The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

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Acknowledgements

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed was a research project directed by the Library of Michigan to collect information on school library services and their relationship to student achievement, specifically in the area of reading achievement in grades 4, 7, and 11.

We would like to thank and credit the staff of the participating schools who made the time in their busy schedules to collect, compile, and report data required to complete the 2002 statewide school library study. Without their efforts, this study would not have been possible.

State Librarian Christie Pearson Brandau and Sheryl Mase, Director of Library Development & Data Services, provided the leadership, foresight, and determination to make this study a reality. A special thanks to Kristine Tardiff, Library of Michigan Youth Services Specialist, for making sure all of our questions were answered, and especially for her enthusiasm.

Thanks are due to the Michigan Department of Education for providing the substantial amounts of data required related to the state's public schools.

This project is funded with a Library Services and Technology Act grant from the Institute of Museum and Library Services, administered by the Library of Michigan.

The review of the literature contained here updates the comprehensive review done for the original Colorado study. Indeed, it was produced by one of that review's co-authors, Christine Hamilton-Pennell of Mosaic Knowledge Works. In addition to updating her earlier effort with Lynda Welborn, she also did an excellent job of relating previous research on this topic to the themes of *Information Power*. This focus improves the organization and readability of the literature review and makes it more relevant to the current context of library media development.

Special thanks to project manager Bill Schwarz, who did yeoman work during both the preparation and data processing stages of this study.

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

For sidebar stories illustrating key findings of the study, we are indebted to Michigan's school library media staff. The success stories from the trenches are probably the most significant evidence of all.

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Keith Curry Lance
Westminster, Colorado

Executive Summary

Michigan Educational Assessment Program (MEAP) reading test scores rise with the extent to which the state's school library programs are headed by qualified school librarians. The relationship between school libraries and test scores cannot be explained away by other school or community conditions at any school level.

School Librarian Staffing

This study's comparison of MEAP reading performance for Michigan schools with and without librarians indicates that the presence of a qualified school librarian can make a tremendous difference in the reading achievement of a school's students. This difference ranges from eight percent for high schools to 35 percent for elementary schools. (See Table A.) For instance, schools with librarians have 35 percent more fourth graders who score proficient or above than schools without librarians.

Table A. MEAP Reading Performance for Schools With and Without Librarians by School Level, 2002

	Average Percentage of Students Scoring Proficient or Above on MEAP Reading Test for Schools				
School Level	**With Librarians**	**Without Librarians**	**Percent Difference***	**t**	**Significance of t**
Elementary (4th)	66%	49%	35%	12.891	.000
Middle (7th)	64%	52%	23%	5.360	.000
High 11th)	77%	71%	8%	2.859	.005

*This is the percent difference, not the difference. For example, 66/49=1.35 This means that 66 is 135% of 49. Thus, 66 is 35% greater than 49.

Results by Level:

- **Elementary:** Weekly hours of school librarian staffing in Michigan elementary schools are higher for schools whose students are most

likely to score well on reading, compared with schools whose students are least likely to excel in reading.

- **Elementary:** At Michigan elementary schools, reading test scores are likely to rise as students spend more time in the library and library staff spend more time teaching students, working with teachers and developing collections.

- **Elementary:** Fourth grade reading scores tend to be higher for Michigan elementary schools whose school libraries report:
  - higher numbers and weekly hours of total library staff and librarians in particular;
  - being open more hours per week;
  - library staff spending more time on motivating readers, developing collections, meeting with other librarians, teaching information literacy skills, and planning with teachers;
  - larger collections of print volumes and video materials and, to a lesser extent, audio materials and software packages;
  - more availability of computers—both in the library and throughout the school—that provide links to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web;
  - more group visits, more individual and group visits for information literacy instruction, and higher circulation per week; and
  - spending more on library operations. (See Table 2)

- **Middle School:** At Michigan middle schools, reading test scores generally rise as more computers throughout the entire school are networked to library resources, including Access Michigan.

- **Middle School:** For Michigan middle schools, seventh grade reading scores usually rise as school libraries report:
  - higher numbers and weekly hours of librarian and total library staff;
  - offering more weekly hours for flexible access/scheduling;

- librarians spending more time planning and teaching cooperatively with classroom teachers, and providing in-service training to teachers;
- larger collections of print volumes and video materials;
- access to more library and school computers that connect to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web;
- more frequent individual and group visits to the library; and
- spending more on library operations. (See Table 10)

- **High School:** At Michigan high schools, reading test scores are likely to rise as the library is open more hours, with more professional staffing, more books, and more students visiting the library on their own.

- **High School:** Increases in eleventh grade reading scores are usually reported by Michigan high school libraries that have:
  - higher numbers and weekly hours of librarian and total library staff;
  - more total weekly hours of operation, and more weekly hours for flexible access/scheduling;
  - librarians spending more time supporting school computer networks;
  - larger collections of print volumes and video materials; and
  - access to more computers—both in the library and throughout the school—that provide links to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web; and
  - more frequent individual visits to the library; and
  - more money for library operations. (See Table 18.)

School & Community Differences in Michigan

The impact of Michigan school libraries on academic achievement cannot be explained away completely by:

- school differences, including:
  - overall per pupil school spending and

  - the teacher/pupil ratio, or
- community differences, including:
  - the percentage of schoolchildren living in poverty,
  - the percentage of schoolchildren belonging to racial/ethnic minority groups, and
  - the percentage of adults in the community who graduated from high school.

When these other factors are taken into account, school library variables alone count for up to three percent of variation in MEAP reading scores. This figure takes into account community wealth or poverty, which alone can explain in excess of 60 percent of test score variation. While school administrators cannot choose the level of poverty in their communities, they can choose to have well-staffed school libraries.

How School Librarians Make a Difference in Michigan

Qualified Michigan librarians strengthen school library programs in a variety of ways. For librarians to exert a positive influence on teachers and students, they cannot work alone. Adequate levels of professional and support staff are essential to keep the school library open, to manage its collections and technology, to facilitate its use, and to help teachers to teach and students to learn.

Generally, better performing schools in Michigan have
- better developed school library programs—i.e., higher levels of staffing, collection development, and funding;
- library staff who spend more time engaged in activities that contribute to collaborative teaching and learning; and
- more extensive and sophisticated computer networks extending the reach of the school library. (See Table B.)

Table B. School Library Predictors of MEAP Reading Scores by School Level

Variable	Elementary	Middle	High
School Library Staffing			
Librarian hours	■	■	■
Total staff hours	■	■	■
School Library Hours of Operation			
Weekly library hours	■		■
Hours available for flexible scheduling		■	■
Library Staff Activities			
Planning with teachers	■	■	
Teaching with teachers		■	
Teaching information literacy	■		
Providing in-service training to teachers		■	
Reading motivation	■		
Collection development	■		
Managing computer networks			■
Library meetings	■		
Information Resources			
Print volumes	■	■	■
Video materials	■	■	■
Audio materials	■		
Computer software	■		
Information Technology			
Library and school computers networked to library resources	■	■	■
School Library Usage			
Individual library visits		■	■
Group library visits	■	■	
Individual library visits for information literacy instruction	■		
Group library visits for information literacy instruction	■		
Circulation	■		
Library Operating Expenditures	■	■	■

As the following figure demonstrates, school libraries are complex. While school library staffing is the consistent factor from level to level, this study demonstrates that all aspects of the school library—its hours of operation and availability, its staff, its collections and their usage—are intertwined in their impact on academic achievement.

THE HEART OF THE SCHOOL

It's lunchtime, a busy time in the library. There is the usual group catching up on the daily news and a student telling me about his latest success in his genealogy research. Some are putting together the jigsaw puzzle while others compete in a friendly game of chess. The computers are filled with students printing assignments and searching the Internet. Someone checks out a paperback and another requests an interlibrary loan. It's not quiet by any means! It's a gathering place. It's comfortable and welcoming.

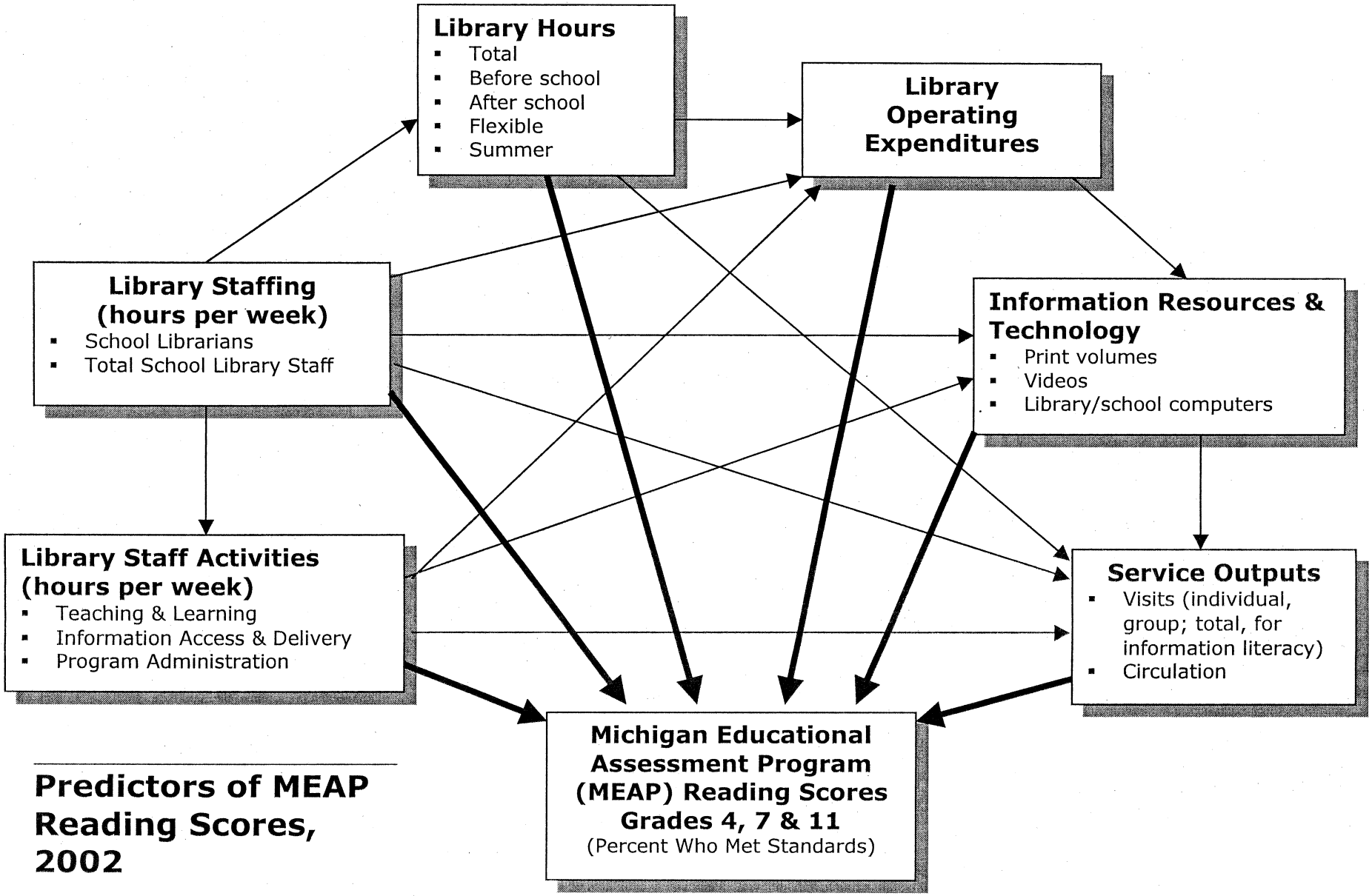
When I was hired five years ago I was coming from 22 years in the English classroom with no knowledge of how to run a library beyond my own use. With the promise that I would pursue my degree, I was hired and given the task of separating the existing collection into three libraries and reintroducing the concept of a library to the students and staff.

That year the school had undergone a major building project so I had a brand new high school library, a small elementary library, and the old library for the middle school. Prior to that, shortages had turned the library into a study hall and the librarian had no time or room to promote library skills and use. With study halls filling the room all day, teachers were not able to make use of the facility. We had seniors who had never checked out a book since leaving elementary. So I went to them, giving book talks in classrooms and staff meetings, taking books to teachers that they might like to use. A survey was given to the students and the next year I posted the survey results and displayed the books and magazines that had been added to our collection as a result. Reading month had activities for all three levels and Teen Read Week was added the following year.

Circulation has risen every year. Students stop me in the hall to discuss what they are reading. They don't wait until the yearly survey to tell me about a new author or series they think we should add to our collection. Though I arrive at school 45 minutes before school starts, there are always students waiting to get in and an hour and a half after school I often have to send them home so I can lock up.

Has it made a difference in the students' test scores? Studies indicate that it should. Has it made a difference in their school lives? I would like to think so.

Patti Colvin
Manton School Libraries
Manton



Predictors of MEAP Reading Scores, 2002

Michigan schools with a higher percentage of the best reading scores tend to have more school librarian hours per student than schools with the lowest percentage of good scores.

.....

At Michigan elementary schools, reading test scores tend to rise as students spend more time in the library and library staff spend more time teaching students, working with teachers and developing collections.

.....

At Michigan middle schools, reading test scores usually rise as more computers throughout the entire school are networked to library resources, including Access Michigan.

.....

At Michigan high schools, reading test scores generally rise as the library is open more hours, with more professional staffing, more books, and more students visiting the library on their own.

Other School Library Impact Studies

For more information about recent research on the impact of school library media programs on academic achievement, visit the Library Research Service web site, http://www.lrs.org. Links are provided to:

- **The Impact of School Library Media Centers on Academic Achievement** (the original 1993 Colorado study)
- **How School Librarians Help Kids Achieve Standards: *The Second Colorado Study*** (2000)
- **Information Empowered: *The School Librarian as an Agent of Academic Achievement in Alaska*** (2nd edition, 2000)
- **Measuring Up to Standards: *The Role of Library Information Programs & Information Literacy in Pennsylvania Schools*** (2000)
- **Good Schools have School Librarians*: Oregon School Librarians Collaborate to Improve Academic Achievement*** (2001)

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THE HEART OF THE SCHOOL

It's lunchtime, a busy time in the library. There is the usual group catching up on the daily news and a student telling me about his latest success in his genealogy research. Some are putting together the jigsaw puzzle while others compete in a friendly game of chess. The computers are filled with students printing assignments and searching the Internet. Someone checks out a paperback and another requests an interlibrary loan. It's not quiet by any means! It's a gathering place. It's comfortable and welcoming.

Students stop me in the hall to discuss what they are reading. They don't wait until the yearly survey to tell me about a new author or series they think we should add to our collection. Though I arrive at school 45 minutes before school starts, there are always students waiting to get in and an hour and a half after school I often have to send them home so I can lock up.

Has it made a difference in the students' test scores? Studies indicate that it should. Has it made a difference in their school lives? I would like to think so.

Patti Colvin
Manton School Libraries
Manton

School library media programs in Michigan schools exert a <u>demonstrably positive and statistically significant impact</u> on reading test scores.

The impact of school library services on academic achievement cannot be explained away by:

<u>school differences</u>

- **overall per pupil school spending**
- **the teacher/pupil ratio**

<u>community differences</u>

- **the percentage of children living in poverty**
- **the percentage of children belonging to racial/ethnic minority groups**
- **the percentage of adults who graduated from high school.**

FASTER OFF THE SHELF

A student was asked if she was finding everything she needed. Her reply was that this was the third day that she had been looking on the Internet for information on "cloning" but she just couldn't find anything for her research paper. I determined that the real problem was that she was finding too much information and was overwhelmed. We told her that we had a book on cloning that might be helpful. When we placed it in her hand, she exclaimed,"wow, a whole book on cloning! This is great, can I use it?"

We told her not ONLY could she USE it she could actually TAKE IT HOME with her for 3 weeks. She was so excited, and said that she was going to tell her friends that we had books on stuff like this that they could use (novel idea those libraries). We felt like missionaries who had just brought food and water to the survivor on a deserted island!! She could now go home and do her work instead of staying after school!!

Shirley Dudek
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Introduction

For many years, the deficient condition of libraries in many Michigan public schools—particularly the absence of qualified school librarians—has been a cause for concern to the State Library. As part of an effort to reverse this alarming trend, the State Librarian and others resolved to document the impact of school libraries and librarians in Michigan schools and to share this information with school decision-makers—school boards, superintendents, principals, teachers, even school librarians.

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**. Between 1999 and 2001, successor studies were completed in Alaska, Colorado, Iowa, Massachusetts, New Mexico, Oregon, Pennsylvania, and Texas. Realizing the potential for such a study in Michigan, the State Library designated funds from the Library Services and Technology Act (LSTA) for this purpose.

In 2002, the State Library contracted for this study with RSL Research Group, whose team of researchers includes those responsible for most of the other state studies: Marcia J. Rodney, Principal Analyst of RSL Research Group; Keith Curry Lance, the principal investigator for the original "Colorado study," and Christine Hamilton-Pennell, President of Mosaic Knowledge Works and also a co-author of the original Colorado study.

In addition to confirming in Michigan the findings of the first Colorado study, this project also sought to explore several issues that were explored in the other recent state studies. Those issues included:

- identifying characteristics of school librarians and school library programs that affect academic achievement,
- assessing the contribution of collaboration between teachers and school librarians to the effectiveness of school library programs, and
- examining the growing role of information technology in school libraries, particularly the contributions of library and school computers providing access to licensed databases as well as the Internet and the World Wide Web.

On all three of those counts, this Michigan study was decidedly successful. This document reports comprehensively on the project, putting it into perspective with past research as well as the American Association of School Librarians' new standards, **Information Power: Building Partnerships for Learning** (1998). It also contains reports of the findings in a variety of readily useful formats, including: an executive summary, a brochure, and the preliminary report.

Review of the Literature

This study aims to replicate and expand upon previous research showing a link between student academic achievement and the school library media program. With the move to standards-based education, which focuses on what students have learned (proficiencies or outcomes) rather than what is taught (coverage of content), the school library media specialist is in a unique position to help students develop the information literacy skills which will enable them to achieve standards.

The new edition of **Information Power: Building Partnerships for Learning** (ALA, 1998), reflects a change in emphasis for school library media programs, from providing resources to students to creating a community of lifelong learners. Three overlapping roles are identified for school library media specialists (LMSs) in this document. The *learning and teaching* role supports the instructional goals of the school in both content (standards and subject curriculum) and process (information literacy skills). The *information access and delivery* role encompasses the more traditional responsibilities of the LMS, those of developing the media center's collection and services and providing access to them. A third role, *program administration*, includes both management of the library media program and larger training and advocacy functions within the school community.

This review of the research organizes the research findings under the three roles identified for the LMS in **Information Power** (1998). Many of the research studies were conducted in the context of the earlier guidelines, **Information Power: Guidelines for School Library Media Programs** (ALA, 1988). Although some of the goals in the document have changed, the underlying mission statement remains the same:

> The mission of the library media program is to ensure that students and staff are effective users of ideas and information. This mission is accomplished:

- by providing intellectual and physical access to materials in all formats
- by providing instruction to foster competence and stimulate interest in reading, viewing, and using information and ideas

- by working with other educators to design learning strategies to meet the needs of individual students. (ALA, 1998, p. 1)

Presence of a Library Media Center with a Professional Library Media Specialist

Many studies conducted before the advent of the **Information Power Guidelines** dealt with the value of the mere presence of a library with a professional librarian, reflecting the lack of centralized library service, particularly at the elementary level. Willson (1965) showed that students demonstrated superior gains on the Iowa Test of Basic Skills (ITBS) in elementary schools with a centralized library and a professional librarian. Likewise, Becker (1970) compared ITBS scores between students in elementary schools with and without libraries and found that the presence of a library and the guidance and function of a librarian appeared to exert significant influence on pupil achievement in some information-gathering skills areas.

In the study by Hale (1969), SAT scores improved among students receiving library service from a professional. McMillen (1965) found that students in schools with good libraries and full-time librarians performed at higher levels in reading comprehension and in knowledge and use of reference materials than students in schools with minimal or no library service. Didier (1982) confirmed that student achievement in reading, study skills and use of newspapers was significantly greater at the seventh grade level in schools with professional library media personnel as compared to schools without them. Student access to the library media center was also significantly greater in schools with professional library media personnel than in schools without them.

Yarling (1968) found that the addition of a well-equipped and managed centralized library had a significant impact on the performance of elementary school students in library-related skills, particularly outlining and note taking. Students who used a new fully staffed and equipped elementary school library also showed significant improvement in library skills test scores in the study by Ainsworth (1969). McConnaha (1972) found that the library skills test scores of high school students who had attended an

elementary school with both a library and a librarian who conducted a strong library skills program were significantly higher than those of students who did not have these advantages.

Recent statistics show that public schools have moved in the direction of providing professionally-staffed library media programs at all levels. In a U.S. Department of Education-funded study conducted recently (Michie and Cheney, 2000), survey results indicate that as of 1997, 98 percent of public schools have a school library media center, and 78 percent of public schools have a state-certified library media specialist.

Learning and Teaching

Early Studies

Some research studies before the advent of **Information Power Guidelines** in 1988 referred to various aspects of the LMS's teaching role. Aaron (1975) studied a group of eighth grade students who participated in a program in which a full-time media specialist was added to the teaching team. In addition to showing significant improvement in language arts, spelling, and math computation, the students in the experimental group experienced improvement in their self-concept. Bailey (1970) studied a group of disadvantaged first-grade students who participated in a library resource program over a 12-week period. The experimental group showed a significant increase in total language ability and the ability to express ideas over the control group of disadvantaged students who received no special treatment. DeBlauw (1973) examined the rate of cognitive growth of students on achievement test batteries before and after implementation of a multi-media program. Elementary students showed significant gains, but the academic performance of high school students was unchanged by the program. A longer-term study of twelfth grade English students by Gilliland (1986) found that test scores on the study-locational portion of the California Assessment Program improved during the years following implementation of a library review program.

Gengler (1965) looked at differences in the ability to apply selected problem solving skills between sixth grade students who were instructed by a

classroom teacher and those who received additional instruction from an elementary school librarian. Findings showed that the mean score on a problem solving skills examination for the librarian-teacher instructed group was significantly higher than for the teacher instructed group. Hastings and Tanner (1963) looked at whether improved English language skills could be developed at the tenth-grade level through systematic library experiences rather than the traditional emphasis on formal English grammar. The group that eliminated all traditional emphasis on formal grammar and spelling and instead received systematic work in the use of library references was significantly superior to the groups that emphasized traditional work in grammar and spelling.

In a study by Hutchinson (1982), English teachers gave tenth-grade students special library skills instruction and practice over a two-week period. Library usage among the students increased regardless of their academic grade point averages. Hale (1970) found that an experimental group of twelfth grade students who were given a variety of library services and resources and the opportunity to work independently under the supervision of the librarian showed "remarkable enthusiasm" for learning. Barrilleaux (1965) focused on a comparison of the achievement of junior high school students in general science classes in which textbooks were used with students who used reference materials in the school library rather than a textbook. Results showed that for all investigated educational outcomes, the use of library materials without a basic textbook was the superior method of instruction.

Instructional Role Since Information Power Guidelines

Much of the research taking place after the introduction of the **Information Power Guidelines** in 1988 focuses on the instructional role of the school library media specialist. Lance, Welborn and Hamilton-Pennell (1993) found that students whose library media specialists played an instructional role, either by identifying materials to be used with teacher-planned instructional units or by collaborating with teachers in planning instructional units, tended to achieve higher reading scores. A study by the Library Research Service in Colorado (1998a) also found that students earned higher reading scores in

schools where the LMS played a vital instructional role, including planning instruction with teachers, providing information literacy instruction, providing in-service training for teachers, and evaluating students' work.

