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ABSTRACT

This study is an assessment of the impact of Alaska school librarians on academic achievement in the state's public schools. It examines the direct relationship between such staffing and student performance and identifies selected activities of library media staff that affect test scores. Other conditions of library media center operation were also considered as potential predictors of academic achievement. During the 1997-98 school year, library media centers in 211 Alaska public schools were surveyed about their staffing levels, hours of operation, staff activities, usage, technology, policies, and cooperation with public libraries. Each library media program characteristic was assessed as a potential predictor of academic achievement, and relationships among potential library media predictors that might create indirect effects on academic achievement were also examined. Recommendations for raising student achievement levels are included. Appendices include a bibliography, list of participants, copy of the questionnaire, a brochure entitled "A School Librarian Can Make a Difference!" and early results briefs. Although the findings, conclusions, and recommendations reported in this work are substantially the same as those of its original edition, this edition corrects typographical and transcription errors, eliminates unnecessary and misleading methodological information, clarifies ambiguous statements, corrects misinterpretations of statistical details, and contains citations accidentally left out of the original bibliography. (MES)

Information Empowered

The School Librarian as an Agent of Academic Achievement in Alaska Schools

Revised Edition

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with
Lois A. Petersen
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Preface to the Revised Edition

This is the revised edition of **Information Empowered**: *The School Librarian as an Agent of Academic Achievement in Alaska Schools*. Although the findings, conclusions and recommendations reported in this work are substantially the same as those of its original edition, this edition

- corrects typographical and transcription errors,
- eliminates unnecessary and misleading methodological information,
- clarifies ambiguous statements,
- corrects misinterpretations of statistical details, and
- contains citations accidentally left out of the original bibliography.

The authors are indebted to Christine McNew of the Texas State Library and Dr. Christopher Benton of Alvin Community College, Alvin, Texas, for calling their attention to several of these problems with the original documentation of the study results.

Table of Contents

Table of Contents 1

List of Tables 2

Figure 3

Acknowledgements 4

Executive Summary 5

Introduction 8

Review of the Literature 10

Methodologies 19
- Sample 19
- Survey 21
- Available Data 24
- Crosstabulation and Chi Square 25
- Comparison of Means and t Test 26
- Statistical Significance 26
- Correlation 27
- Factor Analysis 27
- Regression 28

Findings 29
- Library Media Predictors of Academic Achievement 29
  - Librarian Staffing Level 29
  - Hours LMC Open 32
  - Staff Activities 35
  - Library Media Program Usage 44
  - Cooperation with Public Library 53
  - Online Access to Information 56
  - Collection Development Policy with Review Provisions 58
- Community and School Predictors of Academic Achievement 60

Conclusions and Recommendations 65

Appendices
- Bibliography 69
- List of Participants 75
- Survey of School Library Media Centers in Alaska 1998 (questionnaire) 80
- A School Librarian Can Make a Difference! (brochure) 87
- Early Results Briefs #1-5 89

List of Tables

1. Alaska Public Schools in the Study Sample by Grade or Combination of Grades, 1997-98 19
2. Alaska Public Schools in the Study Sample by Individual Grade, 1997-98 20
3. Alaska Public Schools in the Study Sample by Enrollment Range, 1997-98 20
4. CAT5 Test Scores by Librarian Staffing Level for Alaska Elementary Schools, 1998 31
5. CAT5 Test Scores by Librarian Staffing Level for Alaska Secondary Schools, 1998 31
6. Bivariate Correlation of Librarian Hours per 100 Students with CAT5 Test Scores for Alaska Elementary and Secondary Schools, 1998 32
7. LMC Hours Open by Librarian Staffing Level for Alaska Elementary Schools 33
8. LMC Hours Open by Librarian Staffing Level for Alaska Secondary Schools 34
9. Bivariate Correlation of Librarian Hours per 100 Students with LMC Hours Open for Alaska Elementary and Secondary Schools, 1998 34
10. Time Spent Delivering Library/IL Instruction by Librarian Staffing Level for Alaska Elementary Schools, 1998 36
11. Time Spent Delivering Library/IL Instruction by Librarian Staffing Level for Alaska Secondary Schools, 1998 36
12. Time Spent Planning with Teachers by Librarian Staffing Level for Alaska Secondary Schools, 1998 38
13. Time Spent Providing In-Service Training to Teachers by Librarian Staffing Level for Alaska Elementary Schools, 1998 39
14. Time Spent Providing In-Service Training to Teachers by Librarian Staffing Level for Alaska Secondary Schools, 1998 40
15. CAT5 Test Scores by Time Spent Delivering Library/IL Instruction for Alaska Elementary Schools, 1998 41
16. CAT5 Test Scores by Time Spent Planning with Teachers for Alaska Elementary Schools, 1998 42
17. CAT5 Test Scores by Time Spent Planning with Teachers for Alaska Secondary Schools, 1998 43
18. CAT5 Test Scores by Time Spent Providing In-Service Training to Teachers for Alaska Secondary Schools, 1998 44
19. Student Visits for Library/IL Instruction per Capita by Librarian Staffing Level for Alaska Elementary Schools, 1998 45
20. Bivariate Correlation of Librarian Hours per 100 Students with Student Visits for Library/IL Instruction per Capita for Alaska Elementary and Secondary Schools, 1998 46
21. Student Visits for Library/IL Instruction per Capita by LMC Hours Open for Alaska Elementary Schools, 1998 47
22. Student Visits for Library/IL Instruction per Capita by Time Spent on Library/IL Instruction for Alaska Elementary Schools, 1998 48
23. Bivariate Correlation of Time Spent Planning with Teachers and Staff Visits per 100 Students for Alaska Elementary and Secondary Schools, 1998 50
24. CAT5 Test Scores by Student Visits for Library/IL Instruction for Alaska Elementary Schools, 1998 51

25. Relationships Between Public Libraries and Alaska Elementary Schools by Librarian Staffing Level, 1998 54
26. Relationship Between Public Libraries and Alaska Secondary Schools by Librarian Staffing Level, 1998 54
27. CAT5 Test Scores for Alaska Elementary Schools With and Without Relationships with Public Libraries, 1998 55
28. CAT5 Test Scores for Alaska Secondary Schools With and Without Relationships with Public Libraries, 1998 55
29. CAT5 Test Scores for Alaska Secondary Schools With and Without Touch-Tone Telephones in Library Media Centers, 1998 57
30. CAT5 Test Scores for Alaska Secondary Schools With and Without Modems in LMC Computers, 1998 57
31. CAT5 Test Scores for Alaska Elementary Schools With and Without Collection Development Policies Providing for Reconsideration of Materials, 1998 59
32. CAT5 Test Scores for Alaska Secondary Schools With and Without Collection Development Policies Providing for Reconsideration of Materials, 1998 59
33. Correlation Matrix for Community Indicators for Alaska Elementary Schools, 1998 61
34. Factor Analysis of Community Indicators for Alaska Elementary Schools, 1998 61
35. Correlation Matrix for Community Indicators for Alaska Secondary Schools, 1998 62
36. Factor Analysis of Community Indicators for Alaska Secondary Schools, 1998 62
37. Regression Model Summary Including All Community and School Predictors and Librarian-Pupil Ratio for Alaska Elementary Schools, 1998 63
38. Regression Model Summary Including All School Predictors and Librarian-Pupil Ratio for Alaska Elementary Schools, 1998 63
39. Regression Model Summary Including All Community and School Predictors and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998 64
40. Regression Model Summary Including All School Predictors and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998 64
41. Regression Model Summary Including Teacher-Pupil Ratio and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998 64

Figure

1. The School Librarian's Role in Academic Achievement in Alaska: Summary of Bivariate Relationships 68

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The review of the literature contained herein updates the comprehensive review done for the original Colorado study. Indeed, it was produced by one of the co-authors of that review, Christine Hamilton-Pennell. 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.

