	Library Media Center Holdings	0.126	-0.013

Table 45 gives the “external” partial adjusted R^2 associated with the Library Media Center Holdings, which was the incremental partial correlation between Weighted Average Map Index and the Library Media Center Holdings component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 45: External Partial Correlation with Library Media Center Holdings

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	Library Media Center Holdings	0.400	-0.001

The value -0.001 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Media Center Holdings did not explain any of the Weighted Average Map Index variance on top of the Non-School Library Media Center Services variables. In other words, Library Media Center Holdings did not explain any of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Media Center Holdings

This analysis shows that the component of Library Media Center Holdings was not significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the Non-School Library Media Center Services variables, the Library Media Center Holdings component did not explain any of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables. On top of the other School Library Media Center Services variables, the Library Media Center Holdings component also did not explain any Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables.

Library Staffing

Library Staffing was a component of School Library Media Center Services. As explained in the section Data Aggregation, this component was composed of one variable that covered personnel hours. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 46 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the component of Library Staffing, based on the sample of 241 records with complete data.

The results were derived by running the regression model with Overall Weighted Average Map Index as the dependent variable and Library Staffing as the independent variable. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 46: Correlation between Weighted Average Map Index and Library Staffing

R^2	Adjusted R^2	Significance
0.001	-0.003	0.568

The adjusted R^2 was -0.003 which shows, as discussed in the section Statistical Analysis, that none of the variance of the Weighted Average Map Index was associated with the changes of Library Staffing in the sample. The high p-value, 0.568, also shows that Library Staffing was not related to the Weighted Average Map Index.

Partial Correlation Analysis

The value of the adjusted $R^2 = -0.003$ and the high significance value, 0.568, indicate that the Weighted Average Map Index was not related to the Library Staffing component. The following partial correlation analyses show the affect of the component Library Staffing on the Weighted Average Map Index on top of the other factors.

Table 47 gives the “internal” partial adjusted R^2 with Library Staffing, which was the incremental partial correlation between the Weighted Average Map Index and Library Staffing after the affect of the other 39 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value -0.003 of the incremental partial R_a^2 indicates, as discussed in the section Statistical Analysis, that Library Staffing could explain none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 47: Internal Partial Correlation with Library Staffing

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
All School Library Media Center Services Except Library Staffing	0.129	Library Staffing	0.126	-0.003

Table 48 gives the “external” partial adjusted R² associated with Library Staffing, which was the incremental partial correlation between the Weighted Average Map Index and the Library Staffing component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of the School Library Media Center Services.

Table 48: External Partial Correlation with Library Staffing

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Library Staffing	0.409	0.008

The value 0.008 of the incremental partial R_a² indicates, as discussed in the section Statistical Analysis that Library Staffing could explain up to 0.8% of the Weighted Average Map Index variance on top of the Non-School Library Media Center Services variables. In other words, Library Staffing could explain up to 0.8% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Library Staffing

This analysis shows that the component of Library Staffing was not significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the Non-School Library Media Center Services variables, the Library Staffing component could explain up to 0.8% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables. But on top of the other School Library Media Center Services variables, the Library Staffing component did not explain any Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables.

Summer Reading Program

Summer Reading Program was a component of School Library Media Center Services. As explained in the section Data Aggregation, this component contained one variable about the Summer Reading Program. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 49 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the component of Summer Reading Program, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and the Summer Reading Program as the independent variable. R^2 indicates to what extent the independent variable was related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 49: Correlation between Weighted Average Map Index and Summer Reading Program

R^2	Adjusted R^2	Significance
0.034	0.030	0.004

The adjusted R^2 was 0.030 which shows that 3.0% of the variance of the Weighted Average Map Index was associated with the changes of the Summer Reading Program in the sample. The correlation was very significant since $p\text{-value} = 0.004$.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.030, indicates that there exists a 3.0% association between the variance of Weighted Average Map Index and the variance of Summer Reading Program in the sample. However, it did not mean that the 3.0% associated variance of the Weighted Average Map Index was all caused by the Summer Reading Program. There were other variables that may have caused the Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Summer Reading Program on the Weighted Average Map Index from the other factors.

Table 50 gives the “internal” partial adjusted R^2 with the Summer Reading Program, which was the incremental partial correlation between the Weighted Average Map Index and Summer Reading Program after the affect of the other 39 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within School Library Media Center Services. The value 0.012 of the incremental partial R_a^2 indicates that the Summer Reading Program could explain up to 1.2% of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 50: Internal Partial Correlation with Summer Reading Program

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Summer Reading Program	0.114	Summer Reading Program	0.126	0.012

Table 51 gives the “external” partial adjusted R^2 associated with the Summer Reading Program, which was the incremental partial correlation between the Weighted Average Map Index and the component of Summer Reading Program after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of School Library Media Center Services.

Table 51: External Partial Correlation with Summer Reading Program

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
Non-School Library Media Center Services	0.401	Summer Reading Program	0.416	0.015

The value 0.015 of the incremental partial R_a^2 indicates the additional percent of the Weighted Average Map Index variance that was explained with the presence of the Summer Reading Program on top of the Non-School Library Media Center Services variables. In other words, Summer Reading Program could explain up to 1.5% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Summer Reading Program

This analysis shows that the component of Summer Reading Program was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the other School Library Media Center Services variables, the component of Summer Reading Program could explain up to 1.2% of the Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables. And on top of the Non-School Library Media Center Services variables, the component of Summer Reading Program could explain up to 1.5% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Technology

Technology was a component of School Library Media Center Services. As explained in the section Data Aggregation, this component was composed of six variables concerning technology availability and usage. The following explains the statistical correlation between this component and the Overall Weighted Average Map Index.