Seven recent statewide studies reinforce the importance of the LMS instructional role. A study conducted in Alaska (Lance, Hamilton-Pennell and Rodney, 2000) revealed that students' test scores tended to rise when library staff spent more time teaching information literacy to students and planning instructional units with teachers. In Pennsylvania (Lance, Rodney and Hamilton-Pennell, 2000a), test scores increased as LMSs spent more time teaching cooperatively with classroom teachers and integrating information literacy skills into the school's approach to standards and curriculum. The second Colorado study (Lance, Rodney and Hamilton-Pennell, 2000b) concluded that reading test scores rise as LMSs plan cooperatively with teachers (at the 7th grade level), identify materials for teachers, and teach information literacy skills to students. A Massachusetts study by Baughman (2000) found that both elementary and middle school students tended to score higher on the Massachusetts Comprehensive Assessment System (MCAS) test when there was a library instruction program.

Likewise, in Oregon (Lance, Rodney, and Hamilton-Pennell, 2001), students tended to score higher on reading tests when their LMSs worked with classroom teachers to identify materials to support and enrich instructional units, taught essential information literacy skills to students, and provided in-service training opportunities to classroom teachers. A recent study in Iowa (Rodney, Lance, and Hamilton-Pennell, 2002) revealed that 4th grade reading scores tend to be higher in elementary schools where LMSs spend more weekly hours planning and teaching cooperatively with teachers. In New Mexico (Lance, Rodney, and Hamilton-Pennell, 2003), 10th grade achievement scores tend to improve with the extent to which classroom teachers and library teach cooperatively, and 8th grade scores improve with increases in time spent by library staff on planning with teachers and providing in-service training.

Gap Between Theory and Practice

Nevertheless, several researchers have identified a gap between theory and practice. Person (1993) found a discrepancy between the real and ideal role perceptions of LMSs. While they were aware of the roles identified in the **Guidelines**, they didn't perform them as often as they would have liked. Pickard (1993) also studied the gap between theory and practice of LMSs performing the instructional role and found that less than 10 percent of her sample appeared to be practicing the role to a great extent. Angelo (1994) verified this finding in a study that showed that the majority of LMSs were performing duties of the traditional librarian, such as student orientation and assisting students and teachers in finding materials, while a low percentage were performing planning and consultation roles. Kuhne (1993) concluded that school libraries need to be more integrated into the curriculum and that the school librarian could play a much more distinctive teacher role than he or she does today.

McCarthy (1997) studied LMSs who were "well above average" in the New England region and found that 58 percent of them believed that implementation of **Information Power Guidelines** was only somewhat realizable or not realizable at all. Jones (1997) examined the theoretical and actual curriculum development roles of LMSs in Georgia schools across all levels. She found that while there was widespread agreement among LMSs that participation in the curriculum development process as delineated in **Information Power** (1988) was of critical importance, few were involved in the process to any appreciable extent. McCracken (2000), in a national survey of more than 500 LMSs, found that they perceived all the roles in **Information Power** (1988, 1998) to be more important than they were able to implement in practice. They also perceived that they practiced the role of information specialist (i.e., the traditional role of the librarian) to a greater extent than that of program administrator, teacher, or instructional partner and consultant.

Level of LMS Collaboration with Teachers

Instructional collaboration has many levels, and research indicates that LMSs are most often involved in the less complex levels. Slygh (2000) reports on the difficulty of establishing exactly what is meant by the term "collaboration." She uses a definition by Van Deusen and Tallman (1994) that delineates an interdependent relationship between LMS and classroom teacher involving a continuum of five progressively complex levels of instructional collaboration, from gathering materials to collaborating with a teacher to evaluate a unit. Slygh found that teachers in her sample of Library Power schools indicated a greater frequency of collaborating with the LMS in planning and designing instruction than in delivering it.

A study by DeGroff (1997) compared the ideal roles of the LMS as laid out in **Information Power** (1988) with the actual practice of these roles. She determined that the instructional consultant activities of LMSs were usually limited to gathering books for instructional units and seldom involved participating with teachers in developing, carrying out, or assessing unit plans. Van Deusen and Tallman (1994) found that more than half of their sample of LMSs did not assess student work at all during the study period. Michie and Chaney (2000) found that the overall percentage of library media centers working with teachers on curriculum development, collaboratively teaching curriculum units with classroom teachers or collaboratively evaluating curriculum units with classroom teachers ranged from two percent to 21 percent, depending on the subjects taught. The greatest amount of collaboration was with reading or English teachers.

Mosqueda (1999) studied the roles played by LMSs in 67 Florida schools named as National Blue Ribbon Schools. While the overwhelming majority of responding principals and LMSs agreed that the library media programs performed well in program administration and information access and delivery, an average of 75 percent of principals and LMSs thought the library media programs needed to be more fully integrated into the curriculum. Mosqueda's data does show a higher percentage of LMSs who spend time planning instruction with teachers on a daily (40 percent) or weekly (80 percent) basis than other research studies cited, which may indicate that

LMSs in exemplary schools perform the instructional role more often than their counterparts in less well-recognized schools.

Barriers to Collaboration

Barriers to LMSs practicing the instructional role include the attitudes of LMSs, teachers, and principals, as well as program limitations such as fixed scheduling, limited resources, and lack of technology. Lai (1995) found no significant differences between teachers' and media specialists' attitudes regarding the LMS's role in curriculum development, instructional development and technology use. Both groups believed the LMS had only a marginal role in designing and producing materials for units. Beaird (1999) found that key barriers to collaboration were time, desire to maintain the status quo, and lack of resources. In a national survey of LMSs by McCracken (2000), the biggest barriers cited to expanding their instructional role were lack of time and resources, specifically funding and clerical help.

Several researchers (e.g., Slygh, 2000; Beaird, 1999; DeGroff, 1997) point to role confusion or role conflict of LMSs themselves, as well as lack of understanding of the instructional role of the LMS among the teachers and administrators they work with, as inhibiting expanded collaboration activities. A survey of 450 practicing Georgia LMSs (McCoy, 2001) was conducted to determine the job competencies they use and value most. Results showed that respondents placed administration, information access and delivery, and collection development at the heart of the school library media program. Kolencik (2001) studied 171 school districts in western Pennsylvania and found that principals rarely recognized the instructional role of the LMS. They believed the major role of LMSs was in reference and research services, while the LMSs indicated that their major role was instruction in information literacy.

These finding about barriers to collaboration also hold true in countries outside the United States. Williams and Wavell (2001) investigated the impact of the school library resource center (SLRC) on learning in Scottish secondary schools. They concluded that teachers and librarians do not yet have a common vision or language to describe how the SLRC interacts with

the classroom. The joint planning process that exists is limited and the outcome of the curriculum activity tends to be measured in terms that relate only to the end product, not the skills that contribute to the end product, such as those learned in the SLRC. Likewise, a cross-country study of the role of the principal in an information literate school community (Oberg, Hay, and Henri, 2000), showed that participants in all five countries for which data was available—Canada, Australia, Scotland, South Korea, and Finland—acknowledged that teachers' attitudes and beliefs constituted one of the major barriers to the integration of information skills across the curriculum.

Positive Effects of Flexible Scheduling

Giorgis (1994) discovered that the majority of elementary school teachers perceived the LMS as a resource person and only a few as a collaborator. Nevertheless, during the course of her study Giorgis found that these views changed. Through flexible scheduling and collaborative planning, the perceptions of the LMS's role by classroom teachers, administrators, children and parents became one of teacher and collaborator.

Other researchers also attest to the positive effects of moving to flexible scheduling. Bishop (1992) found that the most significant changes in the role of the LMS occurred with the move to flexible scheduling and curriculum-integrated instruction. Fedora (1993) compared two exemplary school library media centers, one with fixed and one with flexible scheduling and found that the LMS participated more often in planning with teachers and as an instructional consultant in the flexibly-scheduled program. Van Deusen (1993) and van Deusen and Tallman (1994) found that LMSs in schools that combined both flexible scheduling and team planning had significantly more curriculum involvement. Hughes (1998), in her study of four library media programs in schools implementing whole language programs, found that all four LMSs moved to flexible scheduling in the LMC during the course of implementation and were able to provide leadership and direction in creating a library program that promoted the active construction of knowledge. Likewise, Beaird (1999) reported that one of the major enhancers to increased collaboration was flexible scheduling, and McCracken

(2000) found that LMSs who use flexible scheduling perceived that they implemented the role of instructional consultant more than those who used fixed or combination scheduling.

Positive Effects of Collaboration

Research indicates that a collaborative environment begets more collaboration. Beaird (1999) discovered that as a result of a first experience with collaboration with the LMS, teachers were made aware of the presence of another professional on their campuses who could engage in collaborative planning and teaching. LMSs became more aware of teachers' needs as they provide for regular students as well as those with special needs. Straessle (2000), in her case study of a suburban junior high school, concludes that the more teachers and administrators understand and experience the role of the LMS as an instructional consultant, the more likely their perceptions will change and expectations increase, thus improving teacher instruction and student learning. Slygh (2000) reports that LMSs' perceptions of the degree to which their school climate was a professional community affected the amount of instructional collaboration they performed.

Positive Effects of Technology

Technology can also support the instructional role. Everhart (1992) found that high school library media specialists with automated circulation systems spent significantly more time in instructional development and use of technology than those without automated systems, although the actual time spent in development of the educational program was quite low. Van Deusen (1996a) found that both flexible scheduling and library automation were positively related to the LMS performing an instructional consultation role, as well as providing electronic support for teachers using technology, providing individual assistance to students, and reducing the amount of time spent on clerical duties. Jones (1994) concluded that technology expands the teacher-librarian partnership possibilities in literature-based instruction. E. W. Smith (1998) studied the changes occurring in media centers in Dekalb County, Georgia after the incorporation of technology, and found

both that the media center program was a viable component of the school's curriculum and that the media specialist's role as teacher, information consultant, and information specialist had expanded.

Characteristics of Library Media Specialist

Perhaps the most important factor in successfully implementing the instructional role is the characteristics and skills of the school library media specialist himself or herself. Yetter (1994) found that LMSs successfully involved in resource-based learning were energetic, healthy and enthusiastic; showed leadership abilities; had theoretical understanding of resource-based learning; had the ability to translate theory into effective instructional plans; and were knowledgeable about specific learning resources. These LMSs saw teaching as their primary function. As a result, the colleagues of these LMSs saw them as vital participants in the instructional process. Esser (1999) interviewed 18 female LMSs in Kentucky to discover their initial motivations for entering the field and discovered that a desire for autonomy was high on the list. Her data suggested that these teacher-librarians achieve a greater degree of autonomy when they are collaborating with teachers, and they negotiate these relationships and create effective networks in order to carry out their work.

Farwell (1998) found that LMSs could play a pivotal role in the successful implementation of collaborative planning if they were knowledgeable about the curriculum, the library collection, information literacy instruction, and instructional design and delivery. They also needed to have good interpersonal skills and be willing to act as change agents. Van Deusen's (1996b) case study of a school library media specialist involved in an instructional planning process showed that she contributed as a peer and helped to clarify, initiate, summarize and test the discussion ideas. DeGroff (1997) concludes from her survey data that the most important factors supporting opportunities for teachers and LMSs to work together effectively were the librarian's knowledge, personality, and attitudes or interests.

K. G. Alexander (1992) studied four exemplary LMSs and found that they fulfilled most of the aspects of the instructional role. They spent large

portions of each day giving instruction, effectively managed class and teaching time, provided instruction related to the curriculum, and used innovative instructional methods. They also instructed different sections of the school community, ensured that their media center had resources to support the changing curriculum, and assisted teachers in planning classroom instruction. Gehlken (1994) studied the school library media programs in three blue ribbon high schools and came to similar conclusions. In all three schools, there was a cooperative relationship between the LMS and the faculty, with opportunities for collaborative planning and integrating information skills into the classroom curriculum. The students in all three schools overwhelmingly indicated that the most important service provided by the school library media program was help from the LMS in finding and evaluating information. Bell and Totten (1992) found that teachers employed in academically successful schools tended to choose the library media specialist significantly more for cooperation on instructional problems than did teachers serving in academically unsuccessful elementary schools.

Other Aspects of the Instructional Role

Another aspect of the LMS's learning and teaching role identified in **Information Power** (1998) is to encourage and engage students in reading, viewing, and listening for understanding and enjoyment. Yetter (1994) found that LMSs involved in resource-based learning were enthusiastic about reading and books. Lai (1995) found that teachers and LMSs both strongly agreed that the LMS should work with teachers in helping students to develop the habit of reading.

In Australia, Todd, Lamb and McNicholas (1993) studied Year-Seven and Year-Eleven students and found that integrating information skills into subject content, with collaboration by classroom teachers and LMSs, had a positive impact on student learning, including better understanding of subject content and improved test scores. Todd (1995) analyzed the impact of integrated information skills instruction in a Year-Seven science class. The two treatment classes recorded significantly higher annual science scores than the control classes.

The adoption of state content standards and the movement towards standards-based instruction and assessment is too recent to have a substantial research base as yet. N. A. Alexander (1998) determined that standards policy is generally associated with improved student performance, although there are disturbing equity issues. In the school library field, a few research studies to date have looked at the connection between integrating information literacy skills into the curriculum and improved student learning. Grover and Lakin (1998) reported on the development and testing of a Kansas model which integrates information skills into planning and assessing learning across the curriculum. Teachers and librarians who participated in the study indicated that the model facilitated student learning in all grade levels studied and for units of any length. The "integrated assignment" stage of the model was reported as a key to enhancing student learning.

In regard to standards-based education, one of the more interesting developments of the past decade has been the elaboration and proliferation of the value-added assessment model originated in Tennessee by Sanders, et. al. (1997). This model is being considered in Colorado and other states as a method for evaluating the performance of both schools and teachers. In the author's most authoritative account to date, he reports that the strongest predictor of year-to-year improvement in students' test scores is teacher quality. To date, however, there have been no further reports from Sanders or others defining precisely what "teacher quality" means in empirical terms. Decades of library media research findings indicate that one major factor that has demonstrated consistently a positive, strong, and statistically significant relationship to quality teaching is a close working relationship between the classroom teacher and the library media specialist.

Information Access and Delivery

The information access and delivery role includes providing quality resources and technology that support the curriculum, offering convenient and flexible access to the media center's resources and services, and providing a welcoming environment that is conducive to learning. Recent studies show that LMSs still perceive this role to be their most important one, and the one they practice most often in reality (DeGroff, 1997; McCracken, 2000).

Early studies focused on service level and collection size as predictors of academic achievement. Greve (1974) discovered that the most valuable predictor of student test scores was the number of volumes in the school library. Thorne (1967) examined the reading comprehension and library skills of students using the augmented services of a Knapp Project library versus the nominal services of a second junior high school library in a two-year study. Findings revealed a significant difference in the mean gains of the experimental group over the control group in reading comprehension and library skills.

Access to Print Resources

More recent studies have focused on the connection between students' achievement in reading and access to print resources, particularly in libraries. The first Colorado study by Lance, Welborn and Hamilton-Pennell (1993) concluded that the size of a media center's staff and collection is the best school predictor of academic achievement. In that study, academic achievement was represented by reading scores, which were highly correlated with scores in other areas, such as writing and research skills. Elley (1994, 1996) compared the scores of students from 32 countries on the 1992 International Association for the Evaluation of Educational Achievements (IEA) Reading Literacy Study with data on the home environment and school and public libraries. He concluded that access to print, and especially the size of the school library, was the strongest predictor of reading achievement. Froese (1997) compared the IEA reading scores for British Columbia with variables related to school and classroom libraries and found that students who have the opportunity to borrow books from libraries have a considerable achievement advantage over those who cannot.

In his meta-analysis of reading research studies, Krashen (1993) concluded that more free voluntary reading results in better reading comprehension, writing style, vocabulary, spelling and grammatical development. He also determined that when books are readily available and the print environment is rich, more reading is done. Even second-language learners will be more

successful in language acquisition when they read more in the second language. Children get a substantial percentage of their books--from 30 to 90 percent--from school, classroom and public libraries. They also read more when they have a comfortable, quiet place to read, such as the school library. Ramos and Krashen (1998) concluded that simply providing interesting books to children is a powerful incentive for reading, perhaps the most powerful incentive possible.

McQuillan (1997) drew similar conclusions. He found that access to print via the home, school and public library, and frequency of free reading accounted for nearly 80 percent of the variance in fourth grade reading test scores. He also reported a correlation between school and public library quality, library use, and amount of reading done by school children. In McQuillan's (1998) meta-analysis of literacy studies, there was considerable evidence that the amount and quality of students' access to reading materials is substantively related to the amount of reading they engage in, which in turn is the most significant determinant of reading achievement. More reading leads to better reading achievement.

Other researchers have also demonstrated a relationship between free voluntary reading and academic achievement. Digiovanna (1994) found that the amount of recreational reading was positively correlated with higher academic achievement levels for third, fifth, and seventh graders. Halliwell (1995) demonstrated a relationship between eighth graders' self-perceptions of being free voluntary readers and the degree of their success on the Missouri Writing Assessment. Lipscomb (1993) reported on the self-selected recreational reading of first through third-graders over a nine-week period in the summer and found that the total number of words read was a significant predictor of students' overall reading achievement and word recognition.

Access to print through public libraries has been shown to contribute to students' academic achievement. A Library Research Service study (no. 153, 1998) reported that in Colorado school districts scoring in the highest third on the 1997 Colorado State Assessment reading test, circulation of children's materials per capita by public libraries was 50 percent higher than in school districts scoring in the lowest. There were similar results for states scoring highest on the NAEP reading test. Ramos and Krashen (1998) reported that even one classroom trip per month to the public library had a

positive impact on students' reading. McQuillan (1997) found that SAT scores were positively correlated with per capita public library circulation.

An interesting study by Fisher, Lapp, and Flood (2001) examined the effects of elementary students' access to print via a community library vs. an in-school library on reading achievement scores in a large urban school district. The community library group saw a 21% increase in students who tested "at or above grade level," while the in-school group had a modest, but not statistically significant increase in reading scores. Among the reasons they suggest for this finding is that the children's librarian in the community library was more knowledgeable about children's books and used games and booktalks to interest children in reading, the community library had more total staff, and there was a larger collection and more new books in the community library than were available in the school library.

School-Public Library Relationship

A Library Research Service study (no. 150, 1998) reported that students are likely to earn higher reading scores if there is a relationship between the library media program and local public libraries. Such a relationship might include public library staff presenting booktalks at the school library, and the local public library providing a summer reading program. Similarly, Lance, Hamilton-Pennell and Rodney (2000a) found that Alaska students' test scores tended to be higher when the LMC had a cooperative relationship with the public library. Michie and Chaney (2000) reported that 60 percent of LMCs participated in some type of cooperative activity with a local public library, including borrowing materials for teachers or the LMC, informing the public library of curriculum or homework needs, and coordinating class visits to the public library.

School Library and Equity Issues

Several researchers point to the potential importance of the school library as a factor in equalizing access to print resources for disadvantaged children. McQuillan (1997, 1998) found a strong negative correlation between poverty

and print resources at home. He concluded that school and public libraries could help increase access to print for low-income communities and schools, thus improving their students' reading achievement. The survey data collected by Baughman (2000) suggest that children from a lower socioeconomic stratum who have a school library program obtain a higher mean test score than similar children from schools without such a program.

A recent study of Texas school libraries (Smith, 2001) showed that socioeconomic variables explained most of the variance in Texas Assessment of Academic Skills (TAAS) scores, but library variables explained a small but still very significant portion of the variance. Library variables accounted for 4% of the variance at elementary and middle school levels, and 8.2% at the high school level.

Halle, Kurtz-Costes and Mahoney (1997) reported that the number of books in the homes of low-income, African-American children was related to children's reading scores at the end of the following year. They concluded that providing access to children's books through libraries may be one of the most important things disadvantaged communities and schools can do. McQuillan (1998a) studied the public library use of language minority students and found that Spanish-speaking households are much less likely to have access to books, and, therefore, fewer opportunities to further literacy development. He concludes that both public and school libraries must make concerted efforts to reach out to language minority parents and their children. Godina reports that Mexican-background students demonstrate different literacy practices in their homes and communities than those acknowledged at school, where they are viewed as having limited English proficiency and enrolled in low academic tracks. The local public library becomes an important locale for these students' literacy learning because it provides culturally-relevant reading materials.

Unfortunately, school libraries often appear to reflect the economic conditions of their communities. Krashen and O'Brian (1996) reported that socio-economic status was the most powerful predictor of student reading achievement in the Los Angeles Unified School District. Both Krashen (1996) and McQuillan (1998) made the point that the low student reading scores in California could be traced to the deplorable state of its school and public libraries. Allington, Guice, Baker, Michelson, and Li (1995) studied

the variations in access to books in school libraries in twelve high- and low-income neighborhoods. They discovered that high-income schools had 21.5 books per student, whereas the low-income schools had 15.4 volumes. They also discovered disparities in number of magazine subscriptions, size of classroom libraries and access policies.

McQuillan, LeMoine, Brandlin and O'Brian (1997) studied access to school libraries and found that students in high-achieving schools serving largely middle-class children provided greater access to books, more time to read in school, and more liberal circulation policies than those from lower-achieving schools in largely low-income neighborhoods. Smith, Constantino and Krashen (1996) found, not surprisingly, that school libraries in high income communities such as Beverly Hills had around three times as many books per student as school libraries in low-income communities such as Compton and Watts. Public libraries in high-income communities also had about twice as many books as those in low-income communities.

Similar conclusions were drawn by the William Penn Foundation (Neumann, 2002) in a five-year study of Philadelphia libraries in poor and middle-class communities. Researchers discovered that despite similarities in budget allocations, there were striking differences in the quality of school libraries. Children in poor areas had mediocre to poor school libraries, no librarian on site, and were closed more often during the week than libraries in middle-class schools.

Other studies reinforce these conclusions. Duke (2000) studied 20 first-grade classrooms from very low- and very high-socioeconomic status (SES) districts. Data indicated substantial differences between low- and high-SES classrooms in all major areas examined--amount of print experienced, type of print experienced, and number of print-related activities. Neuman and Celano (2001) focused on the neighborhood settings in which literacy begins for young children, and the extent to which literacy is a potential factor contributing to differences in achievement. What they found was striking. Access to print resources, including children's books available for purchase, public areas where children might observe people reading, and the size and quality of book collections in local childcare centers, school and public libraries, varied dramatically between the neighborhoods of middle- and low-income children. Children from middle-income neighborhoods were likely to

be deluged with a wide variety of reading materials, while children from poor neighborhoods would have to "aggressively and persistently seeks them out." These children would have to rely on public institutions, which provided unequal resources. School libraries in these neighborhoods were in serious disrepair.

A case study of a Library Power elementary school in Chattanooga (Oberg, 1999) shows that the library media program can make a difference in a low-income school. Lakeside Elementary School, largely composed of low-income African-American children, improved LMC collections and facilities, developed collaborative planning between teachers and librarians through professional development; provided flexible scheduling to the LMC; and hired a full-time LMS. The school experienced dramatic improvements in student learning, as evidenced by scores on the TCAP (Tennessee Comprehensive Assessment Program), that are attributable at least in part to the Library Power Initiative.

Size of Library Media Center Collection

Size of the school library collection has been shown to be a positive predictor of student academic achievement (Greve, 1974; Lance, Welborn and Hamilton-Pennell, 1993; Elley, 1996). Baughman (2000) and Lance, Rodney and Hamilton-Pennell (2000b) found that the per pupil book count was correlated with higher test scores. Studies in Oregon, Iowa, and New Mexico (Lance, et al, 2001; Rodney, et al, 2002; Lance, et al, 2003, respectively), revealed that achievement scores tend to rise with increases in the number of print volumes per student and the number of periodical subscriptions per 100 students. Furthermore, incremental improvements in staffing and collections yield incremental increases in reading scores. A Texas study (Smith, 2001) also found that the currency and size of the library collection are important factors in student achievement.