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Keith Curry Lance
Denver, Colorado

Executive Summary

This study is an assessment of the impact of Alaska school librarians on academic achievement in the state's public schools. It examines the direct relationship between such staffing and student performance, and identifies selected activities of library media staff that affect test scores. Other conditions of library media center operation—hours open, available technology, relationship with the public library, and selected policies—are also considered as potential predictors of academic achievement.

New Information Power Principles & Previous Research

This study's findings expand upon those of **The Impact of School Library Media Centers on Academic Achievement** (also known as "the Colorado study"), verify almost half a century of previous research on that topic, and demonstrate empirical support for the principles of **Information Power: Building Partnerships for Learning** (1998).

Methodologies

During the 1997-98 school year, library media centers in 211 Alaska public schools were surveyed about their staffing levels, hours of operation, staff activities, usage, technology, policies, and cooperation with public libraries. To the survey results, other data were added. For grades four, eight, and eleven, each school reported the percentage of students scoring below proficient, proficient, and above proficient on Version 5 of the California Achievement Tests (CAT5) of reading, language arts, and mathematics.

Using multiple analytical techniques each library media program characteristic was assessed as a potential predictor of academic achievement. Relationships among potential library media predictors that might create indirect effects on academic achievement were also examined. After the direct and indirect effects of librarians on academic achievement were assessed, their effects relative to other school and community factors were analyzed via multiple regression.

Findings

School librarians are the "information empowered," because they play three critical roles in the learning community. They are teachers, information specialists, and administrators. In each of these roles, they empower students and teachers to meet high standards of academic achievement.

Following is a summary of positive, statistically significant relationships confirmed by this study:

Library Media Specialist Staffing

- Test scores tend to be higher for schools where there is
  - a librarian,
  - a full-time librarian rather than a part-time one,
  - a part-time librarian rather than no librarian at all.

- Higher levels of librarian staffing are associated with
  - longer LMC hours of operation,
  - higher levels of library media staff activity,
  - higher student usage, and consequently
  - higher test scores.

Staff Activities

- The higher the level of librarian staffing, the greater the percentage of library media staff hours dedicated to
  - delivering library/information literacy instruction to students, and
  - providing in-service training to teachers and other staff.

- Regardless of level of librarian staffing, the more library media staff time devoted to these activities, the higher the test scores.

Library Media Program Usage

- The more often students receive library/information literacy instruction in which library media staff are involved, the higher the test scores.

Partnerships, Technology & Policies

Test scores also tend to be associated with

- cooperative relationships between LMCs and public libraries,
- library media programs that have the facilities required to reach the Internet and the World Wide Web—and
- collection development policies that addresses reconsideration of materials.

Controlling for Community and School Conditions

In addition, this study weighed the relative effects on academic achievement of librarian staffing, other school characteristics (i.e., per pupil spending, teacher-pupil ratio), and community conditions (i.e., adult educational attainment, Alaska Native population, poverty). While community conditions proved to have the strongest impact and instructional expenditures per pupil proved a strong factor at the secondary level, the librarian-pupil ratio outweighed both per pupil expenditures and teacher-pupil ratio at the elementary level and added to the effects of teacher-pupil ratio at the secondary level. Throughout the study, school size was controlled for by using ratios, such as the librarian-pupil ratio (i.e., typical weekly hours of librarian staffing per 100 students).

The small size of the data set and correlation between explanatory variables prevent our being able to assess the effect of library media services relative to other explanatory variables, while also controlling for community conditions. However, given these limitations, the data generally support the hypothesis that library services are beneficial for students in all communities.

In tackling these issues, this study broke new ground by taking recommended next steps beyond previous research. Its assessments of the efficacy of specific staff activities and online access to information are two examples of this accomplishment. This study also verifies that relationships to academic achievement found previously for school libraries in other states and communities are not anomalous, but apply equally to Alaska's school libraries. Like earlier studies, this one demonstrates that its key finding—the positive relationship between school librarians and test scores—cannot be explained away entirely by differences in school size, funding, and teacher staffing levels.

Introduction

This study was undertaken by the contractor, the Library Research Service, with the cooperation and collaboration of staff of the Alaska State Library, the Alaska Department of Education and Early Development, and the Institute for Social and Economic Research at the University of Alaska, Anchorage.

In late 1997, the Alaska State Library, concerned about declining test scores, commissioned an investigation of how the condition of the state's school library media programs and the activities of school librarians affect—or might affect—this problem. This study explores how high-quality school library media programs can and do contribute to academic achievement in Alaska. While the primary focus is the role of the school librarian, attention is also given to the contributions of school-public library cooperation, online access to information, and collection development policies.

The School Librarian

Evidence of the positive impact of school librarians on students' academic achievement abounds. Over the past 40 years, dozens of studies conducted throughout the United States and abroad have produced conclusive evidence that this relationship exists. The question that remains is how do school librarians make a difference—what, specifically, do they do that leads students to perform better than they would have otherwise? Recent studies (e.g., Lance, et.al., 1993) have found that it is important for school librarians to have an instructional role, but have not revealed what the focus of this role should be. This study will explore this issue, seeking to identify the most potent focus for action by school librarians in the instructional process.

School-Public Library Cooperation

Even more current research (e.g., Krashen, 1993; Krashen and O'Brian, 1996; Smith, Constantino, and Krashen, 1996; Krashen and McQuillan, 1998) suggests that the success of school librarians in playing an effective instructional role depends, in part, on their establishing and maintaining a strong working relationship with the public library. While school and public libraries have different missions, they are complementary ones requiring mutual support. The importance of such inter-library cooperation will also be explored in this study.

Online Access to Information

Over the past decade, nothing has affected the practice of school librarianship—or, for that matter, education in general—more than the increasingly rapid development of computer and telecommunications technologies, especially the online access to information made possible by the Internet and the World Wide Web. Very recent research (Library Research Service, 1998) indicates that students earn better test scores in schools that provide such access. This study will

seek to verify that providing online access to information is an important role of Alaska's school library media programs.

Collection Development Policies

In last year's new edition of **Information Power**, the American Association of School Librarians reconfirmed the importance of the school librarian's role as policymaker. Perhaps the most important policies for any library are those governing collection development and access to information. This study will consider the importance of collection development policies—especially ones with procedures for reconsidering items selected for the building collection—in shaping effective school library media programs.

After reviewing the literature on this study's topic and explaining the methodologies utilized in the statistical analysis, this report documents findings regarding the role of school librarians as agents of academic achievement in Alaska schools. The report closes with recommendations for action and contains several appendices, including a brochure and several briefing papers for use in sharing the study's results.