Correlation Coefficient

Table 52 shows the correlation coefficient R^2 , the adjusted R^2 , and the statistical significance for the connection between the Overall Weighted Average Map Index and the Technology component, based on the sample of 241 records with complete data.

The results were derived by running the regression model with the Overall Weighted Average Map Index as the dependent variable and the six Technology variables as the independent variables. R^2 indicates to what extent the independent variables were related to the dependent variable in the sample. The adjusted R^2 was the more accurate R^2 since it took the number of variables into account. The statistical significance gives the probability of making a mistake if the correlation in the sample was generalized to the whole population.

Table 52: Correlation between Weighted Average Map Index and Technology

R^2	Adjusted R^2	Significance
0.063	0.039	0.016

The adjusted R^2 was 0.039 which shows that 3.9% of the variance of the Weighted Average Map Index was associated with the changes of the Technology component in the sample. The correlation was significant since p -value = 0.016 which was smaller than 0.05.

Because Technology contained more than one variable, it was necessary to do an itemized bivariate correlation coefficient analysis. Table 53 shows the correlation coefficient of each of the six variables in this category with the Weighted Average Map Index.

Table 53: Correlation Coefficient for six variables of Technology	R	Sig. (2-tailed)
Computer Network (Internet Connection, LAN, WAN) (Ratio to Mean)	.184	.004
Online Library Catalog Services	.114	.076
Number of Computers per Student (Ratio to Mean)	-.102	.113
Standard Information Processing Tools	-.087	.176
Percentage of Student Use of Electronic Information	-.071	.274
Are library/media specialists responsible for leadership of teachers in integrating technology in the curriculum?	-.013	.837

The first variable was significantly correlated to the Weighted Average Map Index. The Computer Network Index had the highest positive correlation.

Partial Correlation Analysis

The value of the adjusted R^2 , 0.039, indicates that there exists a 3.9% association between the variance of the Weighted Average Map Index and the variance of the Technology component in the sample. However, it did not mean that the 3.9% associated variance of the Weighted Average Map Index was all caused by Technology. There were other variables that may have caused Weighted Average Map Index to vary, such as the school demographic variables, community demographic variables, and other School Library Media Center Services components. The partial correlation analysis helped differentiate the affect of Technology on Overall Weighted Average Map Index from the other factors.

Table 54 gives the “internal” partial adjusted R^2 with the Technology, which was the incremental partial correlation between the Weighted Average Map Index and the Technology component after the affect of the other 34 School Library Media Center Services variables were considered. It was called “internal” because the control variables were all within the School Library Media Center Services. The value -0.004 of the incremental partial R_a^2 indicates that Technology could explain none of the Weighted Average Map Index variance on top of the other School Library Media Center Services variables.

Table 54: Internal Partial Correlation with Technology

Beginning independent variables	Adjusted R^2 beginning	Add-in variables	Adjusted R^2 after add-in	Incremental Partial R_a^2
All School Library Media Center Services except Technology	0.130	Technology	0.126	-0.004

Table 55 gives the “external” partial adjusted R^2 associated with Technology, which was the incremental partial correlation between the Weighted Average Map Index and the Technology component after the affect of the Non-School Library Media Center Services variables were considered. It was called “external” because the control variables were the Non-School Library Media Center Services variables that were external of School Library Media Center Services.

Table 55: External Partial Correlation with Technology

Beginning independent variables	Adjusted R ² beginning	Add-in variables	Adjusted R ² after add-in	Incremental Partial R _a ²
Non-School Library Media Center Services	0.401	Technology	0.404	0.003

The value 0.003 of the incremental partial R_a² indicates the additional percent of Weighted Average Map Index variance that was explained with the presence of Technology on top of the Non-School Library Media Center Services variables. In other words, the Technology component could explain up to 0.3% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables.

Summary of Technology

This analysis shows that the component of Technology was significantly correlated with student achievement, represented by the Overall Weighted Average Map Index, when other variables were not present. On top of the Non-School Library Media Center Services variables, the Technology component could explain up to 0.3% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables. But on top of the other School Library Media Center Services variables, the Technology component did not explain any Weighted Average Map Index variance that was not explained by the other School Library Media Center Services variables.

Overview of Analysis

The correlation between Weighted Average Map Index and School Library Media Center Services, and between Weighted Average Map Index and each component of School Library Media Center Services, have been individually presented and discussed.

Two incremental partial correlation coefficients were calculated for each component of School Library Media Center Services: internal partial correlation and external partial correlation. The internal partial correlation was calculated when the other School Library Media Center Services variables were treated as the control variables and the Non-School Library Media Center Services variables were not present. The external partial correlation was calculated when the Non-School Library Media Center Services variables were treated as the control variables and the other School Library Media Center Services variables were not present.

School Library Media Center Services did relate to student achievement. In addition, the significance level was 0.003, which means the results from the sample represents the whole population (all schools of Missouri).

The correlation coefficient of determination between the Overall Weighted Average Map Index and School Library Media Center Services was $R^2=0.272$, and the adjusted R^2 was $R_a^2=0.126$. One could say that 12.6% of the variance of Weighted Average Map Index could be explained by the differences in School Library Media Center Services.

According to the external incremental partial correlation, a more conservative approach, School Library Media Center Services could explain up to 10.6% of the Weighted Average Map Index variance that was not explained by the Non-School Library Media Center Services variables including demographic variables, community variables, and school variables.