Krashen (1995) found that a significant predictor of NAEP reading comprehension test scores was the number of books per student in school library media centers. Similarly, McQuillan (1997) reported that SAT scores were positively correlated with the number of books per student in the

school library. Krashen and O'Brian (1996) did not find a significant relationship between books per student and student achievement in the Los Angeles Unified School District. They postulated that the number of books in a school library has little effect on literacy if access to them is restricted, the books are badly out of date, and students do not know where they are, as was the case in many California school libraries.

Frequency of School Library Use

Frequency of library use has also been positively linked to student achievement scores. Baughman (2000) found that students at each grade level score higher when there is increased use of the LMC and more open hours at the library. Koga and Harada (1989) investigated the attitudes of students in Australia, Japan, Korea and Thailand towards school libraries and found that students with a keen attitude toward learning tended to use the library more often and demonstrated better academic achievement. The LMS at Lakeside Elementary School, a Library Power elementary school in Chattanooga (Oberg, 1999), found a direct relationship between the number of times students had been in the library and the level of their test scores in reading comprehension and reference skills. A Library Research Service report (no. 149, 1998) showed that states with above average reading scores on the 1994 NAEP reading test have schools where students visit the school library media center more frequently and borrow more books and other materials.

Recent statewide studies support the link between amount of school library use and academic achievement. In Iowa (Rodney, et al, 2002), 8th graders tend to earn higher reading scores when the LMC is open longer hours before school, has more weekly hours of LMS staffing per student, and is used more. For 10th graders, there is a connection between academic achievement and number of visits to the library, especially the number of groups receiving information literacy instruction. In New Mexico, a positive correlation exists between 8th grade achievement and the number of weekly hours the school library is open.

Flexible Scheduling

Flexible scheduling appears to support more frequent library use by individual students. Fedora (1993) found that in a flexibly scheduled library media program, students have more frequent access individually and in small groups than in a fixed-schedule program, where nonscheduled use is rare. Van Deusen (1996b) reported that instances of the LMS providing individual assistance to students was higher in flexible than fixed schedule situations. Lance, Rodney and Hamilton-Pennell (2000b) found that middle schools with high test scores tend to have LMCs that report a higher number of individual visits to the LMC on a per-student basis.

The extent to which flexible scheduling occurs in library media centers varies by type of school and educational level. According to recent survey results (Michie and Chaney, 2000), 95 percent of public secondary school LMCs and 60 percent of public elementary school LMCs (70 percent total) report that they use flexible scheduling, although it is most often used in combination with regular scheduling as well. McCracken's (2001) random sample of 500 LMSs from across the United States indicates somewhat lower figures. She found that fixed scheduling is dominant at the elementary school level, at slightly more than 50%, while flexible (48%) and combination (48%) scheduling predominate in middle schools, and flexible scheduling in high schools (84%).

Mosqueda (1999) found that 75 percent of the LMCs of the reporting National Blue Ribbon Schools operated on a flexible schedule. Abdoler-Shroyer (1999) reported that in her population of Missouri's combined K-12 schools, 88 percent of the districts responding used the LMC for teacher released time at the elementary level, with 87 percent seeing students on a fixed schedule. At the high school level, 83 percent scheduled high school classes on a flexible basis.

Role of Library Media Specialist in Program Development

The role of the LMS in developing and providing access to the library media program has received a fair amount of attention in the research. Pembroke

(1997) found that, when school librarians provide reading guidance or a bibliography, reluctant fifth grade readers can be motivated. Other motivating factors included access to the library and books; an adequate collection of print and non-print materials; and an inviting environment. Martin (1996) found that as library services increased (including reference, information skills, curriculum integration, interlibrary loan, reading guidance, and technical assistance), third grade test scores also increased. She found a statistically significant relationship among all the library media center variables (collection size, expenditures for the collection, staffing, and services) and overall achievement in grades 3, 5, and 11, indicating that the whole is greater than the sum of its parts.

A Library Research Service study (no. 150, 1998) reported that students are likely to earn higher reading scores if there is a collection development policy for the school library media center. Lance, Hamilton-Pennell and Rodney (2000) also found that Alaska students' test scores tend to be higher when the LMC has a strong collection development policy.

K. G. Alexander's (1992) study of four exemplary media specialists found that they all provided continuous access to their media centers; assisted individual users; designed flexible circulation policies; used innovative methods to promote their media centers; and developed media center collections which supported all areas of the curriculum. Gehlken (1994) reported that in all three blue ribbon high schools studied, the LMS flexibly scheduled classes; organized and cataloged the collection; provided an inviting climate conducive to learning; assisted students in traditional and electronic methods of information access; and involved faculty in the selection of materials. The media centers in all three schools were organized, automated, easily accessible, and provided materials in a variety of formats across all levels and subject areas. The media center facilities were inviting, aesthetically pleasing, safe, and user-friendly.

Role of Technology in Student Academic Achievement

The role of technology in promoting student achievement has been the focus of several recent studies. In their review of educational technology

research, Sivin-Kachala, Bialo, and Langford (1997) concluded that using technology has a positive effect on student achievement, attitudes toward learning, and student self-concept. Silverstein, Frechtling and Miyaoka (2000) found that technology usage had a small but significant impact on Illinois students' achievement, particularly at the higher grade levels, specifically eleventh grade science. Paul, VanderZee, Rue and Swanson (1996) reported that using the Accelerated Reader technology-based literacy program had a positive affect on student academic performance and attendance rates, especially for socio-economically disadvantaged children in urban areas. Peters (1998), on the other hand, found no significant difference in reading achievement when students used the technology-based Electronic Bookshelf Program.

Wenglinsky (1998) found a positive correlation between computer use and academic achievement in mathematics, but only if computers were used to convey higher-order skills or engage in learning games. Use of computers for drill and practice, the lower-order skills, was negatively related to academic achievement for both fourth and eighth grade students. Significantly, disadvantaged groups had less access to those aspects of technology that positively affected educational outcomes. Page (1999) reported that the presence of classroom technology had a positive effect on the mathematics achievement of low socioeconomic elementary school students, although reading achievement remained inconclusive.

DeFrieze (1998) found that reading achievement appears to be more influenced than mathematics achievement by the use of computers, particularly in an unstructured environment. She speculates that in an unstructured environment teachers have more control over the programs each student accesses, which may be the key to influencing students' higher achievement in reading. A significant finding by Bohannon (1998) is that high frequency of school computer use results in students earning significantly higher mean scores on reading achievement tests. This is true for males and females, as well as high and low socioeconomic groups. She concludes that frequent use of computers requires more continuous reading practice, regardless of the activity.

There is perhaps no place where the library media specialist's role has changed more in the last ten years than in the integration of technology. Person (1993) reported that LMSs don't see a separate, organized technological media role for themselves, but see technology as a means to accomplish the goals and missions of the media center program as expounded in **Information Power** (1988). A Library Research Service report (no. 141, 1998) concluded that students earn higher reading scores if their school library media programs incorporate the latest information technology. Such technology includes a district-wide catalog, access to online databases, resources available through a local-area network, and access to the World Wide Web and the statewide library network. Lewanski (1998) showed a statistically-significant correlation between the use of computer-assisted library research and improvement in overall critical thinking skills. The control group, using a traditional paper-based process did not show such a relationship.

Lance, Rodney and Hamilton-Pennell (2000a) found that Pennsylvania students' test scores increase as LMSs spend more time managing information technology. Students also earn higher reading test scores in Pennsylvania, Colorado, and New Mexico (Lance, et al, 2000a; Lance, et al, 2000b; Lance, et al, 2003, respectively) where networked computers link school libraries with classrooms, labs and other instructional sites, enabling access to LMC resources, licensed databases and the Internet. Alaska students' test scores tend to be higher when the LMC is equipped to provide access to the Internet (Lance, Hamilton-Pennell and Rodney, 2000). Fourth grade reading scores tend to be higher for both Iowa and New Mexico elementary schools whose LMSs spend more weekly hours managing school computer networks (Rodney, et al, 2002; Lance, et al, 2003).

An Illinois study (Silverstein, Frechtling and Miyaoka, 2000) revealed that almost all Illinois schools are now connected to the Internet. McCracken (2000) found that 99% of high school LMCs, 95% of middle school LMCs, and 84% of elementary school LMCs had Internet access. Nevertheless, access to technology in school library media centers still varies widely. Powell's (1998) survey of 300 elementary and secondary school library media centers in Tennessee revealed a wide variability in technology access.

McCarthy (1997) found that less than 50 percent of the New England school library media centers in her sample had automated circulation and cataloging systems, and these were mostly in middle and high school libraries. McCracken's figures (2000) show that the percentage of LMCs with online catalogs ranged from 60% in elementary schools to 84% in high schools. She also reported that LMSs perceive that integrating technology into the LMP is more important than the extent to which they perceive they have actually implemented it into their practice.

High-achieving schools tend to have more technological resources. Baule (1997) found that schools with exemplary technology were also more likely to have high-quality school library media programs. Yetter (1994) observed that the library media centers in successful resource-based learning schools had modern, spacious facilities designed for flexible use and access to technology. Gehlken (1994) noted that all three blue ribbon schools studied had library media centers which were committed to increasing student access to technology, and which had the flexibility and electronic capabilities to accommodate the changing needs created by new technologies. Students identified the electronic catalog, computer printer workstations and copying machines as some of the most important services provided by the library media program.

In New Mexico (Lance, et al, 2003), achievement scores rise with the number of electronic reference sources relative to 4th grade students; the number of library computers that provide access to licensed databases at the 8th grade level; and the availability of library computers to 10th grade students. In Texas (Smith, 2001), the number of computers with modems and library software contribute to student achievement.

As Wenglinksy (1998) and DeFrieze (1998) demonstrated, it is not necessarily the amount of technology or computer use that counts in promoting student achievement, but <u>how</u> it is used. Many researchers (for example, McQuillan, 1996; Lance, Welborn and Hamilton-Pennell, 1993) have found no correlation between reading achievement and amount of computer software available. Technology must be integrated into the school library media program to influence academic achievement. An elementary school in California with a high Latino population (Ferguson, 2000) saw student achievement gains that were attributed to the technological upgrade

of the LMC. Reading scores rose 8% from the previous year after the school hired a professional LMS who refurbished the LMC's technological resources and added reading literacy programs such as Accelerated Reader and the S.T.A.R. Reading testing program.

Program Administration

The program administration role involves effective management of the human, financial and physical resources of the library media program. This role also provides leadership within the larger learning community. Adequate staffing, budget, and administrative support are key to the success of this role. When all these factors are maximized, research studies show a dramatic impact on student achievement.

Maximizing Predictors of Student Achievement

Lance, Rodney and Hamilton-Pennell (2000b) found that when all LMC predictors of students achievement (i.e., staffing, expenditures, information resources and technology) are maximized, Colorado reading test scores tend to run 18 percent higher in the fourth grade and 10 percent higher in the seventh grade. In Pennsylvania (Lance, Rodney and Hamilton-Pennell 2000a), reading test scores tend to run 10 to 15 points higher when LMC predictors (i.e., staffing expenditures, information resources and technology, and information literacy activities of library staff), are maximized. In Alaska elementary schools with well-developed library media programs, 86 percent of students scored proficient or above on state reading tests compared with 73 percent of students in schools with less well-developed media programs (Lance, Hamilton-Pennell and Rodney, 2000). When other conditions are taken into account, library media program development alone accounts for about 2.5 percent of the variation in Iowa reading scores for fourth and eighth graders (Rodney, et al, 2002).

In Oregon and New Mexico, Lance, Rodney, and Hamilton-Pennell (2001, 2003) concluded that whatever the level of a school's library program, incremental improvements in its staffing, collections, and budget yield incremental increases in reading scores (with a caveat from the New Mexico

study that increases in school library spending must not come at the expense of other school programs). The same finding held true in Iowa (Rodney, et al, 2002) for incremental improvements in staffing and collections. Lance, et al also found that test scores rose in Oregon when LMSs spent more time attending faculty meetings, meeting with library media staff at the district level, and meeting regularly with the principal.

Principal Support of the Library Media Program

Yetter (1994) found that schools that had successfully implemented resource-based learning had a common understanding and support from the principal, teaching faculty and library media specialist about the centrality of the library media program in the school's instructional process. These schools provided planning time for teachers and library media specialists to work collaboratively, clerical support for the LMS, flexible scheduling in the library media center, and principal support of the library media program. Likewise, Farwell (1998) determined that in schools with successful collaborative planning, the principal served as an advocate for collaborative planning and information literacy instruction, and provided financial support for the library media program, adequate clerical staff, and time during the school day for LMSs and classroom teachers to plan together.

Mosqueda (1999) concluded that the most important finding in her study of school library media programs in Florida blue ribbon schools was the overall favorable perception of principals and LMSs in regard to the leadership role they played in their schools. The reported strengths of the library media programs in these schools supported the research on what constitutes an exemplary program, including open access, administrative support, well-equipped facilities, technology integration, reading support, and good staffing. Gehlken (1994) reported that in all three blue ribbon high schools she studied, the principals actively supported and promoted the library media program. Standridge (1996) reported that student achievement in urban elementary schools was positively impacted by greater participation of the certified staff in school-based decision making, especially in the areas of goals, vision, mission, and curriculum and instruction.

There appears to be a two-way relationship between administrative support and LMSs performing the instructional role. In schools where there was fiscal and organizational support for the library media program, including automated systems and paid support staff, van Deusen (1996a) found that LMSs performed the instructional consultation role to a greater extent. Lumley (1994) concluded that instituting a curricularly integrated and flexibly scheduled library media program required leadership on the part of the library media specialist as well as principal support, resulting in strong leadership roles for the LMS in curriculum, instruction and staff development. Van Deusen (1996a) reports that the availability of support staff and automated library systems was positively related to LMSs' doing more consulting work with teachers and spending less time on nonprofessional tasks. McCracken (2000) found that the factors most frequently cited by LMSs as important to expanding their instructional role were support of the school administration and support of other teachers at the school.

Collaborative Activities of the Library Media Specialist

Lance, Rodney and Hamilton-Pennell (2000b) found that LMS involvement in collaborative activities has a direct impact on test scores. Higher levels of collaboration result from meeting with school administrators, serving on standards and curriculum committees, working with faculty at school-wide staff meetings, and meeting with library media staff at the building level. Data from Pennsylvania (Lance, Rodney and Hamilton-Pennell 2000a) reinforce the finding that test scores increase as LMSs spend more time serving on curriculum and standards committees. Hughes (1998) reports that LMSs who successfully participated in their schools' move to whole language became part of their school's leadership team, attended professional development workshops with teachers in the school, and spent more time pulling together curriculum-related resources in the library media center.

Effect of Library Media Center Staffing

Lance, Welborn and Hamilton-Pennell (1993) found that library media centers that have more endorsed staff tend to have staff who spend more time identifying materials for instructional units developed by teachers and more time collaborating with teachers in developing such units. They found that as the LMS's instructional role increases, the size of the library media center's staff and collection increases, which, in turn, is a direct predictor of student reading achievement. In Texas school libraries staffed by both a librarian and an aide, LMSs were more likely to do collaborative planning and teaching with teachers, provide staff development to teachers, facilitate information skills instruction, manage technology, communicate with school administrators, and provide reading incentive activities (Smith, 2001).

Martin (1996) also found a significant positive relationship between school library media center staffing and student achievement, especially in high school reading. Schools employing more media center staff had higher achievement test scores.

A Library Research Service study (no. 141, 1998) showed that student reading scores were higher in schools where there is a state-endorsed library media specialist and where the LMS is supported by an aide. This is unfortunately not yet the norm. Michie and Chaney (2000) report that as of 1997, public school libraries had an average of 0.9 professional staff (included non-certified professional staff) and 0.6 other paid employees, overall. Twenty-two percent of public schools lacked a full-time or part-time library media staff person who is state-certified. In Texas (Smith, 2001), nearly one-quarter of all schools do not have a librarian. Among the schools *with* librarians, over 10 percent more students meet the minimum Texas Assessment of Academic Skills (TAAS) expectations in reading. McCracken (2000) reported that the biggest barriers cited by LMSs to expanding their instructional role were lack of time and resources such as funding and support staff.

Studies in Alaska, Pennsylvania, Colorado, Massachusetts, Oregon, New Mexico, and Iowa (Lance, et al, 2000, 2000a, 2000b; Baughman, 2000; Lance, et al, 2001; Lance, et al, 2003; Rodney, et al, 2002, respectively)

attest to the value of full-time, endorsed media staff. In Alaska, at both elementary and secondary levels, the presence of a full-time librarian was a very strong predictor of average and above achievement. Regardless of the level of librarian staffing, however, the more LMS staff time was devoted to delivering library and information literacy instruction to students and providing in-service training to teachers, the higher the test scores.

Colorado reading scores increased with increases in LMS hours per 100 students (for seventh grade) and total staff hours per 100 students. Pennsylvania reading test scores increased with increases in LMS staff hours and support staff hours. In Massachusetts, at elementary and high school levels, students who were served by full-time LMSs had higher test scores than those in schools without full-time LMSs, and non-professional staff assistance also made a positive difference in average test scores. Oregon reading scores rose with increases in total staff (both professional and support) per 100 students. Across all school levels in Iowa, the one common predictor of reading scores was the level of LMS staffing. In New Mexico, achievement test scores rose with school librarian and total library staff hours per 100 students.

Library Media Specialist as Provider of In-Service Training

The involvement of a school library media specialist in technology-based staff training can support student achievement. Michie and Chaney (2000) report that in 1997, 43 percent of public school library media programs with access to the Internet arranged Internet training for teachers and 37 percent for administrators. In Colorado (Lance, Rodney and Hamilton-Pennell, 2000b), reading test scores increased with the amount of time LMSs spent as in-service trainers of other teachers. Alaska and Pennsylvania students' test scores tended to be higher when library staff spent time providing in-service training to teachers (Lance, Hamilton-Pennell and Rodney, 2000; Lance, Rodney and Hamilton-Pennell). Wenglinsky (1998) found that teacher's professional development in technology and the use of computers to teach higher-order skills were both positively related to academic achievement in mathematics and the social environment of the school.

Library Media Specialist Planning and Management Skills

School library media specialists in effective schools tend to have good planning, communication and management skills. Yetter (1994) observed that library media specialists in successful learning-based schools were expert in developing effective library media programs which were congruent with the state and national **Information Power** (1988) guidelines. The basic library procedures and processes in their library media programs functioned smoothly. A Library Research Service report (no. 150, 1998) indicated that students are likely to earn higher reading scores if there is a plan for the development of their school library media program. Gehlken (1994) reported that in all three blue ribbon high schools the LMSs took proactive steps to update students, teachers and administrators about new materials, technology, and services. Lumley (1994) concluded that instituting a curricularly integrated and flexibly scheduled library media program in an elementary school required LMS leadership in site-based staff development and good communication with staff and principal support.

Library Media Specialist Budgetary Role

A very important administrative role for the LMS is to obtain an adequate budget for the library media program. Angelo's (1994) study of Massachusetts school library media programs revealed that more than 90 percent were operating at the minimum level according to state standards in the areas of personnel, collection, and budget. Lancaster (1998) surveyed superintendents about their attitudes toward elementary LMSs. She reports that though there appears to be agreement on the importance of and role of the LMS, in concrete terms, they do not adequately fund or staff the program in many cases. Almost half of the superintendents spent less than two percent of their total budget on the LMC.

Lance, Welborn and Hamilton-Pennell (1993) found that students at Colorado schools with better funded library media centers tend to achieve higher average test scores, whether their schools and communities are rich or poor and whether adults in the community are well or poorly educated.

Bruning (1994) also reported a positive relationship between student achievement measures and the proportion of a school district's budget spent on library materials, for both high- and low-income districts. Studies in Colorado, Oregon, and New Mexico (Lance, et al, 2000b, 2001, 2003, respectively) found that student reading scores increased with increases in library media expenditures per student (as long as this spending did not come at the expense of other school programs). Baughman (2000) reported that in Massachusetts, at elementary and middle school levels, average test scores were higher in schools with larger per pupil expenditures for library materials.

These findings are particularly significant since studies seeking a relationship between school spending as a whole and student performance have shown mixed results. Krashen (1995) found that expenditures for education did not affect reading comprehension scores, while Powell and Steelman (1996) did find that school spending was positively linked to state SAT and ACT performance. A review of over 400 studies of student achievement by Hanushek (1997) demonstrated that there is not a strong or consistent relationship between student performance and school resources after variations in family input are taken into account. Hedges, et. al. (1994) in their meta-analysis of studies of differential school inputs on student outcomes, show that a positive relationship between resources and educational outcomes does exist and is significant enough to be of practical importance. While there is no clear mandate for increasing school spending in general to support student achievement, the research does show that increasing expenditures for school library media materials has a positive effect.

A World Bank meta-analysis of funding studies (Acevedo, 1997?), indicated that differences in aggregate education budgets do not appear to have a tight association with learning outcomes, although class instructional time, school library resources and textbooks, and class frequency of homework are inputs positively associated with improved test scores. Based on this analysis, the PARE program (Programa para Abatir el Rezago Educative) provided increased resources (including library resources) to Mexican schools. Data indicate that on average, PARE assistance had a significant positive effect on learning outcomes in Spanish. Acevedo concluded that

roughly doubling the school resources allocated per student overcame a 30% deficit in test scores among rural students.

Summary

The impact of school library media programs on academic achievement is well documented in the research literature. Studies demonstrate consistently that well-equipped, quality school library media centers that have professional staff involved in instruction contribute to the academic success of their students. Likewise, both higher order uses of technology and expenditures for library materials support student achievement. All three roles of the school library media specialist identified in **Information Power** (1998) lead to greater integration of the school library media program into the larger learning community and promote greater student achievement.

A GREAT FIND IN LESS TIME

After attending a problem solving session with our Director of Computing Resources, many teachers expressed concern that "good websites" need to be advertised so that teachers could find things beyond Altavista, google, and dogpile, to assist them in searching for professional information as well as information that might assist students. Our library/media department offered a workshop that provided a deeper look into the web [Access Michigan Databases]. We need more of this! In just a few hours, the media specialist was able to present a way for us to learn to look deeper for information, and we were able to find sites that would not inundate us with advertising! What a great find!

Rhona Gorosh, Teacher
Bemis Elementary School
Troy

Methodologies

Sample

In 2002, Michigan had more than 3,000 public schools meeting the criteria for this study. Of the 1,864 schools serving fourth grade, 278—14.9 percent—participated in this study. Of the 766 schools serving seventh grade, 201—26.2 percent—chose to be included. Of the 650 schools serving eleventh grade, 250—38.1 percent—participated in this study. (See Table 1.)

Throughout this study, the participants were treated as three distinct samples, one for each tested grade. Table 1 reports the number in the sample for each grade and its proportion of the universe of all schools serving that grade.

Table 1. Comparison of the Study Sample and the Universe of All Michigan Public Schools Serving Grades 4, 7 and 11, 2002

Grade	Number in sample	Number in Universe	Sample as percent of universe
4th	278	1,864	14.9%
7th	201	766	26.2%
11th	250	657	38.1%

Survey

The survey of school library programs used a six page questionnaire that focused on several sets of potential predictors of academic achievement. These included: library hours, library staff and their activities, technology, library usage, library resource collections, and finances.

Respondent Information

The questionnaire began with several items identifying the responding school—its name and address, grades served, and its school district—and the individual respondent—his/her name and title as well as telephone and fax numbers and e-mail address. All of this information was required to assess and address potential deficiencies in the initial response rate to the survey. The grades served were especially important as they made it possible to determine which tested grades a school included.