Review of the Literature

This study aims to build 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 librarian 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 librarians 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 librarian, that of developing the media center's collection and services and providing access to them. A third role, *Program Administration*, includes both management of the program and the 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 school librarian 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. (p. 1)

Presence of a Library with a Professional School Librarian

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. She also found that student access to the library media center was 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 the scores of students who had not had a variety of library services and facilities during their elementary school experience.

Learning and Teaching Role of the School Librarian

Some research studies before the advent of **Information Power Guidelines** in 1988 referred to various aspects of the librarian'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.

In a study by Hutchinson (1982), tenth-grade students were given special library skills instruction and practice by English teachers 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.

Much of the research taking place after the introduction of the **Information Power Guidelines** in 1988 focuses on the instructional role of the school librarian. Lance, Welborn and Hamilton-Pennell (1993) found that students whose librarians 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 test scores. A study by the Library Research Service in Colorado (1998a) also found that students earned higher reading scores in schools where the librarian played a vital instructional role, including planning instruction with teachers, providing information literacy instruction, providing in-service training for teachers, and evaluating students' work.

Nevertheless, several researchers have identified a gap between theory and practice. Person (1993) found a discrepancy between the real and ideal role perceptions of librarians. 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 librarians 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 which showed that the majority of librarians 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.

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 librarian 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.

The most important factor in successfully implementing the instructional role is the characteristics and skills of the school librarian himself or herself. Yetter (1994) found that librarians 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 librarians all saw teaching as their primary function. In turn, they were viewed by their colleagues as a vital part of the instructional process. Farwell (1998) found that librarians 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 librarian involved in an instructional planning process showed that she contributed as a peer and helped to clarify, initiate, summarize and test the discussion ideas.

K. G. Alexander (1992) studied four exemplary librarians and found that they fulfilled most of the aspects of the instructional role. They spent large portions of each day effectively managing class and teaching time, providing instruction related to the curriculum, using innovative instructional methods, instructing different sections of the school community, ensuring that their media center had resources to support the changing curriculum, and assisting 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 librarian 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 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.

Another aspect of the librarian'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 librarians involved in resource-based learning were enthusiastic about reading and books. Lai (1995) found that teachers and librarians both strongly agreed that the librarian should work with teachers in helping students to develop the habit of reading.

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 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 librarians, had a positive impact on student learning, including better understanding of subject content and improved test scores. Todd (1995) analyzed the impact of integrated library/information literacy instruction in a Year-Seven science class. The two treatment classes recorded significantly higher annual science scores than the control classes.

Information Access and Delivery Role of the School Librarian

The information access and delivery role includes providing quality resources and technology which support the curriculum, offering convenient and flexible access to the media center's resources and services, and providing a welcoming environment which is conducive to learning. 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.

More recent studies have focused on the connection between students' achievement in reading and access to print resources, particularly in libraries. The 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. 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. 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.

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.

Access to 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. 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 (e.g., public library

staff presenting booktalks at the school library, the local public library providing a summer reading program).

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. 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.

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.

Frequency of library use has also been positively linked to student achievement scores. 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. JoAnn Everett, a librarian in a Library Power elementary school in Chattanooga (noted in "Positive Correlation...", 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.

The role of the librarian in developing and providing access to the library media program has received a fair amount of attention in the research. Pembroke (1997) found that reading guidance or a bibliography provided by the school librarian was an important factor in motivating reluctant fifth grade readers. 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 between 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.

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 librarian 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 role of technology in promoting student achievement has been the focus of some 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. 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. 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.

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. 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 were automated, and these were mostly in middle and high school libraries.

High-achieving schools tend to have more technological resources. Baule (1997) found that schools with exemplary technology were also more likely to have 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.

As Wenglinksy (1998) demonstrated, it is not the amount of technology or computer use that counts in promoting student achievement, but how it is used. Many researchers (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. 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. Person (1993) reports that librarians do not 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).

Program Administration Role of the School Librarian

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. 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 librarian to work collaboratively, clerical support for the librarian, 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 librarians and classroom teachers to plan together. Gehlken (1994) reported that in all three blue ribbon high schools, 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 librarians 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 librarians 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 librarian in curriculum, instruction and staff development. Van Deusen (1996a) reports that the availability of support staff and automated library systems was positively related to librarians' doing more consulting work with teachers and spending less time on nonprofessional tasks.

Lance, Welborn and Hamilton-Pennell (1993) found that library media centers which 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 librarian'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. 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 librarian is supported by an aide.

School librarians 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 librarians 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 librarian leadership in site-based staff development and good communication with staff and principal support. School librarian involvement in technology-based staff training can support student achievement. 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.

Summary

The impact of school library media programs on academic achievement is well-documented in the research literature. High-quality school library media programs—those that have professional staff who are involved in instruction—contribute to the academic success of their students. Higher order uses of technology and access to strong public libraries also support student achievement. All three roles of the school librarian 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.

Methodologies

This study involved a variety of methodologies, including crosstabulation, comparison of means testing, correlation analysis, factor analysis, and regression analysis. After a profile of the schools in the study sample, each of these analytical approaches is explained briefly.

Sample

During the 1997-98 school year, there were 461 public schools in Alaska serving grades four, eight, and/or eleven. The study necessarily focuses on schools serving these particular grades because those are the ones to whom the state tests are administered. The sample for this study is 211 schools—a little less than half the total.

Representativeness by Grade

The percentages of sample schools serving particular grades and combinations of grades are somewhat higher and lower than the percentages of such schools in the universe of Alaska public schools. (See Table 1.) Schools serving elementary grades only (fourth) and those serving upper secondary grades (eighth and eleventh as well as eleventh only) are over-represented in the sample, while those serving middle grades (fourth and eighth; eighth only; fourth, eighth, and eleventh) are under-represented. These imbalances in the sample, resulting largely from the self-selection of respondents, are mitigated by the fact that separate analyses were conducted for elementary and secondary levels.

Table 1. Alaska Public Schools in the Study Sample by Grade or Combination of Grades, 1997-98

	Universe		Sample		Percent
Grades	Number	Percent	Number	Percent	Difference
4th only	153	33%	85	40%	7%
4th & 8th	38	8%	16	8%	-1%
8th only	46	10%	5	2%	-8%
8th & 11th	42	9%	21	10%	1%
11th only	38	8%	28	13%	5%
4th, 8th & 11th	144	31%	56	27%	-5%
Total	461	100%	211	100%	0%

Some schools serve more than one grade. Indeed, in Alaska, many schools serve all grades. As testing occurs in selected grades, it is also informative to note the numbers of schools tested for each grade, regardless of whether or not the school also included other tested grades. (See Table 2.) Because these counts result in duplication—for instance, counting a school three times if it includes grades four, eight, and eleven—they illustrate the fact that, while only 211 schools were involved in this study, they were the equivalent of 339 schools for analytical purposes.

Table 2. Alaska Public Schools in the Study Sample by Individual Grade, 1997-98

	Universe		Sample		Percent
Grades	Number	Percent	Number	Percent	Difference
4th	335	43%	157	46%	4%
8th	228	29%	77	23%	-6%
11th	224	28%	105	31%	3%
Total*	787	100%	339	100%	0%

* Note: These totals are duplicative. Schools that include two or all three of these grades may be included in multiple lines.

Because the number of schools including eleventh grade was marginal and the number including eighth grade was decidedly small, schools from these two groups were combined into a single group of secondary schools.