To compare the correlations between the individual School Library Media Center Service components and the Overall Weighted Average MAP Index, the following four factors were considered: Adjusted R^2 , Statistical Significance, External Incremental Partial R^2 , and Internal Incremental Partial R^2 . From this, the 11 School Library Media Center Service components were categorized into seven levels as shown in Table 56.

Table 56: Summary of Correlations for 11 components of School Library Media Center Services

	Adjusted R ²	Significant	External Incremental Partial R _a ²	Internal Incremental Partial R _a ²
Level One Library Usage	0.097	Strongly Significant	0.081	0.036
Level Two Summer Reading Program	0.030	Strongly Significant	0.015	0.012
Level Three Library Access	0.033	Significant	0.008	0.018
Level Four Library Budget	0.028	Significant	0.033	0
Technology	0.039	Significant	0.003	0
Level Five Librarian Qualifications	0.017	Significant	0	0
Library Space	0.007	No	0.023	0
Level Six Library Media Center Holdings	0.005	No	0	0
Library Staffing	0.000	No	0.008	0
Level Seven Library Management	0.000	No	0	0
Library Staff Activities	0.000	No	0	0

Level One

Library Usage was the School Library Media Center Services component that was the most strongly correlated to the Weighted Average Map Index, according to the four statistical indicators. Its adjusted R^2 was 0.097, which meant that the Library Usage component could explain up to 9.7% of the variance of the Weighted Average Map Index. Its internal incremental partial correlation was 0.036, which meant that the Library Usage component could explain up to 3.6% of the variance of Weighted Average Map Index, which was not explained by the other ten components of School Library Media Center Services. Its external incremental partial correlation was 0.081, which meant that the Library Usage component could explain up to 8.1% of the variance of Weighted Average Map Index, which was not explained by the school demographic variables and community demographic variables. The p-value for the correlation coefficient was very small, which showed that the correlation revealed by using the sample was 'statistically significant' in representing the correlation in the whole population.

Level Two

In addition to Library Usage, Summer Reading Program was very significant and had non-zero values for all three correlation statistics. Although its correlations to the Weighted Average Map Index were not as strong as the Library Usage component, the non-zero values of the external and internal partial R^2 's showed that it had an irreplaceable affect on the Weighted Average Map Index.

Level Three

Similarly to Summer Reading Program, Library Access had non-zero values for all the three correlation statistics. However, it was not as statistically significant as Summer Reading Program. Although its correlations to the Weighted Average Map Index were not as strong as Library Usage component, the non-zero values of the external and internal partial R^2 's showed that it had an irreplaceable affect on the Weighted Average Map Index.

Level Four

The Technology component and the Library Budget component had adjusted R^2 's and external incremental partial R^2 's similar to those of Summer Reading Program and Library Access, but they had zeros for the internal incremental partial R^2 's. The zero values for the internal incremental partial R^2 meant that the two components did not explain any more variance of Weighted Average Map Index, which was not explained by the other components of School Library Media Center Services. That was, on top of the other components of School Library Media Center Services, the two components did not have an affect on the Weighted Average Map Index.

Level Five

The Librarian Qualifications component had 0.017 as an adjusted R^2 . Its p-value was 0.025. That meant that it was significant according to the significance benchmark of 0.05, but would not be significant if the benchmark were set at 0.01. The component of Library Space was not significant, but it had a considerable external incremental partial R^2 , 0.023. This implied that although this component was not significantly correlated with the Weighted Average Map Index if other variables were not considered, Library Space might explain up to 2.3% of the variance of Weighted Average Map Index on top of the school demographic factors and community demographic factors.

Level Six

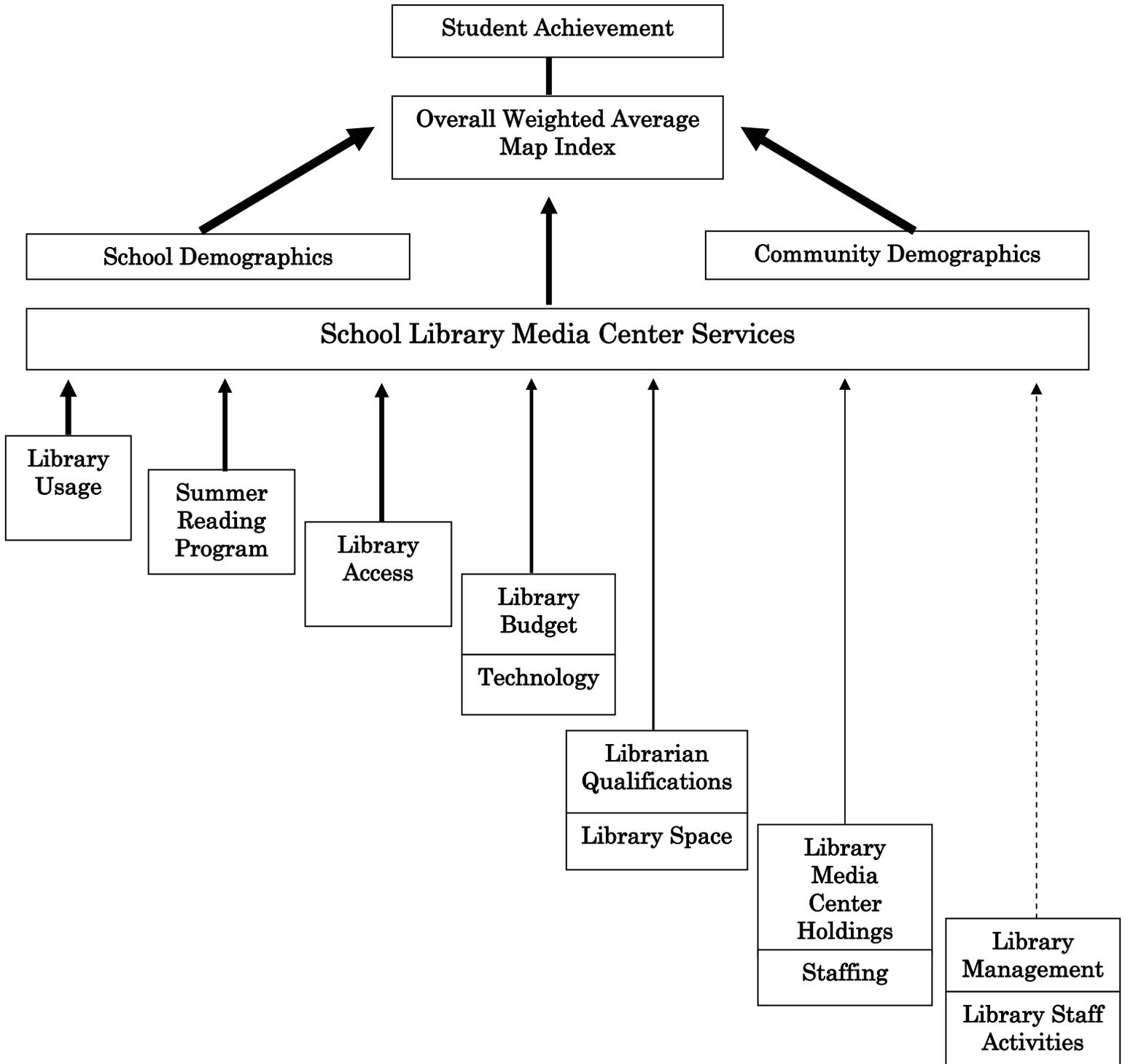
Library Media Center Holdings and Library Staffing were not statistically significant but had one positive correlation value, although not considerable, of the three correlation statistics.