Service Hours

The second part of the questionnaire contained items concerning the school library's hours of operation—before, during, and after student use time in a typical school week and in a typical week during summer. There was also a question about flexible scheduling. It is expected that schools with higher test scores will be those with libraries that have longer hours at all times and that offer more hours for flexible scheduling.

School Library Staff

This part of the questionnaire contained items requesting the numbers of people and total person-hours worked by paid staff with different types of qualifications. Among the respondents to this survey, virtually all school librarians reported master's degrees, teacher certification, and library media endorsement. As noted earlier, one of the most consistent findings of research about the impact of school libraries is the value of staffing them with individuals who are professionally trained for the job. Another consistent finding in past research is the importance of having support staff who free professionals to do their job.

Paid Staff Activities

Perhaps the most fundamental question examined by this study was the value of staffing school libraries with trained individuals who engage in particular professional-level activities. The synergy of these activities proved to have considerable impact on test scores. While the original Colorado study found strong evidence for the importance of the library media specialist's instructional role, those findings were based on just two items—the number of hours library media staff spent identifying and providing materials for instructional units developed by teachers and planning instructional units with teachers. The Michigan questionnaire included a much more comprehensive list of staff activities. Additional activities on this list included, among others, hours per typical week staff spent: providing library/information literacy instruction to individuals or groups; providing in-service training to teachers and other staff; and teaching collaboratively with classroom teachers. The rationale for asking practitioners to parse their time so many ways was to obtain more specific insights about exactly what it is that library media specialists do that makes a difference in how students perform on achievement tests. Despite an absence of research at this level of detail, it seemed reasonable to expect that some activities would be more effective than others and that their effectiveness might vary by school level (elementary, middle, high school).

School Library Usage

The next part of the questionnaire solicited statistics about how often students and staff (i.e., administrators, teachers, others) interacted with school library staff for different purposes, including library/information literacy instruction. This section also included items for 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). Previous research and conventional wisdom indicate that school librarians who impact student performance are those who are most actively engaged with teachers and students alike, particularly more direct involvement in teaching and learning activities. Evidence from previous research also supports the assumption that students who read more—both for school purposes and voluntarily—do better on tests.

School Library Technology

A great deal of detailed information about library technology was collected by the next section of the questionnaire. Respondents were asked to identify numbers of school computers both in and under the jurisdiction of the school libraries and elsewhere in the school from which networked library resources may be accessed. Of those numbers, they were further asked to identify numbers of computers meeting various descriptions (e.g., with access to the library catalog, licensed databases, and the Internet).

School Library Collection

Despite the increasingly critical role played by school library staff in the instructional process, what most people think of first when the school library is mentioned is its collection. This section of the questionnaire solicits an inventory of the collection by format, including traditional print sources (e.g., books, magazine and newspaper subscriptions), non-print items (e.g., videos, software packages, and other audio-visual materials), and the rapidly growing "electronic" sector (e.g., CD-ROM, laser disk, and online database subscriptions). Traditionally, conventional wisdom dictated that the larger the collection, the better. As electronic sources of information proliferate and the value of up-to-the-minute information increases, this assumption becomes more questionable. Another wildcard related to this issue is the age of library collections. A larger collection is not necessarily a better one, if it consists increasingly of deteriorating volumes containing obsolete information.

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Annual Operating Expenditures

Although few school libraries have budgets that include personnel costs, many have budgets for print and non-print materials, electronic access to information, and miscellaneous operating expenses. This section of the questionnaire asked for the total spent in whole dollars.

GO FOR THE GOLD!

I used to think I would never get any more money so why bother to keep up? I decided to write for an LSTA grant to automate our 2 elementary, high school, and public libraries. We received $57,000.

Once I had the taste of successful grant writing, I tried other sources. We are a rural school with 750 students K-12. I am the only certified LMS in the district with an elementary aide. There are not a lot of extra funding sources but here are some ideas: the School Parents Club, the High School Student Council, retired teachers who will donate books (one lets me make a wish list at Amazon.com and sends me a box periodically), our Hillsdale County Community Foundation, local service clubs, a juice vending machine installed in the school (half of all profits go to the library), and a school store in the library, all profits go to the library

If I have a particular need, I try to find an organization to fund it. Last year I asked the Community Foundation for money to purchase new career and biography books. Most importantly, I have the attitude that I can improve my funding situation. I am not afraid to ask for money from agencies or organizations. The worst thing they can say is no, but usually they say yes. Since I have started this, there has been a dramatic increase in the circulation of the areas where new books were purchased.

Betty Spahr, Library Media Specialist
Pittsford Jr.-Sr. High
Pittsford

Available Data

This study depends on demographic data that, whenever possible, was obtained at the school or neighborhood level.

The Michigan Department of Education provided data on both the number and the percentage of students eligible to receive free or subsidized school lunches in each school. The percentage of the student body eligible to receive school lunch assistance was then used as a school-specific poverty variable.

Each school's enrollment, subdivided by ethnicity, was provided by the Michigan Department of Education. Categories included were Asian/Pacific Islander, Black, Hispanic, Native American, and White. Four of these variables, Native American, Asian/Pacific Islander, Black, and Hispanic were then combined to determine the minority percentage of the school population. The school minority percentages were used in regression analysis.

The educational attainment variable demonstrates the general level of education in the school's surrounding population. Educational attainment data was extracted from the United States Census Bureau Web site. The variable refers to the percentage of people age 25 and over with a high school diploma or equivalency or higher.

Total school expenditure data on a district level were also provided by the Michigan Department of Education. The per student expenditure amount was then accorded to each school within that district. Total school budget and per student expenditures were the only factors considered. There were no program breakdowns in such areas as Talented and Gifted or Vocational.

This study also took into consideration one key teacher characteristic, the average teacher salary by district. These figures were also provided by the Michigan Department of Education.

The test scores used as indicators of fourth and seventh grade students' academic achievement in this study are 2001 scores on the Reading portion of the standards-based Michigan Educational Assessment Program (MEAP).

The standards-based results are reported by performance level, with proficiency settings determined by Michigan educators against state content standards. Achievement indicators for eleventh grade students were drawn from the reading portion of the 2001 MEAP High School Test.

Statistical Significance

Statistical significance is an often-misunderstood concept. Usually, when a statistical finding is reported, the first question someone asks is "Is that figure significant?" In this context, the intuitive response is to question the magnitude or size of the figure or the difference between two figures. There are no statistical tests to determine if a difference between two groups is "big enough," particularly if the groups in question represent an entire universe of subjects rather than a sample.

Statistical significance is about reliability or consistency. When a sample is studied, instead of the entire universe (in this case, school libraries in Michigan public schools), a pertinent question is "Are these results truly representative of the universe, or would different samples yield dramatically different results?"

Throughout later sections of this report, statistical significance is reported as "p," as in "probability." Three common milestones for statistical significance are reported: "$p < .05$," "$p < .01$," and "$p < .001$." Respectively, these designations indicate that the probability of reported results being an accident or a coincidence is less than one in 20, one in 100, or one in 1,000. Conversely, these figures may be interpreted to indicate 95, 99, or 99.9 percent certainty that the results are representative.

Generally, the levels of statistical significance reported represent two-tailed tests—ones indicating the probability that the reported results might be either exaggerated or suppressed. In some cases, however, significance levels are based on one-tailed tests—ones indicating only the likelihood that results reported may be exaggerated.

Throughout this study, statistical significance is most often reported in association with Pearson product-moment correlation coefficients in bivariate correlation analyses.

Bivariate Correlation

In this study, bivariate correlation analysis served two purposes: 1) informing decisions about eliminating or combining variables, and 2) assessing the direction and strength of the relationship between two variables, such as the ratio of library media specialist staff hours to students and reading test scores.

Pearson's correlation coefficient (r) indicates the extent to which two variables change together on a scale of −1.00 to zero 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. For each report of this statistic, there is a corresponding indication of its statistical significance. (See earlier discussion about interpreting statistical significance.) In addition to assessing the direction and strength of relationships, Pearson's r helped to determine if any data elements were so strongly associated as to be either unnecessary or problematic if used together. In some cases, this statistic provided the basis for decisions to combine variables. Such data reduction was deemed desirable as it focused and simplified the model to be tested.

The significance of a bivariate correlation may be tested on a one- or two-tailed basis. Two-tailed significance testing assumes that the direction of the presumed relationship is unknown, thus one wishes to assess the possibility of error in either direction. One-tailed significance testing assumes that the direction of the presumed relationship is known, making it necessary to assess the possibility of error in only one direction. Because previous research consistently indicates that the effects on academic achievement of the library media variables under study are positive, some relationships significant on a one-tailed basis, but narrowly not on a two-tailed basis, will be reported.

Comparison of Means and t Test

A t test is a common statistical technique for comparing two groups. It assesses the significance of the difference between the means (or averages) of the two groups. Accordingly, this test is appropriate when one variable is categorical and the other continuous. The key categorical variable in this study is whether or not the school has a librarian. The key continuous variable is test scores. The issues a comparison of means test like the t test can answer include the difference in test scores associated with the presence or absence of a librarian and the statistical significance of that difference.

Because this test makes assumptions about normality of distributions and equality of variances between the two groups in question, a necessary related technique is Levene's test for equality of variances. In assessing whether the difference between two group means is statistically significant, both the extent to which each group's values on a given statistic are normally distributed and the extent to which each set of averaged data are spread out around their mean is a factor.

The issue of the normality of each group's distribution is a moot one. While tests of significance generally assume normal distributions, Monte Carlo studies indicate that this assumption is not critical unless sample size is very small. An accepted rule of thumb is that if your sample size is at least 50, serious biases are unlikely, and if sample size exceeds 100, there is little reason to be concerned about normality assumptions. The sample and sub-groups for this project easily meet these criteria.

The t test procedure deals with the equality of variance issue by producing two sets of results—one assuming and one not assuming equality of variances. Based on the results produced by Levene's test, the appropriate set of t test results was used in each specific analysis.

Multiple Regression Analysis

Multiple regression was used to weigh the effects of library media variables relative to school and community variables as predictors of academic achievement. This technique is especially useful in assessing complex relationships among several potential predictors, because it weighs the importance of each predictor variable while ruling out the effects of the others.

This application of multiple regression techniques is a path analysis because both research and practice suggest a certain cause-and-effect order among the variables. In this model, community variables precede school variables, and school variables precede library media variables. All three sets of predictors precede—and may affect directly and/or indirectly—academic achievement. Multiple regression is used to assess the strength and direction of each separate path from variable to variable. These relationships are reported as path coefficients (i.e., betas or standardized regression coefficients).

Correlation and factor analyses of the original data elements helped to refine the model. They provided the basis for decisions to eliminate redundant variables and combine those that were so closely related as to produce statistical "static." In a path analysis via multiple regression, such "noise" complicates a model unnecessarily and suppresses the effects of other predictors statistically.

It is very important to note that this type of analysis makes two kinds of assumptions. It assumes causal order. The presumed cause-and-effect order in this model is suggested by previous research and practical experience. It is intuitively obvious that the status of library media centers may depend on more general school circumstances, just as they, in turn, may be driven by community conditions. It is equally apparent, however, that each of these sets of variables may affect academic achievement either directly or indirectly via some other variable not represented in this model.

An assumption of causal closure supposes that no critical variables are omitted from the model. This assumption is addressed as fully as was practically possible by this study. Without apology, its focus is on assessing the impact of

school library media centers on academic achievement. The community and school variables included represent major antecedent conditions that might explain away that impact. For instance, the possibility that a correlation between the level of library media (LM) staffing and test scores might be a spurious result of generally high levels of staffing in a school was addressed by including the teacher-pupil ratio. Similarly, the possibility that a correlation between time spent by LM staff on library/information literacy instruction and test scores might be a spurious result of community affluence or socio-economic advantages was addressed by considering several alternative measures of those variables. Likely predictors of academic achievement for which data are not available include parental involvement in a student's education, extra-curricular activities of students, characteristics of school curricula, and pedagogical techniques of teachers. Nonetheless, no relationships between such likely predictors and the level of development of LM programs are anticipated.

Because the original number of variables was large, it is assumed that an acceptable degree of causal closure was established. Nonetheless, Multiple R Square (R^2) is taken as a sufficient statistical indicator of the extent to which the model may not be causally closed. This statistic indicates the percentage of variation in test scores which is explained by a given group of predictors.

Separate analyses were conducted for elementary, middle, and high school levels. In each case, multiple regression was used to generate initial path coefficients. Variables whose path coefficients were less than .10 and which were not statistically significant at at least the .05 level (generally accepted standards) were automatically eliminated from the analysis.

SCHOOL LIBRARIAN, SCHOOL DYNAMO

When I was hired 6 years ago, the media center was not used very much. Very little research took place. I have worked hard to change that. Now we not only have book exchanges with every language arts class, but author talks, book talks and genre activities at the same time to get students excited about checking out books. On the research front, I collaborate with teachers in the planning of research projects using the BIG6 as the guide for doing the projects. Each year, more teachers are collaborating with me and new projects are added to the curriculum, making us the dynamic place we should be.

Beverley Rannow, Library Media Specialist
Otsego Middle School
Otsego

DON'T STAND IN A SCHOOL LIBRARIAN'S WAY!

I inherited a middle school library that never had a certified librarian and operated with minimal financial support. I had three goals when I started: get rid of the junk, get better funding, and automate. The average age of my collection was 1965 when I started in 1997. My science collection was from the 1930s and '40s and bookworms and mold contaminated my fiction collection. I weeded over 2000 books my first year.

The second year we implemented Accelerated Reader, placing a great demand on my fiction collection. The third year I learned that the average school spent $7.35 per student for library books. I discovered we spent $1.50 per student in the elementary; $2.50 in the Middle School; and $6.35 in our high school for library books. I submitted a proposal to our School Board suggesting they create a district line item designating $8.00 per student per building for just books for our libraries. This would prevent building principals from robbing library budgets to purchase school supplies for classrooms. To my amazement, the Board approved the proposal.

The influx of new and exciting titles, along with the promotion of Accelerated Reading, caused my circulation to increase from 200 to over 700 books per week. Unfortunately, I was managing all this manually with check out cards and a rubber date stamp. I only had a part time aide and found myself overwhelmed by the demands of students and teachers who suddenly discovered there was a reason to use our library - it finally had material in it worth using!!

Our local Parent-Teacher Organization donated $7000 towards automating my Middle School library. An additional $2800 came from our local Foundation and I raised the rest through Book Fairs and a Silent Auction.

After 32 years in public education I should probably retire and let the younger generation take the reins. However, I want to enjoy the fruits of my labor. Nothing brings me greater joy than to have a student introduce me to their parents as their "library teacher". There should always be a smile waiting for a child in the library.

Jean Schluckebier
Marshall Greene Middle School
Birch Run

Findings

Using the combination of statistical techniques described above, both direct and indirect relationships between school libraries and academic achievement were explored. The findings concerning both types of relationships are presented by school level. Then, the impact of school libraries on academic achievement is examined more closely, taking into account other school and community conditions that make up the often complex environment in which Michigan's school libraries operate.

Elementary School Level

Several aspects of elementary school library programs are associated with higher MEAP reading test scores for Michigan fourth graders. Highly qualified school librarians (i.e., those with master's degrees, teacher certification, and library endorsement) play a critical role in setting the stage for academic achievement. They develop traditional print and non-print collections as well as online information resources, encourage teachers to integrate such resources into teaching and learning activities, and facilitate access to information resources for everyone involved in the educational enterprise. Last but not least, because they are master teachers, they teach students and teachers alike.

Further examination of the contributions of Michigan elementary school libraries, taking into account other school and community conditions, indicates that they do, in fact, make a measurable, positive, and statistically significant contribution that cannot be explained away by other conditions for which data are available.

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Elementary School Library Programs and Academic Achievement

Fourth grade reading scores tend to be higher for Michigan elementary schools whose school libraries report:

- higher numbers and weekly hours of total library staff and librarians in particular;
- being open more hours per week;
- library staff spending more time on motivating readers, developing collections, meeting with other librarians, teaching information literacy skills, and planning with teachers;
- larger collections of print volumes and video materials and, to a lesser extent, audio materials and software packages;
- more availability of computers—both in the library and throughout the school—that provide links to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web;
- more group visits, more individual and group visits for information literacy instruction, and higher circulation per week; and
- spending more on library operations; (See Table 2.)

WE WANT THEM TO READ. PERIOD.

Every year, South Meadows Elementary in Chelsea does March is Reading Month *in a big way. We have challenged the students to meet goals of hours read, and every year since we started in 1998 they have exceeded the goal . As a carrot, the principal has jumped into jello, been dragon-slimed, and last year she ate a bug (ugh!), videotaped and projected on a screen so all the students could watch. This year we have not set a goal, per se. Our theme is "Birds", and for every hour students read their class will get a feather from a bed pillow. At the end of March we will open the bags of feathers in front of fans directed at the students. The more the kids read, the more feathers we have. Most of the kids want a virtual "blizzard" of feathers, so the motivation is in their hands. We also are counting successful Accelerated Reader quizzes.*

The verdict isn't in yet, but so far the results have been terrific. Several students are staying in at recess and reading and taking quizzes. Because we only have 7 computers in the Media Center, most of the time is spent reading books of their choice, not necessarily AR books. Which is exactly what we want to happen!

We do not want them to only read AR books and take quizzes. We want them to READ. Period. If they don't have a computer to use for a quiz, and just want to read, that is fine. A lot of kids read together, which is great. I don't limit the level of books they read. If a 5th grader wants to read a 1st level AR book, they had better pass the quiz! .....most of the time is spent reading books of their choice, not necessarily AR books. Which is exactly what we want to happen. Kids are reading!

Barbara Locks, Library Media Specialist
South Meadows Elementary
Chelsea

Table 2. Direct School Library Predictors of Reading Scores: Michigan, Grade 4, 2002

Variable	Correlation with 4th grade reading scores
School library staffing	
School librarians	
▪ Number	.401**
▪ Hours per week	.350**
Total school library staff	
▪ Number	.342**
▪ Hours per week	.298**
School library hours open	
▪ Total hours	.257**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.153*
▪ Teach information skills (without teachers)	.192**
Information access & delivery	
▪ Develop library collections	.216**
▪ Provide reading motivation activities for students	.229**
Program administration	
▪ Meet with other librarians in district	.198**
Information resources & technology	
▪ Print volumes	.491**
▪ Audio materials	.215**
▪ Video materials	.417**
▪ Software packages	.147*
Library computers	.258**
▪ library catalog	.303**
▪ licensed databases	.293**
▪ Access Michigan link	.320**
▪ Internet/World Wide Web	.280**
School computers	.182**
▪ library catalog	.209**
▪ licensed databases	.278**
▪ Access Michigan link	.233**
▪ Internet/World Wide Web	.225**

Direct School Library Predictors of Reading Scores: Michigan, Grade 4, 2002--continued

Library visits & circulation per typical week	
▪ Group visits	.201**
▪ Individual visits for information literacy instruction	.134*
▪ Group visits for information literacy instruction	.262**
▪ Circulation	.203**
School library expenditures	.282**

* p < .05, ** p < .01

Elementary School Librarians

A critical asset to any elementary school is a school librarian. The extent to which professional librarians are present in Michigan elementary schools impacts their hours of operation, funding, and involvement in promoting academic achievement. (See Table 3.)

- In Michigan elementary schools with more librarians working more hours per week, the library is likely to be open longer, especially before and after school. In addition, hours available for flexible access/scheduling are likely to be greater where there is a librarian.
- As school librarian hours increase, so do staff hours spent teaching information literacy skills to students, planning and delivering instruction with classroom teachers, and, in some cases, even providing in-service training to teachers.
- When librarians in Michigan's elementary schools work more hours, they spend more time helping teachers and students access information. They are more likely to spend time supporting computer networks, developing collections, identifying relevant and useful materials for teachers, and motivating students to read.
- Increases in librarian hours are associated with increases in their hours spent administering library programs. They spend more time meeting with other librarians, attending faculty meetings, serving on school committees (e.g., standards, curriculum), and, in the best cases, meeting regularly with the principal.
- Elementary school libraries staffed more hours by trained librarians tend to be better funded.

Table 3. School Librarian Staffing Predictors of School Library Hours, Operating Expenditures, and Staff Activities: Elementary Schools, Michigan, 2002

Variable	Correlation with school librarian	
	Number	Hours
School library hours open		
▪ Total hours	.344**	.358**
▪ Hours open before school	.156*	.164**
▪ Hours open after school		.168**
▪ Hours available for flexible scheduling	.287**	.247**
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers	.242**	.366**
▪ Teach with teachers	.255**	.346**
▪ Teach information skills (without teachers)	.348**	.440**
▪ Provide in-service training to teachers		.121*
Information access & delivery		
▪ Develop library collections	.183**	.208**
▪ Support school computer network	.266**	.313**
▪ Identify materials for teachers		.200**
▪ Provide reading motivation activities for students	.192**	.221**
Program administration		
▪ Meet with other librarians in district	.352**	.348**
▪ Meet with principal		.120*
▪ Attend faculty meetings	.291**	.360**
▪ Serve on school committees	.276**	.305**
School library expenditures	.403**	.392**

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

Elementary School Library Funding

Michigan elementary schools that spend more on library programs are likely to be better staffed and to have libraries that are open longer hours. They also tend to be run by professional librarians who are more engaged in teaching and learning, information access and delivery, and program administration activities. (See Table 4.) Library spending increases with the

- number and weekly hours of librarian and total library staffing;

- school library's hours of operation—especially before and after school and during the summer, and for flexible access/scheduling;
- time spent by library staff planning with teachers and teaching with them and independently;
- time spent by library staff developing collections, identifying relevant and useful materials in those collections for teachers, and motivating students to read; and
- time spent by library staff serving on key school committees, attending faculty meetings, and meeting with other librarians.

DIANE SAWYER AND TOM BROKAW, WATCH OUT!

The clock is edging toward 9:05 am and the Media Specialist is counting down with a hand signal denoting THREE, TWO, ONE. With the last finger, 5th grade students swing into action to provide the building with the daily news. One student is operating the live broadcast cart. Another is cueing the media center laptop with large print cue cards for the anchor to read. The anchor shares the highlights of the school and moves the mike to yet another student, the weatherman for the week. Another student shares a guest announcement, a thank-you for participation in the school's toy drive. Inside five minutes the news is complete. The students then debrief with the Media Specialist on how to make the news better. Suggestions are made to purchase PZM mikes, so that the crew will look more like the ones on TV. A different 5th grade news team will start next month.

Becky Krugler, Media Specialist
Pierce Elementary School
Birmingham

Table 4. School Library Staffing and Staff Activities Predictors of School Library Operating Expenditures: Elementary Schools, Michigan, 2002

Variable	Correlation with school library operating expenditures
School library staffing	
School librarians	
▪ Number	.403**
▪ Hours per week	.392**
Total school library staff	
▪ Number	.484**
▪ Hours per week	.536**
School library hours open	
▪ Total hours	.364**
▪ Hours open before school	.137*
▪ Hours open after school	.336**
▪ Hours available for flexible access/scheduling	.314**
▪ Hours open during summer	.381**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.223**
▪ Teach with teachers	.333**
▪ Teach information skills (without teachers)	.292**
Information access & delivery	
▪ Develop library collections	.314**
▪ Identify materials for teachers	.195**
▪ Provide reading motivation activities for students	.285**
Program administration	
▪ Meet with other librarians in district	.267**
▪ Attend faculty meetings	.301**
▪ Serve on school committees	.337**

* $p < .05$, ** $p < .01$

Print Collections in Elementary School Libraries

Despite the growing importance of information technology, the number of print volumes in school library collections remains the strongest library predictor of test scores at the elementary school level. Michigan elementary school libraries tend to have larger print collections where libraries are better

staffed and funded, when libraries are open longer hours, and when staff spend more time in teacher and learning, information access and delivery, and program administration activities. (See Table 5.)