Representativeness by Enrollment Size

During the 1997-98 school year, Alaska had 465 public schools for which enrollment figures were available. The study sample of 211 schools is slightly less than half the number in the universe of Alaska public schools. The percentages of sample schools serving particular enrollment ranges are somewhat higher and lower than the percentages of such schools in the universe. (See Table 3.) The smallest schools, those with enrollments of less than 300 students, were under-represented, while schools in the remaining larger enrollment categories were somewhat over-represented. Most of this over-representation occurred among schools with enrollments between 300 and 700 students. These imbalances in the sample reflect the varying rates of response to the survey by school size.

Table 3. Alaska Public Schools in the Study Sample by Enrollment Range, 1997-98

	Universe		Sample		Percent
Enrollment	Number	Percent	Number	Percent	Difference
Less than 300	307	66%	105	50%	-16%
300-499	75	16%	51	24%	8%
500-699	52	11%	35	17%	5%
700-999	15	3%	9	4%	1%
1,000 & more	16	3%	11	5%	2%
Total	465	100%	211	100%	0%

Survey

The Survey of Alaska School Library Media Centers conducted in Fall 1998 was modeled on the 1997 edition of Colorado's annual survey questionnaire. Questionnaires were distributed via surface mail by the Institute for Social and Economic Research of the University of Alaska, Anchorage, with an initial deadline of November 6, 1998. Follow-up contacts by Institute and State Library staff between mid-November 1998 and late January 1999 were responsible for the number of participating schools reaching 211.

Respondent Information

The questionnaire began with several items identifying the responding school—its name and address, its lowest and highest grades, 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 lowest and highest grade figures were especially important as they made it possible to determine which tested grades (fourth, eighth, and eleventh) a school served.

Hours of the Library Media Center

The second part of the questionnaire contained items concerning the library media center's hours of operations—both during and after school in a typical school week and in a typical week during summer months. These hours were sub-divided according to whether they were supervised or unsupervised hours. Supervision was defined as the presence of the adult responsible for the library's operation. It seemed reasonable to expect that schools with higher test scores would be those with libraries that have longer hours and more supervised hours.

Library Media Staff

Perhaps the most fundamental question examined by this study was the value of staffing library media centers with individuals possessing certain qualifications, such as a master's degree in library science and an Alaska endorsement in school library media services. 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 and work assignments. In addition, numbers of volunteers—both adult and student—and numbers of hours worked by them were collected. As noted earlier, one of the most consistent findings of research about the impact of library media centers is the value of staffing them with individuals who are professionally trained for the job. Another consistent finding is the importance of having support staff who free the professional to do his/her job.

Paid Staff Activities

While the 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 spend identifying and providing materials for instructional units developed by teachers and planning instructional units with teachers. The Alaska 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 providing reading motivation activities. The rationale for imposing upon 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 for elementary and secondary levels.

Use of Library Media Services

The next part of the questionnaire solicited statistics about how often students and staff (i.e., administrators, teachers, others) interacted with library media center staff for different purposes: library/information literacy instruction; technology use; planning; etc. The items about technology use are especially important in assessing the role of library media technology as a facilitator of higher achievement levels. 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, commercial document delivery services). Previous research and conventional wisdom indicate that library media specialists 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.

Library Media Collection

Despite the increasingly critical role played by library media 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 of obsolete information. Many respondents reported great difficulty in obtaining the data required to complete this section or in compiling it as requested. From the outset, therefore, it was clear that this study would have difficulty addressing the issue of the collection directly.

Online Access to Information

The next part of the questionnaire asked a series of mostly yes/no questions about the availability of different kinds of technology, both basic capabilities (e.g., telephone, fax, photocopier) and those required for networking (e.g., e-mail, LAN/WAN, Internet access). While the results of research to date on the impact of technology on academic achievement are mixed, there is recent evidence, such as that reported earlier, that supports a belief that technology in general and Internet access in particular can enable students, especially disadvantaged ones, to improve their test performance.

Annual Expenditures for the Library Media Center

One of the key findings of the Colorado study was that per student expenditures on library media programs impact test scores by enabling those programs to be staffed, stocked, and equipped in ways that facilitate better teaching and learning. While an attempt was made in Alaska to collect complete and accurate data on school library funding, it was largely unsuccessful. As in many states, most of Alaska's school libraries do not have a separately organized and autonomous budget. Their staff expenditures are submerged in a larger school payroll. Their collection expenditures are often mixed in with the costs of textbooks and classroom resources for teachers. Their furniture, computing, and other equipment needs are also aggregated with those of other school departments and units. Many respondents reported great difficulty in obtaining the data required to complete this section or in compiling it as requested. From the outset, therefore, it was clear that this study would have difficulty addressing the issue of funding directly.

Library Media Center Policies

The quality of a library media center's organization and support are also indicated by its policies. The penultimate section of the questionnaire asked a series of yes/no questions concerning whether the school library had policies addressing certain critical issues, including: the program's own development; the role of technology in the library media center and the school; an information literacy or library skills curriculum; collection development; and challenges or objections to materials. The presence of such policies indicates the presence of an activist library media specialist who has the organizational, managerial, and political skills required to develop and codify them and to obtain for them the imprimatur of the school's teachers, administration, and possibly the district board.

Library Media Center Management

In its final section, the questionnaire poses a series of questions related to the school library's relationship to its local public library. After the initial questions establishing the nature of this relationship and its degree of formality, a sequence of questions elicits specific ways in which school and public libraries are cooperating (e.g., a shared network, homework alerts from the school to the public library, a summer reading program at the public library). While the roles of

school and public libraries are different, they are largely complementary. Research indicates that the combined efforts of school and public libraries can play a formidable role in preparing students to excel on tests of academic achievement.

Available Data

Apart from the data obtained from the survey of school library media centers, all other data employed in this study were available data. That is, all other data needs were met by existing data. These data are in three categories: community data, school data, and CAT5 test score data.

Community Data

This study depends on demographic data that, whenever possible, was obtained at the school or neighborhood level. Alaska's unique qualities often required a higher level of granularity such as county equivalents or regional data.

Available data were incorporated in the study from publicly accessible Web sites for the following variables:

- median household income, projected for 1999
- percentage of population below poverty line
- educational attainment

The Federal Financial Institutions Examination Council maintains a site at www.ffiec.gov for the use of financial institutions reporting community investment to the government. This site allows the researcher to enter a street address and zip code and receive information at the Census Tract/BNA level, grouped under income, population, and housing. While the majority of information is from the 1990 census, some variables, such as median household income, are estimated for 1999. This variable is based on Housing and Urban Development (HUD) estimates for the Metropolitan Statistical Area (MSA) or non-MSA area where the school is located. The income module of this site provided the numbers used in this study for percentage of the population below the poverty line and projected median household income for 1999.

The educational attainment variable demonstrates the general level of education in the surrounding population. Educational attainment data are available through the Census Bureau's web site at www.census.gov. Data were obtained at the zip code level for total population and number of people age 25 and over with a high school diploma or equivalency and beyond. The percentage of population with a minimum of a high school diploma was computed from this data.

School Data

The Alaska Department of Education and Early Development provided data on the number of students in each district and the number of students receiving free or subsidized school lunches in each district. The percentage of the student body eligible for the National School Lunch Program was computed and then assigned to each school within that district. A factor analysis of this school lunch eligibility variable, estimated median household income, and percent of the population below the poverty line was conducted in order to obtain a poverty factor for each school's community.