Level Seven

The remaining two components, Library Management and Staff Activities, were not statistically significant and all three correlation values were zero.

Conclusions

The following chart displays all variables and their relationship to student achievement. School and Community Demographics as well as School Library Media Center Services are associated with student achievement. Although School and Community Demographics are associated with student achievement at a higher level, School Library Media Center Services still display a significant relationship to student achievement. The eleven components are shown in seven levels. The higher the level, the stronger the correlation between that component and student achievement.



MISSOURI PUBLIC SCHOOL LIBRARY QUESTIONNAIRE

Please complete this questionnaire for each facility for which you were responsible preferably by November 2, 2002. We must have the completed questionnaire by November 11, 2002. If you have any questions or were unsure how to respond to a specific question, please contact Randy Maginn by phone at (866) 364-0828 or e-mail at randall@qresources.com.

I. IDENTIFYING INFORMATION

Please identify your school by building name, district, and level. Provide contact information for the individual who has primary responsibility for completing this questionnaire.

1. Name of respondent: _____
2. School Building Name: _____
3. District Name: _____
4. Phone Number: _____ Fax: _____
5. Email of Contact Respondent: _____
6. Library Level: (SELECT ONE ONLY)
 - Elementary
 - Middle/Junior High
 - High School
 - Combined: Elementary-Middle/Junior High
 - Combined: Middle/Junior High and High School
 - Combined: Elementary-Middle/Junior High-High School
7. Grade levels: (CIRCLE ALL THAT APPLY)
K 1 2 3 4 5 6 7 8 9 10 11 12
8. How long have you been a certificated librarian?
 - Less than 3 years
 - 3 to 5 years
 - 6 to 10 years
 - More than 10 years
9. Are you responsible for any other school building libraries?
 - Yes How many _____ What was the other school's name? _____
 - No

II. LIBRARY MANAGEMENT

1. Does the school library program receive a budget?

Yes No

2. If yes, do you prepare and submit a budget request to your school administration?

Yes No

3. Please list your total budget for the last three school years?

	Total Budget
2001-2002	\$ _____
2000-2001	\$ _____
1999-2000	\$ _____

- 4a. Would you say that these budgets have been stable or fluctuating?

Stable, why? _____
 Fluctuating, why? _____

4. Is there on-going communication between your library staff and your local public library?

Yes No
 N/A due to no public library in the area

6. Does your school library program have an active advisory committee?

Yes No

7. Does your library have a school board approved copyright policy?

Yes No

8. Does your library have a school board approved collection development policy?

Yes No (SKIP TO Q9)

- 8a. If yes, did your collection development policy address: **(ANSWER YES OR NO TO EACH)**

	Yes	No
Materials selection policy	<input type="checkbox"/>	<input type="checkbox"/>
Weeding policy	<input type="checkbox"/>	<input type="checkbox"/>
Reconsideration of challenged materials	<input type="checkbox"/>	<input type="checkbox"/>

9. Do you have a library policy and procedures manual?

Yes No

10. Do you have a library mission statement and defined goals and objectives?

Yes No

11. Does your school library have a Summer Reading Program?
- Yes No
12. Does your library or school work cooperatively with your local public library to promote student participation in a summer reading club at a local public library?
- Yes No N/A due to no public library in the area
13. Are you responsible for coordinating **distance learning**? That was, were any lessons for students and staff development for teachers or librarians taught via television, satellite or a computer network handled or coordinated through the library?
- Yes No
14. Does your district have a district library or media coordinator? (SELECT ONE ONLY)
- Yes, full-time
 Yes, part-time
 No district library coordinator

III. LIBRARY STAFF

1. Please report the level of staffing for your library, by staff category, full-time or part-time, number of persons in each category (adding part-time and full-time persons for each category), and the total number of personnel hours in a typical week for each staff category. Do not report more than 40 hours per week per person. Count each person only once.