- Reflecting the staff-intensive nature of collection development, print collections are likely to be larger where there are more trained librarians working longer hours to select and organize those materials and where the total library staff is larger, ensuring that handling of the collection (i.e., checking out items to students, delivering them to administrators and faculty, reshelving them) is expeditious.
- When Michigan elementary school libraries are open longer hours and offer more hours for flexible access/scheduling, print materials are more integrated into the school's curriculum, increasing demand for them.
- Larger print collections are likely to result from larger staff investments of time to develop collections as well as increased demands for print information from motivated readers and from savvy students and teachers who use school computer networks to access print as well as electronic information.
- Print collections also tend to grow as strong library program administrators persuade their teacher colleagues on school committees and at faculty meetings to incorporate use of primary source materials in their teaching styles. In their meetings with each other, many elementary school librarians find encouragement and reinforcement in their pursuit of this strategy.
- The overwhelming majority of trackable school library expenditures are for materials and specifically print volumes. Thus, it is no surprise that better funded school libraries tend to have more print volumes.

OF COURSE THEY CAN FLY!

Our second graders are researching different aspects of reindeer. Can they fly? Where do they live? What is their fur like? This ties directly into their science classes. The teachers and I plan for this unit ahead of time, including the science outcomes. I also teach the problem solving process, so that the students learn the process as well as the information. The kids love learning about reindeer, and ask if they can come back to do more research! Third grade is doing research as well, but deciding what animal might be a good replacement for Santa's reindeer. They will all write a letter to Santa explaining why (or why not) their animal would be a good choice to pull the sleigh.

Planning with the art teacher begins before this. The animal the students research also becomes a project they create in art class. The finished projects are displayed in the hallway. This project would not work without all of the library's resources.

Ric Blank, Library Media Specialist
Sandy Hill Elementary
Jenison

Table 5. School Library Predictors of Print Volumes in School Library Collections: Elementary Schools, Michigan, 2002

Variable	Correlation with print volumes
School library staffing	
School librarians	
▪ Number	.454**
▪ Hours per week	.460**
Total school library staff	
▪ Number	.585**
▪ Hours per week	.640**
School library hours open	
▪ Total hours	.433**
▪ Hours open before school	.271**
▪ Hours open after school	.323**
▪ Hours available for flexible scheduling	.362**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.324**
▪ Teach with teachers	.250**
▪ Teach information skills (without teachers)	.369**
Information access & delivery	
▪ Develop library collections	.387**
▪ Support school computer network	.324**
▪ Identify materials for teachers	.178**
▪ Provide reading motivation activities for students	.331**
Program administration	
▪ Meet with other librarians in district	.344**
▪ Attend faculty meetings	.140*
▪ Serve on school committees	.251**
School library expenditures	.548**

* $p < .05$, ** $p < .01$

Technology and Elementary School Libraries

Information technology has transformed the roles of school librarians and libraries. Library programs in Michigan elementary schools are no longer limited to the spaces occupied by libraries. Through computer networks, library programs now permeate the school building, reaching into every

classroom, lab, and office. Like traditional library collections, the technology that provides access to library catalogs and databases, especially Access Michigan, as well as the Internet and the World Wide Web tends to be more prominent where library programs are well staffed and funded, where libraries are open longer, and where school librarians are more active school leaders. (See Table 6.)

- Successful library programs rely on professional librarians who are qualified to help students and teachers get the most—and the best—out of the information available via networked computers, whether those access points are in the library or elsewhere in the school.
- Where technology is more fully integrated into a Michigan elementary school's library program, the demand for more hours of library service seems to follow. Though most computerized resources are usually available from anyplace in the school, students and teachers requiring professional assistance are likely to go to the school library when seeking out the librarian's expertise.
- Of all librarian activities, planning with teachers is most strongly linked with the presence of greater computer resources in libraries and elsewhere in the state's elementary schools. Once teachers experience the boost to their own productivity resulting from collaboration with the school librarian, they also see the advantages of using the school's computer network to facilitate that collaboration. Cooperative planning can be eased by e-mail communication and development of web pages.
- Increasingly, student learning—whether from classroom teachers, librarians, or both working together—relies on a hands-on experience with information technology. Thus, there is a link between the time librarians spend teaching both individually and cooperatively and the size of school computer networks.
- To have such networks, staff time must be spent building and maintaining them. So, librarians who spend more time on information access and delivery activities are likely to be involved with larger networks.
- The links between the size of school networks and the time librarians spend on program administration activities are the weakest ones. But, they reflect the fact that some Michigan school librarians have learned that they must have the political support of elementary school principals and teachers to help students make the most effective use of information technology.

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

- More and more often, school library budgets must be stretched to cover the costs of licensed databases as well as traditional materials, so it is no surprise that schools that spend more on their libraries tend to have more access points for the wealth of resources they offer.

Table 6. School Library Predictors of Library and School Computers: Elementary Schools, Michigan, 2002

Variable	Correlation with computers in Library	School
School library staffing		
School librarians		
▪ Number	.305**	.248**
▪ Hours per week	.372**	.295**
Total school library staff		
▪ Number	.321**	.217**
▪ Hours per week	.471**.	.369**
School library hours open		
▪ Total hours	.251**	.240**
▪ Hours open before school	.242**	.171**
▪ Hours open after school	.160**	.257**
▪ Hours available for flexible access/scheduling	.254**	.292**
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers	.191**	.415**
▪ Teach with teachers	.239**	.237**
▪ Teach information skills (without teachers)	.303**	.266**
▪ Provide in-service training to teachers	.206**	.125*
Information access & delivery		
▪ Develop library collections	.145*	.218**
▪ Support school computer network	.443**	.253**
▪ Identify materials for teachers	.160**	.134*
▪ Provide reading motivation activities for students	.204**	.264**
Program administration		
▪ Meet with other librarians in district	.279**	.157*
▪ Meet with principal		.175**
▪ Attend faculty meetings	.192**	.139*
▪ Serve on school committees	.119*	.231**
School library expenditures	.143*	.280**

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Elementary School Library Visits & Circulation

In Michigan elementary schools, test score increases are associated with group visits, individual and group visits for information literacy instruction, and circulation. (See Table 7.) These outputs tend to rise with:

- the numbers and hours of school librarians and total library staff;
- the school library's hours of operation—before and after school, in summer, and for flexible scheduling;
- library staff activities associated with teaching and learning, information access and delivery, and program administration;
- information resources (print and non-print formats) and technology; and
- school library funding.

Table 7. Library Predictors of Library Visits & Circulation Per Typical Week: Elementary Schools, Michigan, 2002.

Variable	Correlation with weekly			
	Group visits	Individual IL visits	Group IL visits	Circulation
School library staffing				
School librarians				
▪ Number	.370**	.215**	.362**	.287**
▪ Hours per week	.407**	.223**	.410**	.274**
Total school library staff				
▪ Number	.380**	.290**	.375**	.397**
▪ Hours per week	.548**	.322**	.460**	.470**
School library hours open				
▪ Total hours	.337**	.176**	.292**	.225**
▪ Hours before school	.162**	.153*	.280**	
▪ Hours after school	.206**	.116**	.304**	
▪ Hours available for flexible scheduling	.264**	.291**	.280	.143*
▪ Hours in summer		.121*		
Library staff activities (hours per week)				
Teaching & Learning				
▪ Planning with teachers	.243**	.276**	.233**	.232**
▪ Teaching with teachers	.233**	.200**	.200**	.191**
▪ Teaching IL skills to students	.254**	.232**	.475**	.280**
▪ Providing in-service to teachers	.196**	.213		

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

Library Predictors of Library Visits & Circulation Per Typical Week: Elementary Schools, Michigan, 2002—continued.

Variable	Correlation with weekly			
	Group visits	Individual IL visits	Group IL visits	Circulation
Information access & delivery				
▪ Identifying materials for teachers	.236**	.125*	.141*	.280**
▪ Motivating readers	.297**	.181**	.238**	.282**
▪ Developing collections	.270**	.279**	.210**	.180**
▪ Supporting computer network	.330**	.179**	.293**	..141*
Program administration				
▪ Meeting with other librarians	.274**	.213**	.159**	.193**
▪ Meeting with principal	.132*	.252**		
▪ Attending faculty meetings	.218**	.291**	.262**	.120*
▪ Serving on committees	.231**	.328**	.190**	
Information resources & technology				
▪ Print volumes	.416**	.223**	.411**	.838**
▪ Reference works on CD-ROM	.119*		.223**	
▪ Magazine subscriptions	.284**	.220**	.214**	.119**
▪ Audio materials	.228**	.159**	.202**	.189**
▪ Video materials	.384**	.161**	.331**	.245**
▪ Software packages	.145**	.150*	.207**	
▪ Library computers	.327**	.154*	.270**	.173**
▪ School computers	.195**	.208**	.344**	.144*
School library expenditures	.351**		.268**	.329**

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

Elementary School Library Spending, Other Predictors, and Achievement

Correlation analysis indicates that the degree to which highly qualified school librarians are present is a significant positive predictor of academic achievement. But, at the elementary school level, school librarians are a largely all or nothing proposition. The schools that responded to a survey of school libraries are split almost 50-50—slightly less than half without school librarians and slightly more than half with them. (See Table 8.)

Table 8. Number of School Librarians with Master's Degrees, Teacher Certification, and Librarian Endorsement in Michigan Elementary Schools, 2002.

Number of school librarians	Number	Percent
0	128	46.7%
1	145	52.9%
2	1	0.4%
Total	274	100.0%

These circumstances suggest a comparison of average test scores for elementary schools with and without librarians. In Michigan elementary schools with highly qualified school librarians an average of 66 percent of fourth graders earn satisfactory test scores, while in schools without librarians, an average of 49 percent earn satisfactory scores. That is a positive difference of 35 percent associated with the presence of a school librarian ($t=-7.148$, $p< .001$).

Of course, elementary schools with librarians may also have many other conditions going for them that schools without librarians also lack. Conditions that may promote higher test scores might include having more prosperous and better educated communities, smaller disadvantaged populations, higher per pupil school spending, better teacher-pupil ratios, and—of course—larger school library budgets.

To take into account all of these conditions, a regression analysis was conducted, including only schools that reported having school librarians, but using the ratio of total library staff hours per 100 students to maximize the potential for variation.

School library spending per student alone explains 1.5 percent of the variation in test scores. The poverty indicator, the percentage of students eligible for the National School Lunch Program, is the strongest predictor at 60.5 percent, followed by per pupil school spending at 2.0 percent. The poorer a community, the lower its fourth graders score on the MEAP reading test. Conversely, the more schools spend per student, both generally and specifically on their libraries, the higher the fourth grade test scores. Other variables considered—the percentage of students belonging to selected minority groups, the percent of the community's adult population who

graduated from high school, and the teacher-pupil ratio—explained no additional test score differences. Notably, the total library staffing ratio was also excluded. This may be attributable to the fact that, of schools reporting some librarian staffing, 19.9 percent report one library staff member and 63.7 percent report two library staff members. In these circumstances, it is not very surprising that the more variable library spending ratio was a superior predictor of test scores. (See Table 9.)

Table 9. Regression Analysis Results Identifying Predictors of Fourth Grade MEAP Reading Scores, 2002

Variable added	R	R Square	R Square Change	Beta Coefficient	t	Significance
% eligible for NSLP (poverty)	.778	.605	.605	-.711	-12.471	.000
Per pupil school expenditures	.791	.625	.020	.171	3.004	.003
School library expenditures per student	.800	.640	.015	.128	2.311	.022

Excluded variables: percent minority students, percent of adults high school graduates, total library staff hours per 100 students, print volumes per student, and teacher-pupil ratio.

Middle School Level

MEAP reading test scores for Michigan seventh graders tend to improve with many specific features of middle school library programs. Qualified school librarians, in particular, are catalysts for improved student performance toward academic standards. They select traditional print and non-print collections as well as online information resources to support the curriculum, encourage teachers and students to rely more on such resources, and provide access to information resources for everyone in the school. And, like their elementary school counterparts, they are master teachers who teach students and teachers alike.

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Even when other school and community conditions are taken into account, middle school librarians have a measurable, positive, and statistically significant impact on student test performance that cannot be explained away by other conditions.

Middle School Library Programs and Academic Achievement

For Michigan middle schools, seventh grade reading scores rise as school libraries report:

- higher numbers and weekly hours of librarian and total library staff;
- offering more weekly hours for flexible access/scheduling;
- librarians spending more time planning and teaching cooperatively with classroom teachers, and providing in-service training to teachers;
- larger collections of print volumes and video materials;
- access to more library and school computers that connect to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web;
- more frequent individual and group visits to the library; and
- spending more on library operations;. (See Table 10.)

A DIFFERENT POINT OF VIEW

Our library, as in many schools, has served the last several years as an overflow classroom. This has meant that several hours of every day, we have several groups of students working with an instructional assistant on assignments. We found ourselves in conflict with one young man on what seemed like a daily basis. He was often so loud that he was disturbing other classes, was disrespectful to other students and teachers who were using the library or was racing around through the bookshelves. Although we try to start each day anew with each student, we seemed to be spending most of our time reprimanding this particular boy and he was not finding the library a very pleasant place.

Then we premiered our new graphic novel collection. We had written a grant and were very excited to be able to spend some money on a collection that we thought would attract our reluctant readers. To publicize the new collection, we ran a "Create a Hero Contest." One of the art teachers gleefully offered the contest as an extra credit assignment for her classes. Our challenging young man turned out to be an exceptional artist and his entry won one of the top prizes. Awarding him that prize and discovering that he not only loved to draw but also loved graphic novels made an enormous difference. He has gone from resistant and troublesome to friendly. He initiates many conversations on the books he is reading or the characters he is drawing. We have found a connection through the graphic novels and he is discovering that libraries are pretty cool places after all.

Lynn Rutan, Librarian
Macatawa Bay School
Holland

Table 10. Direct Library Predictors of Reading Scores: Michigan, Grade 7, 2002

Variable	Correlation with 7th grade scores
School library staffing	
School librarians	
▪ Number	.344**
▪ Hours per week	.341**
Total school library staff	
▪ Number	.324**
▪ Hours per week	.333**
School library hours open	
▪ Hours available for flexible access/scheduling	.368**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.158*
▪ Teach with teachers	.170*
▪ Provide in-service training to teachers	.138*
Information access & delivery	
▪ Develop library collections	.169*
▪ Support school computer network	.154*
▪ Identify materials for teachers	.162*
Information resources & technology	
▪ Print volumes	.321**
▪ Video materials	.144*
Library computers	.252**
▪ Library catalog	.188*
▪ Licensed databases	.215**
▪ Access Michigan link	.262**
▪ Internet/World Wide Web	.230**
School computers	.257**
▪ Library catalog	.270**
▪ Licensed databases	.268**
▪ Access Michigan link	.271**
▪ Internet/World Wide Web	.278**
Library visits per typical week	
▪ Individual visits	.176*
▪ Group visits	.236**
School library expenditures	.258**

* $p < .05$, ** $p < .01$

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Middle School Librarians

Michigan's middle school librarians make a difference in a variety of ways. (See Table 11.)

- In middle schools with better staffed libraries, the library is likely to be open longer. In addition, hours available for flexible access/scheduling are likely to be greater where there is a librarian.
- Professional school librarians improve teaching and learning by spending more time teaching information literacy skills to students, planning and delivering instruction independently and with classroom teachers, and, in some cases, even providing in-service training to teachers.
- By spending more time supporting computer networks, identifying materials for teachers, and motivating students, middle school librarians help teachers and students access information.
- Like their elementary school counterparts, middle school librarians tend to have more time to devote to administering their programs. They spend more time meeting with other librarians, serving on school committees (e.g., standards, curriculum), and, in the best cases, regularly attending faculty meetings and meeting with their principals.
- Michigan's middle school libraries tend to be better funded when the librarian has more time to spend being a fiscal advocate.

HUNTING FOR THE ANSWERS

A number of years ago, I created a treasure hunt for students to reinforce their book finding skills. Students, working in pairs, must come up with a missing word to complete a clue, and then they are directed to do a certain type of search (author, title, subject, or keyword) on the online catalog. If they do it right, their search will reveal a "one and only" answer. With call number in hand, the students locate the book on the shelf. They know they have found their "treasure" when the correct book reveals play money in the book's pocket. Completed clues allow the pairs to pursue another clue. The top three teams in each class win prizes.

The treasure hunt gets the 7th graders, who are new to this building, feeling comfortable with where everything is. It's worth all the preparation because I know the kids are learning and reinforcing research skills, and without realizing it, having fun, too. I know they've had a good time when they ask me how soon they can do it again. Teachers are impressed with it and my library club members like it enough to request it at nearly every Christmas party. But the best endorsement came this year when two 9th grade girls saw a 7th grade group coming in, and they said with much enthusiasm, "Are you doing the scavenger hunt today?! Can we play, too?"

Joyce E. Felzke, Library Media Specialist
Webberville Community Schools
Webberville

Table 11. School Librarian Staffing Predictors of School Library Hours, Operating Expenditures, and Staff Activities: Junior High/Middle Schools, Michigan, 2002

Variable	Correlation with school librarian Number	Hours
School library hours open		
▪ Total hours	.201**	.214**
▪ Hours available for flexible access/scheduling	.309**	.298**
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers	.336**	.373**
▪ Teach with teachers	.245**	.280**
▪ Teach information skills (without teachers)	.137*	.220**
▪ Provide in-service training to teachers	.320**	.403**
Information access & delivery		
▪ Support school computer network	.217**	.233**
▪ Identify materials for teachers	.195**	.229**
▪ Provide reading motivation activities for students	.150**	.236**
Program administration		
▪ Meet with other librarians in district	.165**	
▪ Meet with principal	.172**	.141**
▪ Attend faculty meetings	.173**	.181**
▪ Serve on school committees	.235**	.362**
School library expenditures	.252**	.296**

* p < .05, ** p < .01, shaded cells indicate non-significant correlations

Middle School Library Funding

Better staffed middle school libraries and those that are open longer hours are likely to have better budgets. They also tend to be run by professional librarians who are more engaged in teaching and learning, information access and delivery, and program administration activities. (See Table 12.) Library funding rises with the

- number and weekly hours of librarian and total library staffing;
- the school library's hours of operation—especially before and after school and during the summer, and for flexible access/scheduling;
- librarian time spent planning with teachers, teaching with them and independently, and providing in-service training to teachers;

- librarian time spent developing collections, supporting school computer networks, identifying relevant and useful materials for teachers, and motivating students to read; and
- time librarians spend serving on key school committees, and attending faculty meetings.

Table 12. School Library Staffing and Staff Activities Predictors of School Library Operating Expenditures: Junior High/Middle Schools, Michigan, 2002

Variable	Correlation with school library operating expenditures
School library staffing	
School librarians	
▪ Number	.252**
▪ Hours per week	.296**
Total school library staff	
▪ Number	.385**
▪ Hours per week	.471**
School library hours open	
▪ Total hours	.270**
▪ Hours open before school	.198**
▪ Hours open after school	.143*
▪ Hours available for flexible access/scheduling	.362**
▪ Hours open during summer	.236**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.216**
▪ Teach with teachers	.204**
▪ Provide in-service training to teachers	.159*
Information access & delivery	
▪ Develop library collections	.247**
▪ Support school computer network	.213**
▪ Identify materials for teachers	.168*
▪ Provide reading motivation activities for students	.161**
Program administration	
▪ Attend faculty meetings	.166*
▪ Serve on school committees	.175*

* $p < .05$, ** $p < .01$

Print Collections in Middle School Libraries

As at the elementary level, the number of print volumes in school library collections is the strongest library predictor of Michigan middle school test scores. Where Michigan middle school libraries are better staffed and funded, when libraries are open longer hours, and when librarians spend more time acting as school leaders, school libraries tend to have larger print collections. (See Table 13.)

- Print collections are larger where there are more trained librarians working longer hours and where the total library staff is larger.
- When school libraries are open longer hours, especially after school and in the summer, and offer more hours for flexible access/scheduling, print collections grow to meet increasing demand.
- Larger print collections tend to result from librarians spending more time identifying relevant and useful materials for teachers as well as increased demands for print information from motivated readers and from tech-savvy students and teachers who find that everything they need is not on the World Wide Web.
- Most school library expenditures are for materials and specifically print volumes, so better funded libraries tend to have more print volumes.

Table 13. School Library Predictors of Print Volumes in School Library Collections: Junior High/Middle Schools, Michigan, 2002

Variable	Correlation with print volumes
School library staffing	
School librarians	
▪ Number	.333**
▪ Hours per week	.391**
Total school library staff	
▪ Number	.324**
▪ Hours per week	.441**
School library hours open	
▪ Total hours	.224**
▪ Hours open after school	.268**
▪ Hours available for flexible access/scheduling	.271**
▪ Hours open during summer	.276**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.237**
▪ Teach with teachers	.286**
▪ Provide in-service training to teachers	.208**
Information access & delivery	
▪ Support school computer network	.611**
▪ Identify materials for teachers	.179*
▪ Provide reading motivation activities for students	.248**
School library expenditures	.397**

* $p < .05$, ** $p < .01$

Technology and Middle School Libraries

Like traditional library collections, information technology tends to be more prominent where library programs are well staffed and funded, where libraries are open longer, and where school librarians are more active school leaders. (See Table 14.)

- Professional librarians help students and teachers get the most—and the best—out of the information available via networked computers, whether those access points are in the library or elsewhere in the school.

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- The more fully technology is integrated into the school library program, the greater the demand for increased hours of library service, often before school and on a more flexible basis during the school day. Though most computerized resources are usually available from anyplace in the school, students and teachers requiring professional assistance are likely to go to the school library when seeking out the librarian's expertise.
- Of all librarian activities, planning with teachers is most strongly correlated with the number of computers in the library and elsewhere in the school.
- The success of library programs depends increasingly on skillful use of information technology. Thus, the number of computers is related to the time librarians spend planning with teachers, teaching both individually and cooperatively with teachers, and providing in-service training to teachers.
- The time librarians spend building and maintaining the school's technology infrastructure is predictably related to the number of computers available to students and teachers.
- As middle school librarians do a better job marshalling the political support of their principals, the numbers of computers in the library increases.
- Today, school library budgets must cover the costs of licensed databases as well as traditional materials, so schools that spend more on their libraries tend to have more access points for their wealth of resources.

Table 14. School Library Predictors of Library and School Computers: Junior High/Middle Schools, Michigan, 2002

Variable	Correlation with computers in Library	School
School library staffing		
School librarians		
▪ Number	.206**	.279**
▪ Hours per week	.246**	.279**
Total school library staff		
▪ Number	.240**	.337**
▪ Hours per week	.394**	.442**
School library hours open		
▪ Total hours	.184**	
▪ Hours open before school		.153*
▪ Hours available for flexible access/scheduling	.258**	.237**
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers	.165*	.249**
▪ Teach with teachers		.186*
▪ Teach information skills (without teachers)	.166*	
▪ Provide in-service training to teachers	.232**	.287**
Information access & delivery		
▪ Develop library collections		.323**
▪ Support school computer network	.611**	.236*
▪ Identify materials for teachers		.159*
▪ Provide reading motivation activities for students		.180*
Program administration		
▪ Meet with principal	.190**	
School library expenditures	.193**	.276**

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

Middle School Library Visits

Several indicators of the strength of Michigan's middle school libraries are linked to the frequency with which they are visited by individuals as well as groups. (See Table 15.) Both types of library visits grow with the:

- number and hours of school librarians and total library staff;
- school library's hours of operation, especially before school and for flexible scheduling;
- library staff activities involved in teaching and learning, information access and delivery, and program administration;
- availability of information resources and technology; and
- total school library expenditures.