Ethnic enrollment within each school was provided by the Alaska Department of Education and Early Development. Categories included were Alaska Native, American Indian, Asian/Pacific Islander, Black, Hispanic, White, and Other. Four of these variables, American Indian, Asian/Pacific Islander, Black and Hispanic were then combined to form a separate variable. Preliminary analysis determined that the only ethnic variable having any significant statistical impact was the percentage of a community's school children who are Alaskan Native.

CAT5 Test Score Data

During the 1997/98 school year, public school students in grades four, eight, and eleven were tested utilizing Version 5 of the California Achievement Tests (CAT5) of reading, language arts, and math. Summary scores by school were obtained from the Alaska Department of Education and Early Development. Scores were summarized in terms of the percentage of students in a school scoring at each of three levels: "above proficient" (76 to 100 percent of answers correct), "proficient" (51 to 75 percent), and "below proficient" (zero to 50 percent). For purposes of this study, the proficient and above proficient percentages were summed to create a proficient or above percentage.

Crosstabulation and Chi-Square

Crosstabulation combines data on two or more different variables in one table, thereby identifying the numbers of cases for each potential combination of the variables in question. This statistical technique is appropriate only for categorical variables or others with very small numbers of values. Each cell in a crosstabulation table represents a unique combination of values on the variables in question. For example, in this study, Alaska school libraries are crosstabulated based on whether they had a library media specialist full-time, part-time, or not at all and whether their schools' test scores were average or above or below average. If the presence of a library media specialist was unrelated to test score performance, one would expect there to be fairly equal numbers of schools in each cell. As predicted, that was not the case. The results of this and related analyses will be reported later.

The common test of statistical significance for relationships between categorical variables is Pearson's Chi-square. The value of Chi-square itself as well as its significance level depends on the overall number of cases under study, the number of cells in the crosstabulation table, and the number of cases in each cell. A key assumption related to use of Chi-square is that the expected

number of cases per cell is not very small. For instance, when the number of cases per cell is very small—say five—Chi-square cannot be calculated with precision or reliability.

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. Categorical variables in this study include library media staffing level (full-time, part-time, none), CAT5 test score level (average and above, below average), and LM staff time spent providing in-service training to teachers (any, none). Continuous variables in this study include, for example: percentages of students scoring proficient or above test scores, hours of library media staffing and activities, and numbers of student visits to the library media center per typical week for instruction. Each of these variables has a substantial range. For instance, test scores are reported in terms of the percentage of students scoring "proficient" or "above proficient"—a figure that could range, theoretically, from 0 to 100. (Alternatively, categorical variables have only a few possible values, such as whether or not a library media center has Internet-accessible computers or whether such access if obtained via dial access or dedicated line.) Is the difference between the group means a reliable one—i.e., one that would be found consistently in alternative samples—or just a fluke? This test is especially appropriate for use with small samples, a relevant asset in this study.

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 total sample for this project exceeds the latter criterion, and the sub-samples exceed the former one.

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 utilized in each specific analysis.

Statistical Significance

Given these two figures, the value of t and the results of Levene's test, the statistical significance of the difference between two group means may be determined. Statistical significance is an often misunderstood concept. Usually, when a statistical difference between two groups is

reported to someone, the first question that occurs to them is "Is that difference significant?" In this context, the intuitive response is to question the magnitude or size of the difference. There are no statistical tests to determine if a difference between two groups is "big enough." Another aspect of "significance" is reliability or consistency. When a sample is studied, instead of the entire universe (in this case, library media centers in Alaska 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.

Correlation

In this study, 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 CAT5 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 making that decision, three generally accepted criteria were followed:

- If r was under .60, both variables were at least initially retained.
- If r was over .80, the one with the lower r's for the larger number of other variables was retained, and the other discarded.
- If r was between .60 and .80, an attempt was made to combine the variables either by addition or factor analysis.

Factor Analysis

While correlation analysis examines relationships between pairs of variables, factor analysis establishes relationships among related variables. This data reduction technique was particularly useful in one instance, when three indicators of poverty needed to be combined, but were measured on different scales (e.g., dollars and percentages).

Instead of reporting the correlation of each variable with each other variable, factor analysis creates artificial factors and reports factor loadings which indicate how strongly and in what direction each variable is related to each factor. A factor loading indicates how much weight is assigned to a given factor for a given variable. Factors on which a variable loads highly are closely related to that

variable. At this stage, factor analysis was a more efficient method of confirming—and discovering—relationships among variables than comparing multiple relationships among pairs of variables.

When sorted by factor, the results are easy to interpret, since a researcher can readily identify variables which load highly on a given factor. The researcher, however, must interpret what a factor represents and decide what to call it. The factor analysis technique will also generate a factor score based on a school's values on the variables which load on a factor.

Regression

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.

It is very important to note that regression 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 presents some problems for 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 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 library media 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.

Causal closure is an issue for this study, due to the small number of potential predictors that demonstrated a direct impact on test scores. Multiple R Squared (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 and secondary levels. In each case, multiple regression was used to generate initial path coefficients. Variables whose beta 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.

Findings

Library Media Predictors of Academic Achievement

Of the library media predictors for which data were available, seven demonstrated noteworthy direct and indirect effects on academic achievement:

- level of librarian staffing,
- hours the library media center (LMC) is open,
- selected activities of LMC staff,
- selected measures of LMC usage,
- facilities for online access to information,
- existence of specific policies, and
- level of cooperation between school and public libraries.

These validated library media predictors of academic achievement are consistent with the principles for learning and teaching, information access and delivery, and program administration embodied in the American Association of School Librarians' **Information Power: Building Partnerships for Learning** (American Library Association, 1998).

Librarian Staffing Level

According to **Information Power**, every school requires a minimum of one full-time certified/licensed library media specialist to implement an effective library media program at the building level. It is the responsibility of this position to design and deliver a library media program that supports the "mission, goals, objectives, and continuous improvement of the school" by:

- communicating about the library media program with administrators, teachers, and other staff to maintain their ongoing support;
- formulating a "comprehensive and collaborative long-range, strategic plan;"
- conducting ongoing assessments that inform program improvement decisions;
- obtaining and providing ongoing staff development, specifically in the area of "information literacy;" and
- managing effectively the program's "human, financial, and physical resources."

For purposes of this study, the level of librarian staffing for a school is represented in two ways: 1) by whether a school has a librarian full-time (i.e., 35 hours per week or more), part-time (i.e., less than 35 hours per week), or not at all and 2) by the typical weekly number of librarian hours per 100 students (i.e., the librarian-pupil ratio).

CAT5 Test Scores by Level of Librarian Staffing

Crosstabulations of librarian staffing level and CAT5 test scores at both elementary and secondary levels indicate that the presence of a full-time librarian is a very strong predictor of average and above achievement. This relationship is both positive and statistically significant.

What Can You Do with Librarians on Board?

The key element to meeting the needs of students and staff in a school library media center is adequate staffing.

Austin E. Lathrop High School is fortunate to have one full-time certified librarian and two full-time library assistants. We have three duty stations that are continually staffed on a period rotation:

Reference Desk / Readers' Advisor

- Students and staff clearly know where to go for help in finding materials.
- Continuous supervision of the main area maintains an atmosphere conducive to learning.
- The presence of a staff member, looking approachable, is more likely to encourage student inquiries.
- The students are more likely to receive individual attention when a library staff member is assigned to one station.