For example, if you have 3 paid professional staff, one was full-time working 40 hours a week and two were part-time working 20 hours a week each, record “1” in the Full-time column, “2” in the Part-time column; “3” in the “Number of Persons” column, and “80” (adding 40+20+20) in the “Total Number of Personnel Hours per Week” column. PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Library Staff Categories	Number who were Full-time	Average number of years in the school	Number who were Part-time	Average number of years in the school	Total Number of Persons (head count)	Total Number of Personnel Hours per Week
Paid library aides or clerical staff						
Adult volunteers (per typical week)						
Student volunteers (per typical week)						
Total (for Volunteers)						

2. Please record in the table below the number of paid staff in your library by level of education and credentials and by the hours they work in a typical week.

Do not report more than 40 hours per week per person. Count each person only once. .

PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Highest Education and Certification of <u>Paid</u> Library Staff	Number of Persons	Total Number of Person Hours per Week
Master's degree or higher with teacher and library science certification		
Master's degree with teacher certification or other state credentials		
Master's degree without teacher certification or other state credentials		
Bachelor's degree with teacher and library science certification		
Bachelor's degree with teacher certification		
Bachelor's degree without teacher certification		
Less than Bachelor's degree		
TOTAL (for Paid Staff)		

3. Do the certificated librarians and /or clerical staff have extended contracts (both before and after school)?

- No
- 1-3 days
- 4-5 days
- 6-10 days
- 11 or more days

What types of activities take place during that time?

IV. SERVICE HOURS PER TYPICAL WEEK

1. Please record the typical number of hours per week that this school library was open for use. . **PLEASE ROUND TO THE NEAREST WHOLE HOUR.**

Library Hours	Hours per Typical Week	
# Hours library was open per typical week during school hours		
# Hours library was closed per typical week during school hours		Why was it closed?
# Hours library was open per typical week before school hours		
# Hours library was open per typical week after school hours		
# Hours library was open per typical week in the summer		

2. Would you describe the most typical student time in the library as:

- Structured
- Non-Structured

3. How would you describe the most typical student activity in the library?

- Study Hall
- Research
- Reading
- Other _____

4. Can students access the library information whenever they need to?

- Yes, How? _____
- No, Why? _____

V. STAFF ACTIVITIES PER TYPICAL WEEK

1. Library staff engages in a wide variety of activities each week. Please record (estimating, if necessary) the number of hours spent on each activity in a typical week by your paid staff.

If library staff did not engage in some activities weekly, please estimate the number of hours spent on that activity in a typical month and divide by four or estimate for a year and divide by the number of weeks per year the library was open. . PLEASE ROUND TO THE NEAREST WHOLE HOUR.

Activities Performed by <u>Paid</u> Library Staff	Number of Personnel Hours per Typical Week
Learning and Teaching	
Planning instructional units with teachers	
Teaching cooperatively with teachers	
Providing staff development (in-service training) to teachers or other school staff	
Working one-to-one with students	
Meetings with building or district committees/teams/task forces on the district curriculum	
Meetings with building or district committees/teams/task forces on school improvement and standards	
Information Access and Delivery	
Performing basic library activities (i.e. checking in and out, re-shelving, processing, retrieving)	
Identifying materials for instructional units developed by teachers	
Providing information skills instruction (i.e. citations, copyright, critical thinking, evaluation of online sources) to individuals or groups	
Drawing in resources from other libraries in the district	
Drawing in resources from libraries in the community	
Providing reading incentive activities (i.e. book talks, story times, reader’s advisory services, author visits)	
Program Administration	
Managing library technology (computers, computer network, automation)	
Administering electronic reading programs such as Accelerated Reader	
Evaluating the affectiveness of the program and its collection	
Informing teachers, students, and administrators of new materials, equipment and/or services	
Managing inter-library loans	
Meeting with the principal	
Attending faculty or staff meetings	
Collaboration	
Discussing library activities, instruction, and/or incentives with the community library	
Working with teachers and students to select the collection	
Communicating with building and district library staffs	
Meeting with building and district library staff	
Leadership	
Attending local/regional library association meetings	
Serving on a MASL committee or in a leadership role	
Attending continuing education training	
Applying for awards or attending recognition events	
Preparing and/or presenting to the district school board	
Getting certified	

2. How successful would you say you have been at establishing the integration of information literacy skills across the curriculum?
- Very Successful
 - Successful
 - Neither Successful or Unsuccessful
 - Unsuccessful
 - Very Unsuccessful
3. How supportive was the school principal of the library program?
- Very Supportive
 - Supportive
 - Neither Supportive or Unsupportive
 - Unsupportive
 - Very Unsupportive

VI. LIBRARY/LOAN USE PER TYPICAL WEEK

1. Please record information in the table below for each of the types of library use in a typical week.

If these figures must be estimated and it was easier to estimate them for a month or year, please do so. If you estimate for a month, please divide by four. If you estimate for a year, please divide by the number of weeks your library was open annually.