Table 15. Library Predictors of Library Visits: Michigan Middle Schools, 2002

Variable	Correlation with	
	Individual visits	Group visits
School library staffing		
School librarians		
▪ Number	.259**	.262**
▪ Hours per week	.268**	.269**
Total library staff		
▪ Number	.137*	.276**
▪ Hours per week	.189**	.371**
School library hours open		
▪ Total hours		.176*
▪ Hours before school		.185**
▪ Hours available for flexible scheduling	.192**	.268**
Library staff activities (hours per week)		
Teaching & learning		
▪ Planning with teachers		.151*
▪ Teaching with teachers	.224**	.259**
▪ Providing in-service to teachers		.202**
Information access & delivery		
▪ Supporting school computer network		.223**
Program administration		
▪ Meeting with principal	.141*	.164*
▪ Serving on committees		.221**

Library Predictors of Library Visits: Michigan Middle Schools, 2002--continued

Variable	Correlation with Individual visits	Correlation with Group visits
Information resources & technology		
▪ Print volumes	.187**	.307**
▪ Reference works on CD-ROM		.194**
▪ Audio materials		.244**
▪ Video materials	.233**	.218**
▪ Software packages	.178*	.144*
▪ Library computers	.173*	.320**
▪ School computers		.230**
School library expenditures		.245**

* p < .05, ** p < .01, shaded cells indicate non-significant correlations

Middle School Librarians, Other Predictors, and Achievement

The extent to which highly qualified school librarians are assigned to middle schools is a significant positive predictor of academic achievement, according to correlation results. At the middle school level in Michigan, almost three out of four schools have librarians. While almost half of elementary schools lack a librarian, only a little over a quarter of middle schools report no librarian at all. (See Table 16.)

Table 16. Number of School Librarians with Master's Degrees, Teacher Certification, and Librarian Endorsement in Michigan Middle Schools, 2002.

Number of school librarians	Number	Percent
0	54	27.1%
1	143	71.9%
2	2	1.0%
Total	199	100.0%

As at the elementary school level, a comparison of average test scores for middle schools with and without librarians suggests how much of a difference having a school librarian can make as part of the overall mix of the learning environment. In Michigan middle schools with highly qualified

school librarians an average of 64 percent of seventh graders meet MEAP reading standards, while in schools without librarians, an average of 52 percent earn satisfactory scores. That is a positive and statistically significant difference of 23 percent associated with the presence of a school librarian ($t=-5.360$, $p < .001$).

Of course, middle schools with librarians may have other advantages that middle schools without librarians lack. These might include more prosperous and better educated communities, smaller disadvantaged populations, higher per pupil school spending, better teacher-pupil ratios, and—of course—larger school library collections and budgets.

A regression analysis including school library variables and data on other advantageous conditions was conducted. This analysis included only schools that reported having school library staff, due to the percentage of middle schools reporting no staff hours.

Alone, librarian hours per 100 students explains 0.8 percent of the variation in test scores. That is a small impact, but a notable one, considering the factors more often expected to affect achievement that failed to explain any measurable variation in test scores. As in other states and at the elementary level in Michigan, the poverty indicator, the percentage of students eligible for the National School Lunch Program, is the strongest predictor at 65.1 percent, followed by per pupil school spending at 4.1 percent and the percentage of students from selected minority groups at 2.0 percent. As community poverty and minority enrollments increase, seventh graders score lower on the MEAP reading test. Those negative factors are counter-balanced by increases in per pupil school spending and librarian hours per 100 students. As these factors increase, seventh grade test scores rise. Other variables considered—the percent of the community's adult population who graduated from high school, and the teacher-pupil ratio—explained no additional test score variation. (See Table 17.)

Table 17. Regression Analysis Results Identifying Predictors of Seventh Grade MEAP Reading Scores, 2002

Variable added	R	R Square	R Square Change	Beta Coefficient	t	Significance
% eligible for NSLP (poverty)	.807	.651	.651	-.600	-9.884	.000
Per pupil school expenditures	.832	.692	.041	.227	4.766	.000
Percent minority students	.844	.712	.020	-.186	-.3210	.002
School librarian hours per 100 students	.848	.720	.008	.095	2.123	.035

Excluded variables: percent of adults who are high school graduates, print volumes per student, library spending per student and teacher-pupil ratio.

High School Level

Michigan eleventh graders score better on the MEAP reading test as several features of high school library programs improve. The indispensable factor in a high school library's impact on test scores is the extent to which it is managed by a qualified school librarian. Librarians select traditional print and non-print collections as well as online information resources that address academic standards, help teachers use such resources in instruction, and make information resources accessible to everyone in the school. Like their colleagues at other levels, they too are master teachers, teaching students and teachers alike.

The link between Michigan high school libraries and academic achievement was established while taking into account other school and community conditions. The state's high school librarians have a measurable, positive, and statistically significant impact on MEAP test scores that cannot be explained away by other conditions for which data are available.

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High School Libraries and Academic Achievement

Increases in eleventh grade reading scores are reported by Michigan high school libraries that have:

- higher numbers and weekly hours of librarian and total library staff;
- more total weekly hours of operation, and more weekly hours for flexible access/scheduling;
- librarians spending more time supporting school computer networks;
- larger collections of print volumes and video materials; and
- access to more computers—both in the library and throughout the school—that provide links to Access Michigan, library catalogs and licensed databases, and the Internet and the World Wide Web; and
- more frequent individual visits to the library; and
- more money for library operations. (See Table 18.)

FASTER OFF THE SHELF, RIGHT INTO THE STUDENT'S HANDS

After three days of searching the Internet after school, my secretary asked a student if she was finding everything she needed. Her reply was that this was the third day that she had been looking on the Internet for information on "cloning" but she just couldn't find anything for her research paper. I determined later that the real problem was that she was finding too much information and was overwhelmed. We told her that we had a book on cloning that might be helpful. When we placed it in her hand, she exclaimed,"wow, a whole book on cloning! This is great, can I use it?"

We told her not ONLY could she USE it she could actually TAKE IT HOME with her for 3 weeks. She was so excited, and said that she was going to tell her friends that we had books on stuff like this that they could use (novel idea those libraries). We felt like missionaries who had just brought food and water to the survivor on a deserted island!! She could now go home and do her work instead of staying after school!!

I don't know if this qualifies as a success, but this happens more often than not lately. We call it the "faster off the shelf" theory.

Shirley Dudek
Library Media Specialist
L'Anse Creuse High School
Harrison Township

Table 18. Direct School Library Predictors of Reading Scores: Michigan, Grade 11, 2002

Variable	Correlation with 11th grade reading scores
School library staffing	
School librarians	
▪ Hours per week	.159*
Total school library staff	
▪ Number	.263**
▪ Hours per week	.275**
School library hours open	
▪ Total hours	.188**
▪ Hours available for flexible access/scheduling	.194**
Library staff activities (hours per week)	
▪ Support school computer network	.178*
Information resources & technology	
▪ Print volumes	.132*
▪ Video materials	.160*
Library computers	.206**
▪ library catalog	.180**
▪ licensed databases	.195**
▪ Access Michigan link	.222**
▪ Internet/World Wide Web	.193**
School computers	.255**
▪ library catalog	.180**
▪ licensed databases	.254**
▪ Access Michigan link	.262**
▪ Internet/World Wide Web	.285**
Individual library visits	.158*
School library expenditures	.273**

* $p < .05$, ** $p < .01$

High School Librarians

Michigan's high school librarians improve the resources and services of library programs in several ways. (See Table 19.)

- Professional school librarians spend more time contributing to teaching and learning by teaching information literacy skills to students, planning and delivering instruction with classroom teachers, and, in some cases, even providing in-service training to teachers.
- They also improve access to information for students and teachers by supporting computer networks, developing library collections, and identifying materials for teachers.
- High school librarians spend more time meeting with other librarians, serving on school committees, attending faculty meetings and regularly meeting with the principal.
- High school libraries run by trained librarians tend to be better funded.

Table 19. School Librarian Staffing Predictors of School Library Hours, Operating Expenditures, and Staff Activities: High Schools, Michigan, 2002

Variable	Correlation with school librarian	
	Number	Hours
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers		
▪ Teach with teachers	.239**	.278**
▪ Teach information skills (without teachers)	.235**	.271**
▪ Provide in-service training to teachers	.240**	.256**
Information access & delivery		
▪ Develop library collections		.131*
▪ Support school computer network	.231**	.236**
▪ Identify materials for teachers		.149**
Program administration		
▪ Meet with other librarians in district	.132**	
▪ Meet with principal	.134**	.160*
▪ Attend faculty meetings		.129*
▪ Serve on school committees		.136*
School library expenditures	.272**	.290**

* p < .05, ** p < .01, shaded cells indicate non-significant correlations

High School Library Funding

As library program spending rises, librareis tend to be better staffed and open longer hours. Professional librarians also tend to be more engaged in teaching and learning, information access and delivery, and program administration activities. (See Table 20.) As library spending rises, so do

- number and weekly hours of librarian and total library staffing;
- hours spent by library staff planning with teachers, teaching with them and independently, and providing in-service training to teachers;
- hours spent by library staff developing collections, supporting computer networks, and identifying materials for teachers; and
- hours spent by library staff serving on key school committees.

Table 20. School Library Staffing and Staff Activities Predictors of School Library Operating Expenditures: High Schools, Michigan, 2002

Variable	Correlation with school library expenditures
School library staffing	
School librarians	
▪ Number	.272**
▪ Hours per week	.290**
Total school library staff	
▪ Number	.452**
▪ Hours per week	.480**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.127*
▪ Teach with teachers	.168**
▪ Teach information skills (without teachers)	.134*
▪ Provide in-service training to teachers	.207**
Information access & delivery	
▪ Develop library collections	.276**
▪ Support school computer network	.315**
▪ Identify materials for teachers	.153*
Program administration	
▪ Serve on school committees	.290**

* $p < .05$, ** $p < .01$

Print Collections in High School Libraries

As at the elementary and middle school levels, the number of print volumes in high school library collections is the strongest library predictor of student performance. School libraries with larger print collections are better staffed and funded, are open longer hours, and are run by librarians who spend more time in teaching and learning, information access and delivery, and program administration activities. (See Table 21.)

- High school print collections tend to be larger where there are more trained librarians working longer hours and where the total library staff is larger.
- When school libraries are open longer hours after school and in the summer, and offer more hours for flexible access/scheduling, print materials are more integrated into the school's curriculum and large collections are required.
- The size of high school print collections is related to the amount of time librarians spend planning with teachers, teaching on their own and with classroom colleagues, and providing in-service training to teachers. The demand for materials increases as the library program becomes more essential in the thinking of teachers.
- Collection growth often follows larger staff investments of time to building those collections, to identifying relevant and useful materials for teachers, and to assisting students and teachers in using school computer networks.
- High school principals who meet regularly with their librarians also appear to be effective catalysts for collection growth.
- As at the elementary and middle school levels, it is no surprise that print collections are usually larger at high schools with better funded libraries.

Table 21. School Library Predictors of Print Volumes in School Library Collections: High Schools, Michigan, 2002

Variable	Correlation with print volumes
School library staffing	
School librarians	
▪ Number	.378**
▪ Hours per week	.449**
Total school library staff	
▪ Number	.451**
▪ Hours per week	.494**
School library hours open	
▪ Hours open after school	.134*
▪ Hours available for flexible access/scheduling	.146*
▪ Hours open during summer	.213**
Library staff activities (hours per week)	
Teaching & learning	
▪ Plan with teachers	.151*
▪ Teach with teachers	.236**
▪ Teach information skills (without teachers)	.206**
▪ Provide in-service training to teachers	.240**
Information access & delivery	
▪ Develop library collections	.157*
▪ Support school computer network	.243**
▪ Identify materials for teachers	.183**
Program administration	
▪ Meet with principal	.151*
School library expenditures	.411**

* $p < .05$, ** $p < .01$

Technology and High School Libraries

Like traditional library collections, the technology associated with high school library programs tends to be better developed where library programs are well staffed and funded, where libraries are open longer, and where school librarians are more active school leaders. (See Table 22.)

- Successful library programs are usually run by professional librarians who spend more time helping students and teachers get the most—and the best—out of the information available via networked computers.
- Supporting computer networks and planning with teachers are the activities of high school librarians most strongly linked with the availability of more computers in the library and elsewhere in the school. Because high school librarians are usually involved in the development of school computer networks, their involvement tends to increase the extent of such networks.
- Hands-on experiences with information technology can be key to student learning—whether from classroom teachers, librarians, or both working together. Thus, the size of school computer networks can be associated with the time librarians spend planning with teachers, teaching both individually and cooperatively with teachers, and providing in-service training to teachers.
- High school librarians who spend more time on information access and delivery activities tend to be involved with larger networks.
- School librarians who are better positioned to help build computer networks are those who spend more time on a regular basis meeting with their principals.
- As at elementary and middle school levels, high schools that spend more on their libraries tend to have more networked computers to serve as access points for the wealth of online resources.

Table 22. School Library Predictors of Library and School Computers: High Schools, Michigan, 2002

Variable	Correlation with computers in	
	Library	School
School library staffing		
School librarians		
▪ Number	.151*	.287**
▪ Hours per week	.184**	.326**
Total school library staff		
▪ Number	.288**	.378**
▪ Hours per week	.374**	.469**
Library staff activities (hours per week)		
Teaching & learning		
▪ Plan with teachers	.397**	
▪ Teach with teachers	.171**	
▪ Teach information skills (without teachers)	.168**	.151*
▪ Provide in-service training to teachers	.168**	.151*
Information access & delivery		
▪ Support school computer network	.288**	.456**
▪ Identify materials for teachers	.308**	.162*
Program administration		
▪ Meet with principal	.168**	
▪ Serve on school committees	.310*	
School library expenditures	.400**	.360**

* $p < .05$, ** $p < .01$, shaded cells indicate non-significant correlations

High School Library Visits

As at the middle school level, MEAP reading scores improve with increases in the frequency of individual library visits per week. (See Table 23.) Library visits grow with the:

- numbers and hours of school librarians and total library staff;
- selected staff activities associated with teaching and technology;
- availability of computers in libraries and elsewhere in schools; and
- total library expenditures.

Table 23. Library Predictors of Library Visits: High Schools, Michigan, 2002.

Variable	Correlation with individual library visits
School library staffing	
School librarians	
▪ Number	.253**
▪ Hours per week	.214**
Total library staff	
▪ Number	.300**
▪ Hours per week	.299**
Library staff activities (hours per week)	
▪ Identifying materials for teachers	.144*
▪ Teaching with teachers	.196**
▪ Teaching information skills to students	.146*
▪ Supporting school computer network	.248**
Information resources & technology	
▪ Print volumes	.270**
▪ Magazine subscriptions	.281**
▪ Video materials	.157*
▪ Software packages	.180**
▪ Library computers	.294**
▪ School computers	.347**
School library expenditures	.355**

* $p < .05$, ** $p < .01$

High School Librarians, Other Predictors, and Achievement

Correlation analysis indicates that a significant positive predictor of academic achievement is the degree to which qualified school librarians manage high school libraries. At the high school level in Michigan, more than seven out of 10 schools responding to a survey have librarians. Compared with almost half of elementary schools and over a quarter of middle schools, only one responding Michigan high school in six reports report no librarian at all. (See Table 24.)

Table 24. Number of School Librarians with Master's Degrees, Teacher Certification, and Librarian Endorsement in Michigan High Schools, 2002.

Number of school librarians	Number	Percent
0	42	16.8%
1	180	72.0%
2	27	10.8%
3	1	0.4%
Total	250	100.0%

The number of high schools reporting no librarian is just large enough to suggest a comparison of average test scores for high schools with and without librarians. In Michigan high schools with highly qualified school librarians, an average of 77 percent of eleventh graders meet MEAP reading standards, while in schools without librarians, an average of 71 percent met those standards. That is a positive and statistically significant difference of eight percent associated with the presence of a school librarian ($t=-2.859$, $p = .005$).

To understand the relative importance of the variety of conditions that might help to predict academic achievement, a regression analysis was conducted. Besides the school library, the other conditions weighed included having more prosperous and better educated communities, smaller disadvantaged populations, higher per pupil school spending, and better teacher-pupil ratios.

Alone, school librarian hours per 100 students explains 2.7 percent of the variation in test scores. Again, the poverty indicator, the percentage of

students eligible for the National School Lunch Program, is the strongest predictor at 39.0 percent, followed by the percentage of students from selected minority groups at 5.1 percent and per pupil school spending at 3.1 percent. In schools in poorer communities and with larger minority enrollments, eleventh graders did more poorly on the MEAP reading test. On the other hand, higher per pupil school spending and librarian hours per 100 students were associated with higher eleventh grade test scores. Other variables considered—the percent of the community's adult population who graduated from high school, and the teacher-pupil ratio—explained no additional test score differences. (See Table 25.)

Table 25. Regression Analysis Results Identifying Predictors of Eleventh Grade MEAP Reading Scores, 2002

Variable added	R	R Square	R Square Change	Beta Coefficient	t	Significance
% eligible for NSLP (poverty)	.624	.390	.390	-.432	-7.263	.000
Percent minority students	.664	.441	.051	-.320	-5.493	.000
Per pupil school expenditures	.687	.471	.031	.185	3.635	.000
School librarian hours per 100 students	.706	.499	.027	.166	3.435	.001

Excluded variables: percent of adults who are high school graduates, print volumes per student, library spending per student and teacher-pupil ratio.

FINDING THE TIME...TO DO EVEN MORE!

Because the Stockbridge High School Library Media Center is heavily booked, finding open slots of time to bring classes to the facility has always been problematic. This makes planning difficult for teachers. After spending considerable time developing class activities, the best-laid plans are often foiled by lack of available space. If teachers were working on this at night or on the weekends, it was especially frustrating to try to make organizational decisions and then find that the Library was not availalbe.

This year, I put the Media Center Schedule on-line. Teachers can check availability at any time – they do not need to traipse down to the Library from their classrooms and they can plan from home in the evenings and on weekends. Additionally, there is a request form on-line to ask for Library time.

Teachers are really grateful to have this information at their fingertips wherever they are, and they also appreciate the convenience of being able to request Library time from their classrooms or from home.

Debra Overbey, Library Media Specialist
Stockbridge High School
Stockbridge

Comparison of Highest & Lowest Scoring Schools

The foregoing analyses indicate that improvements in school library programs can help to change one of the state's lowest scoring schools on the MEAP reading test to one of the highest scoring schools. The following tables compare the 25 highest scoring schools with the 25 lowest scoring ones at each grade level.

With only a few exceptions, schools with better test scores

- have demonstrably better developed school library programs—i.e., higher levels of staffing, collection development, and funding;
- have library staff who spend more time engaged in activities that contribute to collaborative teaching and learning; and
- have more extensive and sophisticated computer networks extending the reach of the school library. (See Tables 26-28.)

Table 26. Statistical Comparison of Top and Bottom 25 Scoring Michigan Elementary Schools on Fourth Grade MEAP Reading Test, 2002

Variable	Top 25 Mean (N=33)	Bottom 25 Mean (N=28)	Difference
4th Grade MEAP Reading Scores			
Percent of students proficient or above	86.16	15.87	443%
School library hours			
Total hours open	28.26	20.55	37%
Hours open before school	1.73	1.00	73%
Hours open after school	1.39	0.88	58%
Hours available for flexible scheduling	15.77	3.55	344%
Hours open in summer	0.55	1.54	-64%
School library staff			
Librarians per 100 students	0.22	0.04	450%
Total library staff per 100 students	0.53	0.25	112%
Librarian hours per 100 students	6.51	1.37	375%
Total library staff hours per 100 students	13.39	6.71	99%
Library staff activities (% of weekly hours)			
Identifying materials for teachers	0.08	0.16	-50%
Planning with teachers	0.04	0.03	33%
Teaching with teachers	0.06	0.05	20%
Teaching IL to students	0.19	0.13	46%
Motivating students to read	0.12	0.11	9%
Developing collections	0.06	0.03	100%
Meeting with other librarians	0.02	0.00	
Supporting school computer network	0.09	0.08	12%
Service output measures			
Individual visits per student	0.71	0.80	-11%
Group visits per 100 students	5.59	3.47	61%
Individual IL visits per student	0.26	0.07	271%
Group IL visits per 100 students	3.50	0.80	338%
Circulation per student	1.55	1.05	48%
In-library use per student	32.88	16.92	94%
Interlibrary loans received per 100	0.47	0.00	

students			

Statistical Comparison of Top and Bottom 25 Scoring Michigan Elementary Schools on Fourth Grade MEAP Reading Test, 2002--continued

Variable	Top 25 Mean (N=33)	Bottom 25 Mean (N=28)	Difference
Technology			
Library computers per 100 students	9.10	0.90	911%
School computers per 100 students	8.91	0.86	936%
Library collection			
Volumes per student	27.27	8.82	209%
Reference CDs per 100 students	3.29	1.26	161%
Subscriptions per 100 students	4.57	2.68	70%
Audio materials per 100 students	11.35	3.70	207%
Video materials per 100 students	64.17	6.95	823%
Software packages per 100 students	6.87	1.31	424%
School library expenditures per student	$14.14	$5.60	152%

Table 27. Statistical Comparison of Top and Bottom 25 Scoring Michigan Middle Schools on Seventh Grade MEAP Reading Test, 2002

Variable	Top 25 Mean (N=29)	Bottom 25 Mean (N=25)	Difference
7th Grade MEAP Reading Scores			
Percent of students proficient or above	79.86	31.04	157%
School library hours			
Hours open during school	32.72	29.21	12%
Hours open before school	1.82	1.19	53%
Hours open after school	2.54	1.54	65%
Hours available for flexible scheduling	29.27	16.42	78%
School library staff			
School librarians per 100 students	0.15	0.05	200%
Total library staff per 100 students	0.33	0.24	38%
School librarian hours per 100 students	5.62	1.84	205%
Total library staff hours per 100 students	10.22	8.19	25%
Library staff activities (% of weekly hours)			
Teaching with teachers	0.08	0.06	33%
Developing collections	0.07	0.04	75%
Supporting school computer network	0.16	0.12	33%
Service outputs			
Individual visits per student	0.76	0.37	105%
Group visits per 100 students	4.69	3.89	21%
Individual IL visits per student	0.18	0.11	64%
Group IL visits per 100 students	2.13	2.10	1%
Technology			
Library computers per 100 students	7.59	2.19	247%
School computers per 100 students	5.61	1.78	215%

Statistical Comparison of Top and Bottom 25 Scoring Michigan Middle Schools on Seventh Grade MEAP Reading Test, 2002--continued

Variable	Top 25 Mean (N=29)	Bottom 25 Mean (N=25)	Difference
Library collection			
Volumes per student	18.47	13.43	37%
Reference CDs per 100 students	6.89	3.05	126%
Audio materials per 100 students	7.21	4.73	52%
Video materials per 100 students	52.52	21.04	150%
Software packages per 100 students	1.47	1.34	10%
School library expenditures per student	$15.34	$7.82	96%

Table 28. Statistical Comparison of Top and Bottom 25 Scoring Michigan High Schools on Eleventh Grade MEAP Reading Test, 2002

Variable	Top 25 Mean (N=25)	Bottom 25 Mean (N=25)	Difference
11th Grade MEAP Reading Scores			
Percent of students proficient or above	92.12	47.29	95%
School library hours			
Hours open during school	35.89	32.43	11%
Hours open before school	1.75	1.56	12%
Hours available for flexible scheduling	33.47	24.89	34%
Hours open in summer	2.04	1.58	29%
School library staff			
School librarian hours per 100 students	5.39	3.69	46%
Total library staff hours per 100 students	10.49	10.15	3%
Staff activities (% of weekly hours)			
Planning with teachers	0.04	0.03	33%
Supporting school computer networks	0.17	0.13	31%
Service outputs			
Individual visits per student	0.50	0.42	19%
Individual IL visits per student	0.16	0.13	23%
Technology			
Library computers per 100 students	6.34	3.74	69%
School computers per 100 students	6.22	3.53	76%
School library collection			
Reference CDs per 100 students	18.29	2.20	731%
Video materials per 100 students	43.85	38.03	15%
Software packages per 100 students	1.13	1.02	11%
School library expenditures per student	$20.56	$15.01	37%

Recommendations for Action

The findings of this study recommend five specific actions by Michigan school decision-makers:

- School libraries should have **adequate professional and support staff, hours of operation, and information resources and technology**. Qualified school librarians with library aides, the availability of library staff and facilities before and after as well as during school, and a combination of traditional print and ever-changing online resources are essential components of a successful library program. Such conditions are necessary if not sufficient alone to generate higher levels of academic achievement.