Circulation Desk / Student aide supervisor / Computer Lab monitor

- Help is close at hand for student aides.
- Fewer mistakes result with automated catalog/circulation system, magazine distribution, photocopy machine.
- Supervision of an active computer lab is possible. Acceptable use of the Internet is better monitored.
- Mechanical difficulties with computers, printers and photocopier are attended to quickly.

Work time

- Necessary tasks have a better chance of being completed.
- Cataloging/processing backlog is given attention more frequently - items get out to students quicker!
- There is time for repairs on books and AV.
- Time is available for special projects (book displays, preparing brochures, bibliographies, etc., weeding).
- There is an extra staff member "on call" to help out when the library is filled to capacity with students.
- Librarian is able to visit classes to teach online searching and still have the library supervision totally covered.
- Provides more flexibility in scheduling - i.e. the librarian may attend more departmental and curricular meetings yet still leave the library adequately supervised.

At the elementary level, four out of five schools (over 80 percent) with full-time librarians had more students who earned proficient or above proficient test scores on the CAT5 tests for reading, language arts, and mathematics. (See Table 4.) Among schools with only part-time librarians, two out of three (over 65 percent) had more high-achievement students—a lower proportion than for schools with full-time librarians, but a higher one than for schools with no librarian at all. Among the latter group of schools, fewer than three out of five (less than 60 percent) had more high-achievement students.

Table 4. CAT5 Test Scores by Librarian Staffing Level for Alaska Elementary Schools, 1998

	CAT5 Test Scores		
Staffing Level	Average and above	Below average	Total
Full-time (35+ hours/week)	38 83%	8 17%	46 100%
Part-time (< 35 hours/week)	10 67%	5 33%	15 100%
None	44 59%	30 41%	74 100%
Total	92 68%	43 32%	135 100%

Chi-square = 7.020, $p < .05$

At the secondary level, this trend is even more pronounced and more statistically significant. Nine out of ten schools (over 90 percent) with full-time librarians had more students who earned proficient or above proficient test scores. (See Table 5.) Among schools with only part-time librarians, almost seven out of ten (almost 70 percent) had more high-achievement students—a lower proportion than for schools with full-time librarians, but a higher one than for schools with no librarian at all. Among the latter group of schools, only about half (just over 50 percent) had more high-achievement students.

Table 5. CAT5 Test Scores by Librarian Staffing Level for Alaska Secondary Schools, 1998

	CAT5 Test Scores		
Staffing Level	Average and above	Below average	Total
Full-time	35 92%	3 8%	38 100%
Part-time	9 69%	4 31%	13 100%
None	34 51%	32 49%	66 100%
Total	78 67%	39 33%	117 100%

Chi-square = 17.922, $p < .001$

Staffing Differences between Schools with Higher and Lower Test Scores

Comparison of means analysis indicates that higher-achieving elementary and secondary schools averaged twice the level of librarian staffing found in lower-achieving schools. At better scoring elementary schools, librarian staffing averaged 4.5 weekly hours per 100 students, compared with only 2.2 hours at lower scoring schools ($t = 2.643$, $p = .01$). At better scoring secondary schools, librarian staffing averaged 4.2 weekly hours per 100 students, compared with only 2.1 hours at lower scoring schools ($t = 2.031$, $p < .05$). Both of these relationships are positive and statistically significant.

Correlation of Librarian Staffing with Test Performance

Correlation analysis indicates that, at both elementary and secondary levels, there is a relationship between the librarian-to-students staffing ratio and the percentage of a school's students scoring proficient and above on the CAT5 tests. (See Table 6.) This relationship is both positive and statistically significant at both school levels, but even more so on both counts for elementary schools.

Table 6. Bivariate Correlation of Librarian Hours per 100 Students with CAT5 Test Scores for Alaska Elementary and Secondary Schools, 1998

School Level	Number of schools	Pearson's r	Statistical significance
Elementary	133	.30	= .001
Secondary	115	.20	< .05

The findings from all three types of analysis are consistent with earlier research on the impact of library media staff on academic achievement; but, they raise other questions:

- What level of access to services do these staff provide?
- What important activities do these staff engage in regularly?
- How do these staff affect the extent to which the LMC is utilized by both teachers and students?
- How do all of these conditions combine to affect levels of academic achievement?

Hours Library Media Center Open

The "information access and delivery" principles of **Information Power** mandate that library media programs provide both intellectual and physical access to "information and ideas for learning" in a climate that is conducive to learning.

Library Media Specialist Staffing as a Predictor of Hours Open

One important indicator of the level of access to a library media program and its services is the number of hours the LMC is open to serve both students and teachers. An LMC's hours are dictated largely by its level of staffing, particularly by the librarian. Throughout this report, LMC hours open indicates hours the LMC is staffed and open during the school day. While there is no direct relationship between hours of operation and academic achievement, the level of access those hours represent does affect the level of LMC usage which, in turn, affects academic achievement. (The latter relationship will be explored later.)

Library Media Specialist Staffing Levels by LMC Hours Open

Crosstabulation analyses of level of librarian staffing and LMC hours open during the school day at both elementary and secondary levels indicate that the presence of a full-time librarian is a strong predictor of a higher level of access to library media services. This relationship is both positive and statistically significant at both levels.

Four out of five elementary schools (over 80 percent) with full-time librarians have LMCs that are open longer hours. (See Table 7.) Among elementary schools with either part-time librarians or none at all, two-thirds (over 65 percent) are open shorter hours.

Table 7. LMC Hours Open by Librarian Staffing Level for Alaska Elementary Schools, 1998

	LMC Hours Open		
Staffing Level	Median and above	Below median	Total
Full-time	39	8	47
	83%	17%	100%
Part-time	5	10	15
	33%	67%	100%
None	30	52	82
	37%	63%	100%
Total	74	70	144
	51%	49%	100%

Chi-square = 27.926, $p < .001$

More than four out of five secondary schools (85 percent) with full-time librarians have LMCs that are open longer hours. (See Table 8.) Among secondary schools with either part-time librarians or none at all, over two-thirds (over 70 and 65 percent, respectively) are open shorter hours.

Table 8. LMC Hours Open by Librarian Staffing Level for Alaska Secondary Schools, 1998

Staffing Level	LMC Hours Open		Total
	Median and above	Below median	
Full-time	34	6	40
	85%	15%	100%
Part-time	4	10	14
	29%	71%	100%
None	25	46	71
	35%	65%	100%
Total	63	62	125
	50%	50%	100%

Chi-square = 28.377, $p < .001$

Staffing Ratios for LMCs with Higher and Lower Hours Open

Comparison of means analysis indicates that elementary and secondary schools whose LMCs are open longer averaged more than twice the level of librarian staffing found in schools whose LMCs are open less. At elementary schools with LMCs open longer, librarian staffing averaged 4.9 weekly hours per 100 students, compared with only 2.3 hours at schools with LMCs open less ($t = 3.466$, $p = .001$). At secondary schools whose LMCs are open longer, librarian staffing averaged 4.5 weekly hours per 100 students, compared with only 2.6 hours at schools whose LMCs are open less ($t = 1.908$, $p = .059$). At the elementary level, this relationships is both positive and statistically significant. At the secondary level, it is positive, but falls just slightly short of statistical significance.