Library Use in a Typical Week	Number				
	Students	Teachers	Administrators	Parents	Other
Number of scheduled and unscheduled visits to the school library by individuals (students, teachers, administrators, parents, other)					
Number of scheduled and unscheduled visits to the school library by classes or other groups (groups of teachers, administrators, parents, or others)					
Number of scheduled or unscheduled information skills instruction contacts with individuals (students, teachers, administrators, parents, other)					
Number of scheduled or unscheduled information skills instruction contacts with classes or groups (groups of teachers, administrators, parents, or others)					
Total number of books and other materials checked out during the most recent full week					
Number of materials used in the library (estimate based on re-shelving count)					
Number of loans provided by library to other libraries in district					

2. Please record information in the table below for each of the types of library loans in a typical week.

If these figures must be estimated and it was easier to estimate them for a month or year, please do so. If you estimate for a month, please divide by four. If you estimate for a year, please divide by the number of weeks your library was open annually.

Loans in a Typical Week	Number
Number of loans received by library from other libraries in the district	
Number of loans provided by library to other libraries outside the district	
Number of loans received by library from other libraries outside the district	

3. In a typical week, what percent of the classes that visit the library were:

Flexibly scheduled (e.g. scheduled for varying time periods according to need): _____%

Rigidly scheduled (e.g. scheduled for previously specified times): _____%

VII. LIBRARY TECHNOLOGY

1. Does your library have?

	Yes	No
An automated district wide catalog?	<input type="checkbox"/>	<input type="checkbox"/>
An automated catalog accessible through the Internet?	<input type="checkbox"/>	<input type="checkbox"/>
Capability to allow the school building access to the online catalog and any other school library databases	<input type="checkbox"/>	<input type="checkbox"/>
Access to central library services	<input type="checkbox"/>	<input type="checkbox"/>
A telephone	<input type="checkbox"/>	<input type="checkbox"/>
A fax machine	<input type="checkbox"/>	<input type="checkbox"/>
A CD ROM server	<input type="checkbox"/>	<input type="checkbox"/>
A video projector	<input type="checkbox"/>	<input type="checkbox"/>
A digital camera	<input type="checkbox"/>	<input type="checkbox"/>
A satellite dish	<input type="checkbox"/>	<input type="checkbox"/>
One or more laptops	<input type="checkbox"/>	<input type="checkbox"/>

2. Does your school have a board adopted Internet access policy or Acceptable Use Policy (AUP)?

Yes No

3. Please describe your library's conditions/restrictions of student Internet access. **(SELECT ALL THAT APPLY)**

- No restrictions
- With parental permission and/or acceptable use agreement
- Restricted for grades: **(SPECIFY)** _____
- Other restrictions: _____

7. Which of the following selection tools do you regularly use? (**CHECK ALL THAT APPLY**)

- Booklist
- Hornbook
- School Library Journal
- Publisher's Catalog
- Cooperative Children's Book Center publications
- Other _____

THANK YOU for completing the questionnaire!

If you have any questions please contact Randy Maginn by phone at (866) 364-0828 or e-mail at randall@qresources.com

Core Data Inventory

SCHOOL DATA

- School District Code
- School Building Code
- School Building Name
- School District Name
- County
- Total Enrollment
- Number Female Students
- Number Male Students
- Number White Students
- Number Black Students
- Number Hispanic Students
- Number Asian Students
- Number Native American Students
- Attendance Rate
- Number of Dropouts
- Dropout Rate

STUDENT RATIO DATA

- Student/Instructor Ratio
- Student/Teacher Ratio
- Student/Administrator Ratio

FREE AND REDUCED LUNCH DATA

- Free & Reduced Lunch JAN-Enrollment
- Free & Reduced Lunch Count
- Free & Reduced Lunch Percentage

ACT DATA

- ACT - Number of Graduates
- ACT - Number of Graduates Scoring at or Above the National Average
- ACT - Percent of Graduates Scoring at or Above the National Average

GRADUATION FOLLOW-UP DATA

- Number of Graduates
- Percentage in a 4-year college/university
- Percentage in a 2-year program
- Percentage in a post-secondary (Non-college) Institution
- Percentage employed
- Percentage serving in the Military/Armed Forces
- Percentage doing something other

DISCIPLINE DATA

- Number of Behavioral Incidents
- Number of Incidents
- Number of Weapon Incidents
- Number of Alcohol Incidents
- Number of Drug Incidents
- Number of Tobacco Incidents
- Number of Violent Acts Incidents
- Number of Other Incidents
- Number of Missing Incidents
- Number of Incidents that were Multiple Short Sessions (MSS)
- Number of Incidents that were 10 Consecutive Days
- Number of Incidents that were 11-45 Days
- Number of Incidents that were 46-89 Days
- Number of Incidents that were 90 Days or More but Not 1 Full Year
- Number of Incidents that were 1 Full Year
- Number of Incidents that had Length of Time Missing
- Number of Incidents that were In School Suspension (ISS)
- Number of Incidents that were Out of School Suspension (OSS)
- Number of Incidents that were Expulsions
- Number of Incidents that were Place of 11-45 Days within a Treatment Facility
- Number of Incidents that were 10 Consecutive Days
- Number of Incidents that were More than 10 Consecutive Days
- Incident Rate per 100 students
- Weapons Rate per 100 students
- Alcohol Rate per 100 students
- Drug Rate per 100 students
- Tobacco Rate per 100 students
- Violent Act Rate per 100 students
- Other Offense Rate per 100 students
- In-School Suspension Rate per 100 students

- Out of School Suspension Rate per 100 students
- Expulsion Rate per 100 students
- 10 Consecutive Days Rate per 100 students
- More Than 10 Consecutive Days Rate per 100 students

BUILDING CERTIFICATION DATA

- Number of Classroom Teachers
- Percent of Teachers with Regular Certificate
- Percent of Teachers with Temporary or Special Assignment Certificate
- Percent of Teachers with Substitute, Expired or No Certificate