- The school library program cannot be limited to the school library as a place. Just as **school librarians** must involve themselves in the **design and delivery of instruction**, **technology** must be used to make information resources **available to teachers and students wherever they may be** in the school.

- While Internet access is important, the school librarian has an important role to play in ensuring that teachers and students have access to **high-quality licensed databases** from which current, authoritative information may be obtained. School librarians can provide **the necessary training** to ensure an information resource.

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

KEEP THE DOORS OPEN – AND STAND BACK!

We wrote our first grant proposal and were awarded $141,000 for our district. This included $89,000 worth of library books, an online database with several encyclopedias including a Spanish one, a new library web page, and open access to the school libraries on Monday nights for students and parents. The Monday night program has really grown as parents can come with their children, use the computers, and have fun with books. Our goal is to make the library part of a family's weekly routines. The success is already having dozens of families coming on Monday AND students improving their grades..both in reading and other subjects. We've seen a definite change in a few students' attitudes toward reading and school. Having Mom or Dad come to the library and read or use the computer to research with them is really making a difference. The extra time in the evening gives them more time to browse the shelves and find books.

Sheri Kurtyak, Librarian
Lincoln International Studies School
Kalamazoo

Christine Langsam, Librarian
Martin Luther King Elementary
Westwood

IT'S A BIRD...IT'S A PLANE...IT'S A SCHOOL LIBRARIAN!

I teach formal library lessons to students in grades K-5. Many times teachers will express amazement at how well my lessons fit into what they are doing in the classroom. I monitor the curriculum and what units various grades complete throughout the year and integrate those activities into my lessons at each grade level.

Often our high school special education teacher sends her students to the media center for one-on-one assistance when they are working on major projects and papers. It's assistance they can't receive from their general education teachers because they just get lost in the crowd. One of the students came in to proudly show me a term paper I had helped her find resources for, because she received an A. She wanted to thank me for my help, because otherwise she would not have done so well.

My colleagues ask for me as an inservice presenter because they say my presentations are always practical and useful in their curriculum. I decided a gap existed, however, with our paraprofessional staff. We all wear multiple hats. My assistants include the aides for special education, the nurse, playground/kitchen, and the discipline room. Because of their multiple roles and student contacts, I felt it was important that they receive the training to support their roles with students as information providers. So I trained them for a three hour block during our fall parent-teacher conference schedule. The paraprofessionals left with training on ten different electronic databases and the envy of the teaching staff who wondered when they would have the opportunity to receive the same training. My training was the first offered for their benefit in my 11 year tenure with the district.

My staff and I developed a daily task routine for our student aides to make them an integral part of our library media staff and give them ownership in the facility. Students also have to complete a series of lessons involving our electronic databases.. One of my students commented after he had completed these assignments and performed his daily task list (tasks as varied as shelving books, checking out books through our automated system, entering data, helping students using the media center), "I never knew working in the library could be so much...work!" The same student made a name badge proclaiming his role as a library student aide to be "a cut above the regular student aide..priority 5 on a scale of 5."

I feel hugs and whispers are my biggest success stories at the elementary level, though. A child who spontaneously gives me a hug in the hallway, or the child who spots me in the grocery store and tells Mom or Dad, "That's my library teacher," in a secretive whisper as I pass by, those are my successes.

Deb Larson, District Library Media Specialist
Bellaire Public Schools, Bellaire

FREEDOM TO BE – AND TO ASK QUESTIONS

One of our 5th grade teachers had been expressing her frustration over trying to teach her students about Core Democratic Values. The students weren't getting it, weren't interested, etc.

I decided to try to have a very short discussion about freedom, using literature as a starting point. I began by remarking to the students that I had heard that they were learning about CDV's in their social studies class. This was a bit of a mistake! Immediately they started complaining about what they thought was coming…another lesson on something they were not interested in. I told them to just sit back and relax and not to worry about it. I would read a story to them…nothing that would really "tax their brain". They accepted this and actually payed close attention to the story.

The book that I had chosen was Sweet Clara and the Freedom Quilt by Deborah Hopkinson. After reading, our discussion centered on the Underground Railroad, slavery, quilts, and women's history. I asked the students if they enjoyed the story and the discussion, and they answered in the affirmative. The looks on their faces when I told them that we had just learned about/discussed an important CDV were priceless! They agreed that it had been painless!

We continued talking about quilts the following week in class. I brought in a few examples and explained the history behind the patterns. Many students shared memories of family quilts and stories.

I think that when the 5th grade teacher did not meet with success after trying to teach CDV's, it may have been because they were presented in the abstract. Explaining about them and talking about them just wasn't doing it for the students. Reading and discussing an appropriate story did! I thought it was a good example of using literature to support and enhance curriculum content.

Patricia Pulis, Media Specialist
Fitzgerald Public Schools
Mound Park Elementary and Neigebaur Early Childhood Center
Warren

HOW TO MAKE A QUANTUM LEAP – ENOUGH STAFFING!

I have been in this job at the middle school full time for 4 years. Previous to this, there was one school library media specialist assigned to four libraries K-8, basically "book rooms". Now that I am at the middle school full time, and we have an additional librarian working in the elementary buildings, (still not ideal, but better and we are always working on that), these are some things that have happened with the 45 teachers and 700 students and myself.

We average 15 to 20 classes a week coming in for booktalks, research lessons, technology use, etc. We have doubled our circulation, automated the media center, developed a curriculum, recognized the importance of reading, held special events, recognized our Spanish-speaking and visually-impaired students by ordering special materials for them, developed a working web site as our home page for access to resources, and basically changed the accessibility, climate, and "look" of the old library into a wonderfully spacious updated media center that does what it's intended to do.

Meeting on a bi-weekly basis during team planning time not only offers me insight into the curriculum that I am supporting, it builds relationships, supports selection of materials, provides time for technology training, and is a wonderful tool for providing PR from the media center directly to the staff and in turn to the students.

I also have a terrific paraprofessional, Pat Behnke, for 6 1/2 hrs. a day. She and I work as a real team and in my 30 year career at being a middle school teacher/librarian she is the best!

Charlotte Poole, Middle School Library Media Specialist
Lakeshore Middle School
Stevensville

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Appendices

Bibliography

Participating Michigan Elementary Schools

Participating Michigan Middle Schools

Participating Michigan High Schools

Survey of Michigan School Library Programs

The Impact of Michigan School Libraries on Academic Achievement: Preliminary Report

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed brochure

EVERYONE'S A CRITIC

Both middle schools in Brighton participate in our Mock Newbery Awards Contest. Throughout the fall, media specialists gather a list of new books that are being discussed as possible award winners. We often "eavesdrop" on the children's literature electronic lists to find the titles gathering the most interest. We then visit classes and remind students about the Newbery Award, discussing what criteria the official committee uses in selecting the winner. We also discuss our unofficial nominees to peak the student's interest.

Students can read the books and if they feel one is a "notable" or "distinquished" book they submit a short evaluation form. We all wait anxiously the morning of the official selection day late in January. The American Library Association committee is meeting in Chicago and making their big decision! When it's announced we check to see if any student at our schools has picked the winner or a runner-up. We also tally our votes and see who each school would have chosen as the most notable book of the year.

This contest has really increased our student's awareness of this important award for children's literature and how books judged literarily. They also feel quite a sense of ownership over the winners and the books that didn't receive awards. We often hear them recommending a specific book to a friend, saying, "That's the book I thought should have won the Newbery last year!"

Jan Dohner, Library Media Specialist
Maltby Middle School
Brighton

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The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Participating Michigan Elementary Schools

DISTRICT	SCHOOL
Abney Academy	William C. Abney Academy
Adrian	Alexander Elementary School
Allen Academy	Allen Academy
Allendale	Allendale Upper Elementary School
Alpena	Ella M. White School
Alpena	Hinks School
Ann Arbor	Ann Arbor Open at Mack School
Ann Arbor	Burns Park Elementary School
Ann Arbor	Eberwhite School
Ann Arbor	Pattengill School
Ann Arbor	Uriah H. Lawton School
Armada	Armada Later Elementary School
Battle Creek	Ann J. Kellogg School
Battle Creek	Franklin School
Bay City	Hampton Elementary School
Bay City	Kolb Elementary School
Bay City	MacGregor Elementary School
Bay City	Washington Elementary School
Bellaire	Bellaire Elementary School
Big Rapids	Brookside Elementary School
Blissfield	South Elementary School
Bloomfield Hills	Conant Elementary School
Bloomfield Hills	Hickory Grove Elementary School
Bloomfield Hills	Pine Lake Elementary School
Bloomingdale	Pullman Elementary School
Boyne Falls	Boyne Falls School
Breitung Twp	Woodland Elementary School
Brighton	Hawkins Elementary School
Brighton	Hornung Elementary School
Brighton	Lindbom Elementary School
Brimley	Brimley School (K-12)
Buchanan	Moccasin Elementary School
Buchanan	Stark Elementary School
Caledonia	Kettle Lake Elementary School
Carman-Ainsworth	Carman Park Elementary School
Carman-Ainsworth	Dye Elementary School
Carman-Ainsworth	Woodland Elementary School
Central Academy	Central Academy
Cesar Chavez	Cesar Chavez Academy
Charlotte	Galewood Elementary School
Charlotte	Leora Weymouth School
Charlotte	Parkview Elementary School

Charlotte	Washington School
Chassell	Chassell K-12 School
Chelsea	South Meadows Elementary School
Clare	Clare Primary School
Clarenceville	Botsford Elementary School
Clarkston	Clarkston Elementary School
Clarkston	Independence Elementary School
Clarkston	North Sashabaw Elementary School
Climax-Scotts	Climax-Scotts Intermediate School
Columbia	Brooklyn Elementary School
Columbia	Norman Miller Elementary School
Dearborn	Howard Elementary School
Dearborn	Maples Elementary School
Dearborn	McDonald School
Dearborn	Miller Elementary School
Dearborn	Nowlin Elementary School
Dearborn	Salina Elementary School
Dearborn Heights #7	Polk Elementary School
Detour	Detour Elementary School
Detroit	Bates Academy
Detroit	Birney Elementary School
Detroit	Clinton Elementary School
Detroit	Courville Elementary School
Detroit	Davison Elementary School
Detroit	Fairbanks Elementary School
Detroit	Ferry Elementary School
Detroit	Hutchinson Elementary School
Detroit	Maybury Elementary School
Detroit	Nichols Elementary School
Detroit	Rose Elementary School
Detroit	Stewart Elementary School
Detroit	Weatherby Elementary School
Dundee	Dundee Elementary School
East Jackson	Bertha Robinson School
East Jackson	Memorial School
Elk Rapids	Lakeland Elementary School
Elk Rapids	Mill Creek Elementary School
Essexville-Hampton	Verellen Elementary School
Evart	Evart Elementary School
Ewen-Trout Creek	Ewen-Trout Creek Consolidated
Farmington	Gill Elementary School
Farmington	Highmeadow Common Campus School
Farmington	Hillside Elementary School
Farmington	Longacre Elementary School
Farmington	Wood Creek Elementary School
Farmington	Wooddale Elementary School

Fitzgerald	Mound Park School
Fitzgerald	Westview Elementary School
Flushing	Seymour Elementary School
Fowler	Waldron Elementary & Middle School
Francis Reh	Francis Reh PSA
George Crockett	George Crockett Academy
Glen Lake	Glen Lake Elementary School
Grand Haven	Robinson School
Grand Rapids	Aberdeen Tech/Math Academy
Grand Rapids	Academia de Espanol
Grand Rapids	Alexander School
Grand Rapids	Alger School
Grand Rapids	Beckwith School
Grand Rapids	Brookside School
Grand Rapids	Buchanan School
Grand Rapids	Burton Elementary School
Grand Rapids	C.A. Frost School
Grand Rapids	Campau Park School
Grand Rapids	Campus School For Arts & Literature
Grand Rapids	Coit School
Grand Rapids	Congress Elementary School
Grand Rapids	Covell School
Grand Rapids	Dickinson School
Grand Rapids	East Leonard School
Grand Rapids	Eastern School
Grand Rapids	Fountain School
Grand Rapids	Franklin School
Grand Rapids	Hall School
Grand Rapids	Harrison Math/Science Academy
Grand Rapids	Harrison Park Elementary School
Grand Rapids	Henry Park Paideia Academy
Grand Rapids	Hillcrest Environmental Science
Grand Rapids	Huff School
Grand Rapids	Jefferson School
Grand Rapids	Kensington Elementary School
Grand Rapids	Kent Hills School
Grand Rapids	Madison Park Elementary School
Grand Rapids	Mulick Park Elementary School
Grand Rapids	North Park Elementary School
Grand Rapids	Oakdale Elementary School
Grand Rapids	Ottawa Montessori School
Grand Rapids	Palmer School
Grand Rapids	Riverside Elementary School
Grand Rapids	Shawmut Hills School
Grand Rapids	Shawnee Park School
Grand Rapids	Sherwood Park School

Grand Rapids	Sibley School
Grand Rapids	Sigsbee School
Grand Rapids	South East Academic Center
Grand Rapids	Stocking School
Grand Rapids	Vandenberg Creative Arts Academy
Grand Rapids	Wellerwood Montessori Academy
Grand Rapids	West Leonard School
Grandville	Central Elementary School
Grandville	East Elementary School
Grandville	Grand View Elementary School
Grandville	West Elementary School
Grosse Pointe	Ferry Elementary School
Grosse Pointe	George Defer Elementary School
Gull Lake	Gull Lake Intermediate School
Hamilton	Hamilton Elementary School
Haslett	Vera Ralya Elementary School
Hillsdale	Gier Elementary School
Holland	Longfellow School
Holland	Maplewood Elementary School
Holland	Van Raalte School
Houghton-Portage	Houghton Elementary School
Howell	Latson Road Elementary School
Hudson	Lincoln Elementary School
Ishpeming	Birchview School
Ishpeming	Central School
Jenison	Bauerwood School
Jenison	Sandy Hill School
Kalamazoo	Lincoln Elementary School
Kalamazoo	Milwood Elementary School
Kalamazoo	Northeastern Elementary School
Kenowa Hills	Fairview Elementary School
Kenowa Hills	Walker Station School
Lake Orion	Orion Oaks Elementary School
Lake Shore (Macomb)	Rodgers Elementary School
Lakeshore (Berrien)	Roosevelt Elementary School
Lowell	Cherry Creek Elementary School
Mason (Ingham)	North Aurelius Elementary School
McBain	McBain Elementary School
Memphis	Memphis Elementary School
Meridian	Meridian Elementary School
Merrill	Merrill Elementary School
Midland	Cook Elementary School
Mid-Michigan PSA	Mid-Michigan Public School Academy
Mona Shores	Lincoln Park Elementary School
Montague	Oehrli Elementary School
Mosaica	Mosaica Academy of Saginaw

Mt. Clemens	George Washington School
Muskegon	Angell School
Muskegon	McLaughlin Elementary School
Muskegon	Moon Elementary School
Muskegon	Nelson Elementary School
Muskegon	Oakview Elementary School
New Lothrop	New Lothrop Elementary School
Newaygo	Velma Matson Upper Elem. School
Northport	Northport Public School
Northridge	Northridge Academy
Northville	Silver Springs Elementary School
Novi	Novi Woods Elementary School
Oak Park	Einstein Elementary School
Oak Park	Key Elementary School
Oak Park	Pepper Elementary School
Owosso	Emerson School
Oxford	Clear Lake Elementary School
Oxford	Leonard Elementary School
Oxford	Oxford Elementary School
Pewamo-Westphalia	Pewamo Elementary School
Pinckney	Hamburg Elementary School
Pine River	Tustin Elementary School
Plymouth-Canton	Bird Elementary School
Plymouth-Canton	Eriksson Elementary School
Pontiac	Emerson School
Pontiac	Longfellow School
Pontiac	Owen Elementary School
Pontiac	Whitmer Resource Center
Reed City	G.T. Norman Elementary School
Republic-Michigamme	Republic-Michigamme School
Richmond	Will L. Lee School
Romulus	Barth Elementary School
Romulus	Cory Elementary School
Romulus	Hale Creek Elementary School
Romulus	Merriman Elementary School
Romulus	Wick Elementary School
Shelby	Ferry Community School
South Arbor	South Arbor Charter Academy
South Lyon	Frank E. Bartlett School
South Lyon	Salem Elementary School
South Lyon	Sayre Elementary School
Southfield	Eisenhower Elementary School
Southfield	Glenn Schoenhals Elementary School
Southfield	John F. Kennedy Elementary School
St. Johns	East Essex School
St. Johns	East Olive Elementary School

St. Johns	Eureka School
St. Johns	Gateway Elementary School
St. Johns	Riley Elementary School
St. Joseph	Brown School
St. Joseph	Clarke School
St. Joseph	Lincoln School
Stanton Township	E.B. Holman Elementary School
Superior Central	Superior Central School
Three Rivers	Norton Elementary School
Three Rivers	Ruth Hoppin School
Toussaint	Pierre Toussaint Academy
Tri-Valley	Tri-Valley Academy
Troy	Hill Elementary School
Troy	Martell Elementary School
Troy	Morse Elementary School
Troy	Schroeder Elementary School
Troy	Troy Union Elementary School
Troy	Wass Elementary School
Troy	Wattles Elementary School
Utica	Roberts Elementary School
Van Buren	Edgemont Elementary School
Vassar	Central School
Vicksburg	Indian Lake Elementary School
Vicksburg	Tobey Elementary School
Voyageur	Voyageur Academy
Walkerville	Walkerville Rural Community School
Walled Lake	Commerce Elementary School
Walled Lake	Glengary Elementary School
Walter French	Walter French Academy
Warren	Susick Elementary School
Waterford	Laura Smith Haviland School
Waverly	Meryl S. Colt Elementary School
Webberville	Webberville Elementary School
West Bloomfield	Doherty Elementary School
West Bloomfield	Ealy School
West Bloomfield	Green School
West Bloomfield	Roosevelt School
West Bloomfield	Scotch Elementary School
West Ottawa	Great Lakes Elementary School
West Ottawa	Lakeshore Elementary School
West Ottawa	Waukazoo School
West Ottawa	Woodside Elementary School
Windemere Park	Windemere Park Charter Academy
Yale	Avoca Elementary School
Yale	John F. Farrell School
Yale	Yale Elementary School

Ypsilanti	Chapelle Elementary School
Ypsilanti	Erickson School
Ypsilanti	Estabrook School
Ypsilanti	Evart W. Ardis Elementary School
Ypsilanti	George Elementary School
Ypsilanti	Olive M. Adams Elementary School

Participating Michigan Middle Schools

DISTRICT	SCHOOL
Allen Academy	Allen Academy
Allen Park	Allen Park Middle School
Allendale	Allendale Public High School
Almont	Almont Jr/Sr High School
Alpena	Thunder Bay Junior High School
Ann Arbor	Ann Arbor Open at Mack School
Ann Arbor	Scarlett Middle School
Ann Arbor	Slauson Middle School
Ann Arbor	Tappan Middle School
Armada	Armada Middle School
Battle Creek	Northwestern Middle School
Beal City	Beal City High School
Bedford	Bedford Junior High School
Bellaire	Bellaire High School
Berkley	Anderson Middle School
Birch Run	Marshall Greene Middle School
Birmingham	Berkshire Middle School
Birmingham	Derby Middle School
Blissfield	Blissfield Middle School
Bloomfield Hills	Bloomfield Hills Middle School
Bloomingdale	Bloomingdale High School
Boyne City	Boyne City Middle School
Boyne Falls	Boyne Falls School
Brighton	Maltby Middle School
Brimley	Brimley School (K-12)
Bronson	Bronson Jr/Sr High School
Brown City	Brown City High School
Byron Center	Byron Center Middle School
Cadillac	Mackinaw Trail Middle School
Carman-Ainsworth	Carman-Ainsworth Junior H.S.
Carsonville	Carsonville-Port Sanilac H.S.
Cedar Springs	Cedar Springs Middle School
Central Academy	Central Academy
Charlotte	Charlotte Junior High School
Chassell	Chassell K-12 School
Chippewa Valley	Seneca Middle School
Clarkston	Sashabaw Middle School
Climax-Scotts	Climax-Scotts High School
Colon	Colon High School
Columbia	Columbia Junior High School
Constantine	Constantine Middle School

Dearborn	Stout Middle School
Deckerville	Deckerville Community High School
Delton-Kellogg	Delton-Kellogg Middle School
Detour	Detour High School
Detroit	Barbour Magnet Middle School
Detroit	Bates Academy
Detroit	Clippert Academy
Dryden	Dryden Community High School
Dundee	Dundee Middle School
Durand	Durand Middle School
East China	Marine City Middle School
East China	St. Clair Middle School
Edwardsburg	Edwardsburg Middle School
Evart	Evart Middle School
Ewen-Trout Creek	Ewen-Trout Creek Consolidated
Farmington	O.E. Dunckel Middle School
Farmington	Power Middle School
Farmington	Warner Middle School
Ferndale	Calvin Coolidge School
Fitzgerald	P.D. Chatterton Middle School
Flint	McKinley Middle School
Flint	Southwestern Academy
Flint	Whittier Middle School
Forest Hills	Central Middle School
Fowler	Waldron Elementary & Middle School
Francis Reh	Francis Reh PSA
Fremont	Fremont Middle School
Fruitport	Fruitport Middle School
George Crockett	George Crockett Academy
Gobles	Gobles High School
Godwin Heights	Godwin Heights Middle School
Grand Blanc	Grand Blanc Middle School
Grand Ledge	Kenneth T. Beagle Middle School
Grand Rapids	Campus School For Arts & Literature
Grand Rapids	City Middle/High School
Grand Rapids	Harrison Math/Science Academy
Grand Rapids	Hillcrest Environmental Science
Grand Rapids	Ottawa Montessori School
Grand Rapids	South East Academic Center
Grandville	Grandville Middle School
Grass lake	Grass Lake Junior/Senior High School
Grosse Pointe	Parcells Middle School
Gull Lake	Gull Lake Middle School
Hamilton	Hamilton Middle School
Harbor Springs	Harbor Springs Middle School
Harrison	Harrison Middle School