Correlation of Librarian Staffing with LMC Hours Open

Correlation analysis indicates that, at both elementary and secondary levels, there is a positive, statistically significant relationship between the librarian-to-students staffing ratio and the typical weekly hours open of the LMC. (See Table 9.) The higher the level of librarian staffing, the longer the hours of operation of the LMC.

Table 9. Bivariate Correlation of Librarian Hours per 100 Students with LMC Hours Open for Alaska Elementary and Secondary Schools, 1998

School Level	Number of schools	Pearson's r	Statistical significance
Elementary	142	.31	< .001
Secondary	123	.24	< .01

Staff Activities

While many previous studies conclude that librarian staffing is a predictor of academic achievement, few address the obvious next question: What do they do that makes a difference? This study explored the relationships between librarian staffing and selected major staff activities, and, in turn the relationships between those activities and academic achievement.

Librarian Staffing as a Predictor of Staff Activities

Level of librarian staffing is a predictor of three major types of staff activities: delivering library/information literacy instruction, planning cooperatively with teachers, and providing in-service training programs to teachers. Each of these activities is embraced by **Information Power**. The Learning and Teaching principles identify the teaching role of the school librarian as an "essential" one. The ideal library media program is "fully integrated into the curriculum to promote students' achievement of learning goals." Thereby, the school librarian is in a position to model and promote "collaborative planning and curriculum development" as well as "creative, effective, and collaborative teaching." In **Information Power's** Program Administration principles, it also endorses the preparation of the librarian as a provider of "instruction in information literacy for teachers, administrators, and other members of the learning community."

Librarian Staffing as a Predictor of Library/Information Literacy Instruction

One of the perennial debates in what most refer to as the library media community is what its practitioners should be called. After years of being known simply as school librarians, members of the profession sought a more accurate and up-to-date name for the position. The prevailing title is "school library media specialist," though other variations have some following, such as "learning resources coordinator," "instructional media consultant," and the like. Other popular alternatives include "library media teacher" and "teacher-librarian." These latter options are indicative of the important role librarians play by delivering information skills (IS--or "information literacy") instruction directly to students.

Librarian Staffing by Percent of
Time Spent Delivering Information Skills (IS) Instruction

At both elementary and secondary levels, crosstabulation indicates that the presence of a librarian—full-time or part-time—is a strong predictor of the whether a library media program is above or below average in terms of the amount of time it delivers library/IL instruction. (See Table 10.)

Almost three out of four elementary schools with a full-time librarian (over 75 percent) deliver above average hours of library/IL instruction. While that proportion drops to about three-fifths (over 60 percent) for schools with part-time librarians, it reverses for schools with no librarian.

Among such schools, over two-thirds (over 65 percent) deliver below average hours of library/IL instruction. This relationship is both positive and statistically significant.

Table 10. Time Spent Delivering Library/IL Instruction by Librarian Staffing Level for Alaska Elementary Schools, 1998

	Percent of Hours Spent Delivering Library/IL Instruction		
Staffing Level	Median and above	Below median	Total
Full-time	36 78%	10 22%	46 100%
Part-time	9 60%	6 40%	15 100%
None	25 32%	52 68%	77 100%
Total	70 51%	68 49%	138 100%

Chi-square = 24.739, $p < .001$

For secondary schools, this relationship is also positive, but fails to achieve statistical significance. Two out of three schools with a full-time librarian (almost 65 percent) deliver above average hours of library/IL instruction. (See Table 11.)

While that proportion drops to almost three out of five (over 55 percent) for schools with part-time librarians, it reverses for schools with no librarian. Among such schools, over three out of five (almost 60 percent) deliver below average hours of library/IL instruction.

Table 11. Time Spent Delivering Library/IL Instruction by Librarian Staffing Level for Alaska Secondary Schools, 1998

	Percent of Hours Spent Delivering Library/IL Instruction		
Staffing Level	Median and above	Below median	Total
Full-time	25 63%	15 37%	40 100%
Part-time	8 57%	6 43%	14 100%
None	27 41%	39 59%	66 100%
Total	60 50%	60 50%	120 100%

Chi-square = 4.968, $p = .083$, not statistically significant

Differences in Time Spent Delivering Library/IL Instruction by Level of Librarian Staffing

Comparison of means analysis provides some illustrative statistics regarding time spent delivering library/IL instruction in elementary schools. For elementary schools with librarians—either full-time or part-time—typical weekly hours spent providing library/IL instruction were dramatically higher than for schools without librarians.

Among elementary schools with full-time librarians, library/IL instruction hours constituted more than one-quarter (28 percent) of LM staff hours, compared with one out of eight hours (12 percent) for schools with no librarian ($t = 5.898$, $p < .001$). The discrepancy is only somewhat smaller for a part-time librarian versus none at all: one out of five (21 percent) and one out of eight (12 percent), respectively ($t = 2.140$, $p < .05$). Both of these relationships are positive and statistically significant.

A Little Learning is a Contagious Thing

At Colony Middle School, in Palmer, Alaska, Librarian Karen Nash Joynt works with students in Special Services classes on finding answers to questions for research projects.

Students learn how to research their questions in books and using a planned World Wide Web search. Students are attentive and enthused, and apply their new skills to other classroom projects.

The same pattern was observed at the secondary level. Among secondary schools with full-time librarians, library/IL instruction hours constituted about one out of eight (13 percent) LM staff hours, compared with one out of 12 hours (8 percent) for schools with no librarian ($t = 3.060$, $p < .01$). This relationship is both positive and statistically significant. The discrepancy is smaller for a part-time librarian versus none at all: one out of 10 (10 percent) and one out of 12 (8 percent), respectively ($t = .977$, $p = .341$). This relationship is positive, but fails to achieve statistical significance, likely because the number of schools with part-time librarians is relatively small (only 14) or because part-time status does not allow very much time for this activity.

Correlation of Librarian Staffing with Time Spent Delivering Library/IL Instruction

Correlation analysis indicates that, at the elementary level, there is a positive, statistically significant relationship between the librarian-to-students staffing ratio and the typical weekly hours spent delivering library/IL instruction ($r = .40$, $p < .001$). The higher the level of librarian staffing, the more time spent by library media staff delivering library/IL instruction.

Librarian Staffing as a Predictor of Planning Cooperatively with Teachers

While time spent delivering library/IL instruction appears to be somewhat more important at the elementary than the secondary level, time spent by library media staff planning cooperatively

with teachers appears to be more important—or, at least, more likely to be happening—at the secondary level.

Librarian Staffing by
Percent of Time Spent Planning Cooperatively with Teachers

Crosstabulation indicates that secondary schools with full-time or part-time librarians are more likely to report above average time investments in cooperative planning, while schools without librarians are more likely to report below average time investments in this activity. This relationship is both positive and statistically significant. (See Table 12.)

Of secondary schools with full-time librarians, more than three out of four (75 percent) reported above average planning hours, and, for those with part-time librarians, almost two-thirds (almost 65 percent) reported above average planning hours. Conversely, for schools with no librarian, almost seven out of ten (almost 70 percent) reported below average planning hours.