TEACHER DEMOGRAPHICS

- Number of Full-Time Teachers
- Teacher Average Salary
- Teacher Average Years Experience in the District
- Teacher Average Years Experience in the Missouri
- Teacher Average Years Experience in Public Education
- Percent of Teachers with a Master Degree or Higher Year
- Average Teacher Salary (Regular Term)
- Average Teacher Salary (Includes extended contract salary, Career Ladder supplement and extra duty pay.)
- Average Administrator Salary

LIBRARIAN DEMOGRAPHICS

- Number of Full-Time Librarians
- Librarian Average Salary
- Librarian Average Years Experience in the District
- Librarian Average Years Experience in the Missouri
- Librarian Average Years Experience in Public Education
- Number of Full-Time Clerical Helpers
- Number of Full-Time Library Clerical Helpers

LIBRARY MEDIA DATA

- Library Begin Grade Served
- Library End Grade Served
- Library Enrollment Served
- Number of Library Seats
- Square Footage of Ancillary Space in Library
- Square Footage of Reference Space in Library
- Library Staff Served
- LMC Number of CD-ROMs
- LMC Number of Telephones
- LMC Number of Satellite Dishes
- LMC Number of Fax Machines
- LMC Number of Modems
- LMC Total Electronic Catalogs
- LMC Total Count of Non-Fiction
- LMC Total Count of Professional Materials
- LMC Total Count of Reference Materials
- LMC Total Count of Visual Materials
- LMC Total Fiction Holdings
- LMC Total Magazine Holdings
- LMC Total Newspaper Holdings
- LMC Total Non-Fiction Holdings
- LMC Total Periodical Index Holdings
- LMC Total Professional Journal Holdings
- LMC Total Professional Materials Holdings
- LMC Total Reference Material Holdings
- LMC Total Selection Tool Holdings
- LMC Total Visual Material Holdings

LIBRARY FUNDS DATA

- Library Funds - Equipment Budget
- Library Funds - Materials Budget
- Library Funds - Other Budget

CENSUS OF TECHNOLOGY-HARDWARE

- Number of Alpha Smart/Laptop Processors in building
- Number of Apple 68030 in computer labs
- Number of Apple 68030 in Instructional Rooms
- Number of Apple 68030 Library/Media Center
- Number of Apple 68030 in other locations
- Number of Apple 68030 in Principal Office
- Number of assistive/adaptive devices in building
- School Building Number
- Number in building
- Number of units/systems in building
- Number of Celeron in computer labs
- Number of Celeron in Instructional Rooms
- Number of Celeron in Library/Media Center
- Number of Celeron in other rooms
- Number of Celeron in Principal Office
- Number of computer projection devices in building
- Number of computer labs connected to the Internet
- Number of Instructional Rooms connected to the Internet
- Number of Library/Media Centers connected to the Internet
- Number of other rooms connected to the Internet
- Number of Principal Offices connected to the Internet
- Total number of rooms connected to the Internet
- Contractors that maintain and support hardware
- Number in building
- Number of Staff that maintains and support of hardware
- Number of Dot Matrix Printers in building
- Number in building
- Number in building
- Number of HS 386 in computer labs
- Number of Hs 386 in Instructional Rooms
- Number of HS 386 in Library/Media Center
- Number of HS 386 in other rooms
- Number of HS 386 in Principal Office
- Number of HS 486 in computer labs
- Number of HS 486 in instructional rooms
- Number of HS 486 in Library/Media Center
- Number of HS 486 in other rooms
- Number of HS 486 in Principal Office
- Number of IMAC in computer labs
- Number of IMAC in Instructional Rooms
- Number of IMAC in Library/Media Center

- Number of IMAC in other rooms
- Number of IMAC in Principal Office
- Number of units/systems in building
- Is the library media center catalog automated, yes or no
- If other than listed, please specify
- What is the product's name?
- Numbers of Macintosh computers that are multimedia equipped
- Number of Mac 68040 in computer lab
- Number of Mac 68040 in Instructional Rooms
- Number of Mac 68040 in Library/Media Centers
- Number of Mac 68040 in other rooms
- Number of Mac 68040 in Principal Office
- Number of FTE that maintains and supports hardware in school building
- Number of computer labs that are multimedia equipped, connected to the Internet, has access to a printer and a dedicated projection device
- Number of Instructional Rooms that are multimedia equipped, connected to the Internet, access to a printer and has a dedicated projection device
- Number of Library/Media Centers that are multimedia equipped, connected to the Internet, has access to a printer and a dedicated projection device
- Number of other rooms that are multimedia equipped, connected to the Internet, has access to a printer and a dedicated projection device
- Number of Principal Offices that are multimedia equipped, connected to the Internet, has access to a printer and a dedicated projection device
- Total number of rooms that are multimedia equipped, connected to the Internet and has access to a printer and a dedicated projection device
- Number of computer labs with one or more multimedia-equipped computers connected to the Internet
- Number of Instructional Rooms with one or more multimedia equipped computer connected to the Internet
- Number of Library/Media Centers with one or more multimedia equipped computers connected to the Internet
- Number of other rooms with one or more multimedia equipped computers connected to the Internet
- Number of Principal Offices with one or more multimedia equipped computers connected to the Internet
- Total number of rooms with one or more multimedia equipped computers connected to the Internet
- Number of computer labs with one or more multimedia equipped computers
- Number of Instructional Rooms with one or more multimedia equipped computers
- Number of Library/Media Centers with one or more multimedia equipped computers
- Number of other rooms with one or more multimedia equipped computers