Hartland	Hartland M.S. at Ore Creek
Holland	East Middle School
Holland	West Middle School
Holly	Sherman Middle School
Holt	Hope Middle School
Holt	Washington Woods Middle School
Holton	Holton High School
Houghton-Portage	Houghton Middle School
Hudsonville	Baldwin Street Middle School
Hudsonville	Riley Street Middle School
Imlay City	Imlay City Middle School
Ironwood	Luther L. Wright High School
Ishpeming	C.L. Phelps School
Ithaca	Ithaca High School
Jefferson	Jefferson Middle School
Jonesville	Jonesville Middle School
Kalamazoo	Milwood Middle School
Kingston	Kingston High School
Lake Linden-Hubbell	Lake Linden-Hubbell High School
Lake Shore (Macomb)	Kennedy Middle School
Lakeshore (Berrien)	Lakeshore Middle School
Lakewood	Lakewood Middle School
Linden	Linden Middle School
Marshall	Marshall Middle School
Mason (Monroe)	Mason Middle School
Mayville	Mayville Middle School
McBain	McBain Middle School
Mendon	Mendon Middle/High School
Menominee	Menominee Middle School
Meridian	Meridian Junior High School
Midland	Central Middle School
Midland	Cook Elementary School
Midland	Northeast Middle School
Mid-Michigan PSA	Mid-Michigan Public School Academy
Mio-AuSable	Mio-AuSable High School
Monroe	Monroe Middle School
Morrice	Morrice Area High School
Mosaica	Mosaica Academy of Saginaw
New Lothrop	New Lothrop High School
Newaygo	Newaygo Middle School
North Central	North Central Area High School
Northport	Northport Public School
Northridge	Northridge Academy
Northville	Hillside Middle School
Ontonagon	Ontonagon Area Jr/Sr High School
Otsego	Otsego Middle School

Oxford	Oxford Area Middle School
Parchment	Parchment Middle School
Peck	Peck Community High School
Perry	Perry Middle School
Pewamo-Westphalia	Pewamo-Westphalia Junior H.S.
Pinckney	Pathfinder School
Pine River	Pine River Area Jr/Sr High School
Pittsford	Pittsford Area High School
Plymouth-Canton	Central Middle School
Plymouth-Canton	East Middle School
Pontiac	Washington Middle School
Port Huron	Central Middle School
Port Huron	Chippewa Middle School
Port Huron	Fort Gratiot Middle School
Port Huron	Holland Woods Middle School
Portage	Portage Central Middle School
Portage	Portage West Middle School
Republic-Michigamme	Republic-Michigamme School
Rochester	Hart Middle School
Rochester	West Middle School
Rogers City	Rogers City High School
Saginaw	North Middle School
Saginaw	Saginaw Arts and Sciences Academy
Saginaw Township	White Pine Middle School
Saline	Saline Middle School
Saugatuck	Saugatuck Middle School
Sault Ste. Marie	Sault Junior High School
South Lake	South Lake Middle School
South Lyon	South Lyon Middle School
South Redford	John D. Pierce Middle School
Southfield	Birney Middle School
Sparta	Sparta Middle School
Spring Lake	Spring Lake High School
St. Johns	St. Johns Middle School
St. Joseph	Upton Middle School
Stanton Township	E.B. Holman Elementary School
Sturgis	Sturgis Middle School
Superior Central	Superior Central School
Suttons Bay	Suttons Bay Middle School
Tecumseh	Tecumseh Middle School
Three Rivers	Three Rivers Middle School
Toussaint	Pierre Toussaint Academy
Trenton	Boyd W. Arthurs Middle School
Tri-Valley	Tri-Valley Academy
Troy	Boulan Park Middle School
Troy	Larson Middle School

Utica	Malow Junior High School
Van Buren	North Middle School
Vandercook Lake	Vandercook Lake High School
Vicksburg	Vicksburg Middle School
Voyageur	Voyageur Academy
Wakefield	Wakefield School
Walkerville	Walkerville Rural Community School
Walter French	Walter French Academy
Waterford	Isaac E. Crary Middle School
Waverly	Waverly Middle School
Wayne-Westland	Adams Middle School
Wayne-Westland	Adlai Stevenson Middle School
Wayne-Westland	Benjamin Franklin Middle School
Webberville	Webberville Middle/High School
West Bloomfield	Abbott Middle School
West Bloomfield	Orchard Lake Middle School
West Ottawa	Harbor Lights School
Western	Western Middle School
Westwood	Robichaud Jr/Sr High School
White Pigeon	White Pigeon Jr/Sr High School
Whitehall	Whitehall Junior High School
Yale	Yale Junior High School

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Participating Michigan High Schools

DISTRICT	SCHOOL
Airport	Airport Senior High School
Allendale	Allendale Public High School
Almont	Almont Jr/Sr High School
Alpena	Alpena High School
Ann Arbor	Community High School
Ann Arbor	Huron High School
Ann Arbor	Roberto Clemente Center
Armada	Armada Area High School
Athens	Athens High School
Atherton	Atherton High School
Avondale	Avondale High School
Bay City	Central High School
Beal City	Beal City High School
Beaverton	Beaverton High School
Bellaire	Bellaire High School
Berkley	Berkley High School
Berrien Springs	Berrien Springs High School
Birmingham	Ernest W. Seaholm High School
Birmingham	Wylie E. Groves High School
Blissfield	Blissfield High School
Bloomfield Hills	Bloomfield Hills Andover H.S.
Bloomfield Hills	Bloomfield Hills Lahser H.S.
Bloomingdale	Bloomingdale High School
Boyne City	Boyne City High School
Boyne Falls	Boyne Falls School
Brandon	Brandon High School
Brandywine	Brandywine Senior High School
Brighton	Brighton High School
Brimley	Brimley School (K-12)
Bronson	Bronson Jr/Sr High School
Brown City	Brown City High School
Buena Vista	Buena Vista High School
Bullock Creek	Bullock Creek High School
Burt Township	Burt Township School
Byron Center	Byron Center High School
Cadillac	Cadillac Senior High School
Caledonia	Caledonia High School
Calumet	Calumet High School
Camden-Frontier	Camden-Frontier High School
Capac	Capac High School
Carman-Ainsworth	Carman-Ainsworth High School

Carsonville	Carsonville-Port Sanilac H.S.
Cedar Springs	Cedar Springs High School
Central Academy	Central Academy
Central Montcalm	Central Montcalm High School
Charlotte	Charlotte Senior High School
Chassell	Chassell K-12 School
Cheboygan	Cheboygan Area High School
Chippewa Hills	Chippewa Hills High School
Clare	Clare High School
Clarkston	Clarkston High School
Clawson	Clawson High School
Climax-Scotts	Climax-Scotts High School
Clintondale	Clintondale High School
Coloma	Coloma High School
Colon	Colon High School
Comstock	Comstock High School
Constantine	Constantine High School
Coopersville	Coopersville High School
Crawford AuSable	Grayling High School
Dansville	Dansville High School
Dearborn	Dearborn High School
Deckerville	Deckerville Community High Schoo
Delton-Kellogg	Delton-Kellogg High School
Detour	Detour High School
Detroit	Communication & Media Arts HS
Detroit	Davis Aerospace High School
Detroit	Detroit HS-Fine & Performing Art
Detroit	MacKenzie High School
Detroit	Mumford High School
Detroit	Northwestern High School
Detroit	Redford High School
Detroit	Western International High Schoo
DeWitt	DeWitt High School
Dryden	Dryden Community High School
Dundee	Dundee Community High School
Durand	Durand Area High School
East China	Marine City High School
East Jordan	East Jordan High School
Edwardsburg	Edwardsburg High School
Evart	Evart High School
Ewen-Trout Creek	Ewen-Trout Creek Consolidated Sc
Farmington	Farmington High School
Farmington	North Farmington High School
Farwell	Farwell High School
Fenton	Fenton Senior High School
Flat Rock	Flat Rock High School

Flint	Central High School
Flint	Northern High School
Flint	Southwestern Academy
Forest Hills	Forest Hills Central High School
Fowler	Fowler High School
Fowlerville	Fowlerville High School
Frankenmuth	Frankenmuth High School
Fremont	Fremont High School
Garden City	Garden City High School
Gaylord	Gaylord High School/Voc. Bldg.
Gladwin	Gladwin High School
Gobles	Gobles High School
Goodrich	Goodrich High School
Grand Haven	Grand Haven High School
Grand Ledge	Grand Ledge High School
Grand Rapids	City Middle/High School
Grand Rapids	Ottawa Hills High School
Grandville	Grandville High School
Grass lake	Grass Lake Junior/Senior High Sc
Grosse Pointe	Grosse Pointe North High School
Hale	Hale High School
Hamilton	Hamilton High School
Hancock	Hancock Central High School
Harbor Beach	Harbor Beach Community High Scho
Harbor Springs	Harbor Springs High School
Harper Creek	Harper Creek High School
Harrison	Harrison Community High School
Hart	Hart High School
Hartford	Hartford High School
Hillsdale	Hillsdale High School
Holland	Holland High School
Holt	Holt Senior High School
Holton	Holton High School
Hopkins	Hopkins High School
Houghton Lake	Houghton Lake High School
Houghton-Portage	Houghton Central High School
Howell	Howell High School
Hudson	Hudson Area High School
Imlay City	Imlay City High School
Ionia	Ionia High School
Ironwood	Luther L. Wright High School
Ishpeming	Ishpeming High School
Ithaca	Ithaca High School
Jefferson	Jefferson High School
Jenison	Jenison High School
Jonesville	Jonesville Alternative H.S.

Kelloggsville	Kelloggsville High School
Kenowa Hills	Kenowa Hills High School
Kingston	Kingston High School
Lake Linden-Hubbell	Lake Linden-Hubbell High School
Lake Shore (Macomb)	Lake Shore High School
Lakeshore (Berrien)	Lakeshore High School
Lakeview (Calhoun)	Lakeview High School
Lakeview (Macomb)	Lakeview High School
Lakeview (Montcalm)	Lakeview Community High School
Lamphere	Lamphere High School
L'Anse Creuse	L'Anse Creuse High School
Lansing	Everett High School
Lapeer	Lapeer East Senior High School
Leslie	Leslie High School
Lincoln Park	Lincoln Park High School
Linden	Linden High School
Manton	Manton Consolidated High School
Marcellus	Marcellus High School
Mason (Ingham)	Mason High School
Mason (Monroe)	Mason Senior High School
Mattawan	Mattawan High School
Mayville	Mayville Community High School
McBain	McBain High School
Melvindale-N. Allen	Melvindale High School
Memphis	Memphis High School
Mendon	Mendon Middle/High School
Merrill	Merrill High School
Midland	H.H. Dow High School
Midland	Midland High School
Mio-AuSable	Mio-AuSable High School
Monroe	Monroe High School
Montabella	Montabella High School
Montague	Montague High School
Morley Stanwood	Morley Stanwood High School
Morrice	Morrice Area High School
Mt. Clemens	Mt. Clemens High School
Mt. Pleasant	Mt. Pleasant Senior High School
Munising	Munising High School
Muskegon	Muskegon High School
Napoleon	Napoleon High School
Negaunee	Negaunee High School
New Buffalo	New Buffalo Senior High School
New Haven	New Haven High School
New Lothrop	New Lothrop High School
Newaygo	Newaygo High School
North Central	North Central Area High School

Northport	Northport Public School
Northview	Northview High School
Novi	Novi Senior High School
Onaway	Onaway Senior High School
Onsted	Onsted Community High School
Ontonagon	Ontonagon Area Jr/Sr High School
Orchard View	Orchard View High School
Oscoda	Oscoda Area High School
Parchment	Parchment High School
Peck	Peck Community High School
Perry	Perry High School
Petoskey	Petoskey High School
Pine River	Pine River Area Jr/Sr High Schoo
Pittsford	Pittsford Area High School
Plainwell	Plainwell High School
Plymouth-Canton	Canton High School
Pontiac	Northern High School
Pontiac	Pontiac Central High School
Port Huron	Port Huron Northern High School
Portland	Portland High School
Quincy	Quincy High School
Reese	Reese High School
Republic-Michigamme	Republic-Michigamme School
Rochester	Rochester High School
Rogers City	Rogers City High School
Rudyard	Rudyard High School
Saline	Saline High School
Sandusky	Sandusky High School
Saugatuck	Saugatuck High School
Sault Ste. Marie	Sault Area High School
Shelby	Shelby High School
Shepherd	Shepherd Senior High School
South Haven	South Haven High School
Southfield	Southfield High School
Southfield	Southfield-Lathrup High School
Sparta	Sparta Senior High School
Spring Lake	Spring Lake High School
St. Joseph	St. Joseph High School
Superior Central	Superior Central School
Swartz Creek	Swartz Creek High School
Tecumseh	Tecumseh High School
Tekonsha	Tekonsha Senior High School
Traverse City	Traverse City Central H.S.
Trenton	Trenton High School
Troy	Troy High School
Ubly	Ubly Community High School

Van Dyke	Lincoln High School
Vandercook Lake	Vandercook Lake High School
Vassar	Vassar Senior High School
Vicksburg	Vicksburg High School
Wakefield	Wakefield School
Walkerville	Walkerville Rural Community Scho
Walled Lake	Walled Lake Central High School
Walled Lake	Walled Lake Western High School
Walter French	Walter French Academy
Warren	Cousino Senior High School
Warren	Sterling Heights Senior High Sch
Waterford	Waterford Kettering High School
Waverly	Waverly Senior High School
Wayne-Westland	John Glenn High School
Webberville	Webberville Middle/High School
West Bloomfield	West Bloomfield High School
West Ottawa	West Ottawa High School
Westwood	Robichaud Jr/Sr High School
White Pigeon	White Pigeon Jr/Sr High School
Whitehall	Whitehall Senior High School
Williamston	Williamston High School
Woodhaven-Brownstown	Woodhaven High School
Wyandotte	Roosevelt High School
Yale	Yale Senior High School
Zeeland	Zeeland High School

The Impact of Michigan School Librarians on Academic Achievement: Kids Who Have Libraries Succeed

Direct questions to:
Kristine Tardiff, Library of Michigan
ktardiff@michigan.gov

Due Date: April 26, 2002

PART A - RESPONDENT INFORMATION

Please identify your school by name, level, and district and provide contact information for the individual who responded to this survey. Complete a separate questionnaire for each school. Do **not** combine data for multiple schools.

Please Print

School Name			
School Level (Mark one) ❑ Elementary ❑ Jr High/Middle ❑ High ❑ Combined			
Grades in School (circle **all** that apply) preK K 1 2 3 4 5 6 7 8 9 10 11 12			
Are you a combined public/school library? ☐ Yes ☐ No			
District Name			
School Address			
City	County	Zip code	
Name of Respondent	Title		
Phone ( )	Fax ( )	E-mail:	

PART B - SERVICE HOURS PER TYPICAL WEEK

Please report the typical **weekly** number of hours your school library is open for use in each of the following five categories:

Category	*Line*	*Hours per Typical Week*
Hours open per typical school week during student use time	1	
Hours open per typical school week before student use time	2	
Hours open per typical school week after student use time	3	
Hours available per typical school week for flexible scheduling during student use time	4	
Hours open per typical summer week	5	

PART C - SCHOOL LIBRARY PAID STAFFING PER TYPICAL WEEK

Please report the education levels of **paid** staff for your library media program.
Include both the **number** of people at each level (in Col. A) and the corresponding **total number of staff-hours** per typical **week** for each level (in Col. B).
Do not report more than 40 hours per week per person.
Count each individual only once.
Do **not** include volunteers or student workers or their hours, if any.

Example: If you have two people at the "Associate's degree" level, enter "2" on line C 7, Col. A. If one of them works 20 hours per week and the other 10 hours per week, enter "30" on line C 7, Col. B.

Paid Staff by Education and Selected Other Credentials	*Line*	**Col. A** Number of People (head count, **not** FTE)	**Col. B** Total Staff-Hours per Typical **Week**
Master's degree or higher --with teacher certification & library media endorsement	1		
--with teacher certification but no library media endorsement	2		
--with neither teacher certification nor library media endorsement	3		
Bachelor's degree --with teacher certification & library media endorsement	4		
--with teacher certification but no library media endorsement	5		
--with neither teacher certification nor library media endorsement	6		
Associate's degree	7		
High school --with some college	8		
--high school diploma only	9		
No high school diploma	10		
TOTALS (Add lines 1 through 10, both columns)	**11**		

This TOTAL in Part C, 11B MUST equal the TOTAL in Part D, 14A on the next page. In other words, total paid staff hours per week must equal total paid staff activity hours.

PART D – SELECTED PAID STAFF ACTIVITIES PER TYPICAL WEEK

Report your best estimate of the **number of hours** per typical **week** your **paid** staff spends on **each** of the following activities.
Include **all** paid staff hours, not just paid professional staff hours.
Col. B is **OPTIONAL.** ***Only*** complete it if you wish to report voluntary unpaid overtime.

Selected Activities	*Staff-Hours Per Typical Week*		
	Line	Col. A Regular Paid hours	Col. B Unpaid Overtime hours
Hours spent **weekly** identifying materials for teachers	1		
Hours spent **weekly** planning instructional units with teachers	2		
Hours spent **weekly** teaching students cooperatively with teachers	3		
Hours spent **weekly** providing information skills instruction to students—individually or in groups (e.g., locating information, citations, copyright/plagiarism, evaluating Internet sources, note-taking)	4		
Hours spent **weekly** providing in-service training to teachers and/or other school staff (includes informal one to one and formal group sessions)	5		
Hours spent **weekly** offering reading incentive activities for students (e.g., reader's advisory services, book talks, story times, author visits, puppet shows)	6		
Hours spent **weekly** on collection development (e.g., selecting materials)	7		
Hours spent **weekly** meeting with school library staff from building, district, or beyond	8		
Hours spent **weekly** meeting with principal and/or other building or district administrators	9		
Hours spent **weekly** attending general faculty and/or staff meetings	10		
Hours spent **weekly** with meeting standards and/or curriculum committees/teams/task forces	11		
Hours spent **weekly** managing computers/library automation/computer network	12		
Hours spent weekly on **All other library activities** (e.g., processing, retrieving, checking in and out, re-shelving/re-storing) *plus* **Extra duties unrelated to school library services** (e.g., classroom teaching unrelated to school library services, monitoring restrooms, lunch, etc.)	13		
TOTALS (Add lines 1 through 12)	**14**		

This TOTAL in Part D, 14A MUST equal the TOTAL in Part C, 11B on the previous page. In other words, total paid staff hours per week must equal total paid staff activity hours.

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PART E - SCHOOL LIBRARY USAGE PER TYPICAL WEEK

Please report the following types of usage of your school library program per typical week. If these figures must be estimated and it is easier to estimate them for a month or year, estimate for a month and divide by four; or for a year, divide by the number of weeks your school library is open annually.

Type of Usage ***per Typical Week***	**Line**	**Number per Week**
Total Visits to the school library, scheduled or unscheduled, by: **Individuals** (students, teachers, administrators, parents, student aides, volunteers, others). Do *not* count people who are in the LMC in groups	1a	_____ people
Classes or other **groups** (e.g., the number of **classes** or **groups** of teachers, administrators, parents, or students visiting your library)	1b	_____ groups
Information skills instruction contacts, scheduled or unscheduled, for purposes like locating information, citations, copyright/plagiarism, critical thinking, evaluating Internet sources, or note-taking by: **Individuals** (students, teachers, administrators, parents, others) Do not count people who are in the LMC in groups	2a	_____ people
Classes or other **groups** (e.g., the number of **groups** of teachers, administrators, parents, or students visiting your library)	2b	_____ groups
Total circulation of materials, including all formats, in a typical **week**	3	
In-library use of materials in a typical **week** (estimate based on re-shelving count)	4	
Inter-library loans to any other library, both in and outside of your district, in a typical **week**	5	
Inter-library loans received from any other library, both in and outside of your district, in a typical **week.**	6	

PART F - SCHOOL LIBRARY MANAGEMENT

Please answer the following — Just mark YES or NO.

Item	***Line***	***Response***	
Does the school library program receive a budget?	1	❑ YES	❑ NO
If YES, do school library staff submit a budget request?	2	❑ YES	❑ NO
Does the school library program have an advisory committee?	3	❑ YES	❑ NO
Do school library staff meet regularly with local public library staff?	4	❑ YES	❑ NO
Does the school library have a policy to handle any challenges (reconsiderations) of materials in the school library's collection?	5	❑ YES	❑ NO

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PART G – SCHOOL LIBRARY TECHNOLOGY

FIRST, determine the number of computers located *in* or *under supervision of* your school library. This might include some computers not located *in* the library.

- (Note: For this question, the terms "computer", "terminal", and "workstation" are considered synonymous.)

Enter this number on Line 1 in Col. A.

THEN, determine the number of computers that are:

- located elsewhere in the school (like a computer lab, mini-lab, administrative office, etc.), and
- are *not* under supervision of the school library, and
- *are* connected to LMC resources. (Do *not* include any that are *not* connected to LMC resources)

Enter this number on Line 1 in Col. B.

On Lines 2 through 5, enter the number *of* the Line 1 Totals, in *each* column, that have the accesses, options, etc. specified on each of Lines 2 through 5.

A computer in either of the Line 1 Totals may be included on as many of Lines 2 through 5 as necessary.

For example, a computer in the school library might have Internet access *and* an Access Michigan bookmark. This computer would be counted on both Lines 2 *and* 5 under Col. A.

		Number of computers in school	
Number of computers	**Line**	**Col. A** *Located in or under supervision of school library*	**Col. B** *Located elsewhere, not under library control, but connected to LMC resources*
TOTALS: FIRST, enter on this line the *TOTAL* number of computers in *each* of the Col. A and Col. B categories:	1		
THEN, enter the number of each of the Line 1 TOTALS that have...			
Internet access	2		
Student access to the school library catalog	3		
Access to school library databases (e.g., ProQuest, EBSCO) other than or in addition to Access Michigan	4		
A link to Access Michigan via bookmark, hyperlink, menu option, or other pointer	5		

What library systems are automated? Check all that apply:			**What catalog software do you use? Check one:**		
circulation	6a		Follett	7a	
catalog	6b		Sagebrush/Winnebago/Athena	7b	
acquisitions	6c		Dynix (Epixtech)	7c	
other (please list)	6d		other (please list)	7d	
Is your library catalog accessible via the Web?				8	❑ YES ❑ NO
Does your automated system allow patron-initiated interlibrary loans?				9	❑ YES ❑ NO

PART H - SCHOOL LIBRARY COLLECTION

Report in Col. A and Col. B on *all* holdings, except where shaded.
Include all circulating and non-circulating items, *but*
Exclude any materials that are *not* available for use by teachers or students, such as materials reserved for library media staff, the principal, counselors, etc.
Report average copyright dates in Col. B. If these dates cannot be obtained from an electronic catalog, randomly select 25 items in the category (e.g., one per range or section, every third item, an item from every fifth shelf), and *average* their copyright dates.

Item	*Line*	***Col. A*** *Number*	***Col. B*** *Average Copyright Year*
Books of all types (number of volumes ***only***)	1		
Dewey 600-699 books, circulating & reference (copyright year ***only***)	2		
Encyclopedias & reference titles on CD-ROM or laser disk	3		
Current print subscriptions to magazines & newspapers	4		
Audio materials (cassettes, CDs, LPs)	5		
Video materials (cassettes and disks)	6		
Computer software packages for use in school library by students	7		
Does the school library subscribe to any online or CD-ROM services separate from AccessMichigan (e.g., ProQuest, EBSCO)?	8	❑ YES ❑ NO	

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PART I- ANNUAL OPERATING EXPENDITURES

For Line 1: Report the annual operating expenditures for this library media program from school or district funds. This figure should:

Exclude major one-time capital outlays for computers, furniture, and other equipment.
Exclude labor costs and fees and salaries of personnel having media responsibilities.
Exclude spending from income from book fairs, bake sales, donations, and other volunteer efforts.

For Lines 2 through 5: Just mark YES or NO.

Item	***Line***	***Whole dollars only***
TOTAL ANNUAL OPERATING EXPENDITURES	1	**.00**
Indicate which items are purchased through the library's operating budget:		
Books	2	❑ YES ❑ NO
All other print materials (include magazines & newspapers)	3	❑ YES ❑ NO
Materials in electronic formats (e.g., software, CD-ROM, laser disk, locally-mounted databases)	4	❑ YES ❑ NO
Non-print materials (e.g., audio, video, microform)	5	❑ YES ❑ NO
Electronic access to information (e.g., online database searching, Internet access)	6	❑ YES ❑ NO