- Number of Principal Office's with one or more multimedia equipped computers
- Total number of rooms with one or more multimedia equipped computers
- Number of computer labs that are multimedia equipped
- Number of Library/Media Centers that are multimedia equipped
- Number of other rooms that are multimedia equipped
- Number of Principal Office that are multimedia equipped
- Total number of rooms that are multimedia equipped
- Number of Instructional Rooms that are multimedia equipped
- Number of Multimedia Distribution Systems in building
- If no one supports or maintains hardware
- Number of computers running NOVELL 4X Operating System
- Number of computers running NOVELL 5X Operating Systems
- Number of computers running NOVELL 6X Operating Systems
- Number of computers running operating systems 7.x
- Number of computers running operating systems 8x
- Number of computers running operating system 9 or later
- Outside Vendors that maintains and supports hardware
- Parents/Community Members that maintains and supports hardware
- Number of PC computers that are multimedia equipped
- Number of Pentium in computer labs
- Number of Pentium II in computer labs
- Number of Pentium II in Instructional Rooms
- Number of Pentium II in Library/Media Center
- Number of Pentium II in other rooms
- Number of Pentium II in Principal Office
- Number of Pentium in Instructional Rooms
- Number of Pentium in Library/Media Center
- Number of Pentium in other rooms
- Number of Pentium in Principal Office
- Number of Pentium 4 in computer lab
- Number of Pentium 4 in Instructional Rooms
- Number of Pentium 4 in Library/Media Center
- Number of Pentium 4 in other rooms
- Number of Pentium 4 in Principal Office
- Number of Pentium III in computer labs
- Number of Pentium III in Instructional Rooms
- Number of Pentium III in Library/Media Center
- Number of Pentium III in other rooms
- Number of Pentium III in Principal Office
- Number of Personal Digital Assistants in building
- Number of Power Mac 5500 in computer labs
- Number of Power Mac in Instructional Rooms
- Number of Power Mac in Library/Media Centers

- Number of Power Mac in other rooms
- Number of Power Mac in Principal Office
- Number of units/systems in building
- Regional Centers/RPDCs that maintain and support hardware
- Total number of all rooms with telephone access
- Number of computer labs with telephone access
- Number of Instructional Rooms with telephone access
- Number of Library/Media Center rooms with telephone access
- Number of other rooms with telephone access
- Number of Principal Office rooms with telephone access
- Total number of rooms with computer labs
- Total number of rooms that are instructional rooms
- Total number of rooms that are library/media center rooms
- Total number of rooms that are other rooms
- Total number of rooms that are principal offices
- Total number of all rooms
- Number in building
- Number in building
- Certified staff that maintains and supports maintenance
- Number of Classified staff that maintains and supports the hardware
- Number in building
- Students that maintain and support hardware
- Total number of color printers in building
- Number in building
- Number of computers running UNIX/Linux Operating Systems
- Number in building
- Number of computers running 2000 ME
- Number of computers running Windows 3.1
- Number of computers running Windows 95
- Number of computers running Windows 98
- Number of computers running Windows NT 3X Operating System
- Number of computers running Windows NT 4x
- Number of computers running XP Operating System
- Number of computer labs wired for Internet
- Number of Instructional Rooms wired for Internet
- Number of Library/Media Center rooms wired for Internet
- Number of other rooms wired for Internet
- Number of Principal Office rooms wired for Internet
- Number of all rooms wired for Internet

CENSUS OF TECHNOLOGY-INTERNET CONNECTION

- Does the building have access to the Internet, yes or no?
- Is MOREnet the provider of the Internet?
- Select other if not MOREnet
- List name of other provider if not MOREnet
- Do you have a dedicated line just for Internet, yes or no?
- Bandwidth capacity: 56 - 256Kbps
- Bandwidth capacity: 384 - 784Kbps
- Bandwidth capacity: T1 - 6Mbps
- Bandwidth capacity: 10 - 45Mbps
- Bandwidth capacity: OC1 or Greater
- Does the building have dial-up link?
- Other dial-up access description
- Number of modems using 14.4 kb
- Number of modems using 28.8 kb
- Number of modems using 33.6 kb
- Number of modems using 56 kb
- Number of dial-up lines available for school building
- Is District dialed?
- Is Morenet dialed?
- Is Commercial dialed?
- Is Other dialed?
- Description of other dialed
- Does building have Local Area Network (LAN), yes or no?
- Number of computers in building connected to LAN
- How many servers in the building?
- Number of Linux servers
- Number of Windows NT servers
- Number of Apple Share servers
- Number of Novell servers
- Number of Other servers
- Describe other servers
- Is Filtering ran on the servers?
- Is FTP ran on the servers?
- Is Proxy Server ran on the servers?
- Is Web ran on the servers?
- Is Firewall ran on the servers?
- Is Telnet ran on the servers?
- Is email ran on the servers?
- Is building connected to other buildings using Wide Area Network (WAN), yes or no?
- Do students use Satellite to participate in remote classes?

- Do students use Desktop Technologies/IP/MOREnet to participate in remote classes?
- Do students use Cable TV to participate in remote classes?
- Do students use Interactive TV (Video classroom) to participate in remote classes?
- Do students use Compressed Video to participate in remote classes?
- Do students use other than listed to participate in remote classes?
- Does building participate in Distance Learning Programs, yes or no?
- Any Distance Learning Programs planned within the next two years, yes or no?
- Are the students in this building required parental signature to use the Internet?
- Percentage of students in building that have signed Internet Policies
- Does building use filtering hardware/software on their computers, yes or no?
- Percentage of computers that use filtering hardware/software