Table 12. Time Spent Planning with Teachers by Librarian Staffing Level for Alaska Secondary Schools, 1998

	Typical Weekly Hours Spent Planning with Teachers		
Staffing Level	Median and above	Below median	Total
Full-time	30	10	40
	75%	25%	100%
Part-time	9	5	14
	64%	36%	100%
None	21	45	66
	32%	68%	100%
Total	60	60	120
	50%	50%	100%

Chi-square = 19.870, $p < .001$

Differences in Time Spent Planning Cooperatively with Teachers by
Level of Librarian Staffing

Comparison of means analysis indicates that a relatively small investment of time in this activity make a substantial difference. Secondary schools with at least part-time librarians spend 4.3 percent of their LM staff time on cooperative planning, while those without librarians spend only 1.9 percent of staff time on this activity ($t = 2.293$, $p < .05$). While these percentages of time are small, the difference is statistically significant.

Correlation of Librarian Staffing with
Time Spent Planning Cooperatively with Teachers

Correlation analysis indicates that, at the secondary level, there is a positive, statistically significant relationship between the librarian-to-students staffing ratio and the typical weekly hours spent planning cooperatively with teachers ($r = .30$, $p = .001$). The higher the level of librarian staffing, the more time spent planning cooperatively by library media staff and teachers.

Librarian Staffing as a Predictor of Providing In-Service Training to Teachers

A role often not associated with the school librarian by administrators, teachers, and other members of the learning community is "educating the educators." Like cooperative planning with teachers, this activity is not necessarily a time-consuming one, but it can be a critical one.

Librarian Staffing by Percent of
Time Spent Providing In-Service Training to Teachers

Crosstabulation of librarian staffing levels and time spent providing in-service training to teachers at both elementary and secondary levels indicates that this role is played largely, though not exclusively, by full-time librarians. This relationship is both positive and statistically significant. (See Table 13.)

Among elementary schools with full-time librarians, over half (over 50 percent) report spending any time providing in-service training to teachers. Among schools where there is only a part-time librarian or no librarian at all, the overwhelming majority (over 85 percent and 70 percent, respectively) report spending no time on this activity.

Table 13. Time Spent Providing In-Service Training to Teachers by Librarian Staffing Level for Alaska Elementary Schools, 1998

	Typical Weekly Hours Spent Providing In-Service to Teachers		
Staffing Level	Any	None	Total
Full-time	25 54%	21 46%	46 100%
Part-time	2 13%	13 87%	15 100%
None	23 29%	57 71%	80 100%
Total	50 36%	91 64%	141 100%

Chi-square = 11.953, $p < .01$

A similarly positive and statistically significant relationship was found for the secondary level. (See Table 14.)

Among secondary schools with full-time librarians, seven out of ten (70 percent) report spending time providing in-service training to teachers. Among schools where there is only a part-time librarian or no librarian at all, the overwhelming majority of school library media centers (over 70 percent and almost 80 percent, respectively) report spending no staff time on this activity.

Table 14. Time Spent Providing In-Service Training to Teachers by Librarian Staffing Level for Alaska Secondary Schools, 1998

	Typical Weekly Hours Spent Providing In-Service to Teachers		
Staffing Level	Any	None	Total
Full-time	28 70%	12 30%	40 100%
Part-time	4 29%	10 71%	14 100%
None	15 21%	56 79%	71 100%
Total	47 38%	78 62%	125 100%

Chi-square = 26.595, $p < .001$

Staff Activities as Predictors of CAT5 Test Scores

The three types of staff activities identified earlier as predictable consequences of higher levels of librarian staffing are also predictors of CAT5 test scores for reading, language arts, and mathematics.

Library/Information Literacy Instruction as a Predictor of CAT5 Test Scores

Library/information literacy instruction is an especially important activity for staff of elementary school LMCs. The development of a high level of information literacy is an integral part of "learning how to learn"—a set of skills that must be mastered in the earliest grades to ensure a lifelong pattern of high academic achievement.

Time Spent on Library/Information Literacy Instruction by CAT5 Test Scores

Crosstabulation indicates that elementary schools whose library media programs make above average time commitments to delivering such instruction are overwhelmingly more likely to

have higher percentages of students scoring proficient and above. This relationship is both positive and statistically significant. (See Table 15.)

Four out of five schools (over 80 percent) whose library media staff devoted above average amounts of time to library/IL instruction had more high-achieving students. Barely half of schools (just over 50 percent) whose library media staff made below average commitments to library/IL instruction had more high-achieving students. Conversely, compared with schools whose library staff spend more time delivering library/IL instruction, schools that make lesser commitments to that activity are more than twice as likely to be among low-scoring schools (almost 50 percent vs. almost 20 percent, respectively).

Table 15. CAT5 Test Scores by Time Spent Delivering Library/IL Instruction for Alaska Elementary Schools, 1998

Time spent on Library/IL instruction	CAT5 Test Scores		Total
	Average and above	Below average	
Median and above	56	12	68
	82%	18%	100%
Below median	33	29	62
	53%	47%	100%
Total	89	41	130
	69%	31%	100%

Chi-square = 12.743, $p < .001$

Differences in Time Spent Delivering Library/IL Instruction between Schools with Higher and Lower CAT5 Test Scores

Comparison of means analysis found that, among elementary schools, those with higher test scores averaged 22 percent of librarian hours spent delivering library/IL instruction, compared with only 13 percent for low-achievement schools. This relationship is both positive and statistically significant at the elementary level ($t = 3.028$, $p < .01$). At the secondary level, hours spent delivering library/IL instruction averaged 11 percent for schools with higher test scores and eight percent for those with lower scores. At this level, however, the relationship narrowly fails to achieve statistical significance ($t = 1.932$, $p = .057$).

Correlation of Time Spent Delivering Library/IL Instruction with CAT5 Test Scores

Correlation analysis indicates that, for elementary schools, there is a positive, statistically significant relationship between the percentage of librarian hours spent delivering library/IL instruction and the percentage of students achieving proficient or above scores on the CAT5 tests ($r = .29$, $p = .001$). For secondary schools, there is a similarly positive relationship, although it is weaker and achieves statistical significance by a lower standard ($r = .16$, $p = .05$, 1-tailed). The more time spent by library media staff on library/IL instruction, the higher the level of academic achievement.

Librarian-Teacher Planning as a Predictor of CAT5 Test Scores

One of the most critical activities of library media staff is cooperative planning with teachers. Without such collaboration, the effectiveness of the library media program and the school as a whole as a learning community is in jeopardy. It is little surprise, therefore, that even small amounts of time spent on this activity were found to make a difference in academic achievement.

Time Spent on Librarian-Teacher Planning as a Predictor of CAT5 Test Scores

At both elementary and secondary levels, crosstabulation indicates that schools with library media programs that make larger time commitments to cooperative planning with teachers are more likely to be high-achieving schools. This relationship is positive and statistically significant. (See Table 16.)

More than three out of four elementary schools (over 75 percent) spending average or above amounts of time on cooperative planning were schools with higher-achieving students. Only two out of three (60 percent) of schools with lesser commitments to cooperative planning between library media staff and teachers were in the high-achievement group.

Table 16. CAT5 Test Scores by Time Spent Planning with Teachers for Alaska Elementary Schools, 1998

Time spent planning with teachers	CAT5 Test Scores		Total
	Average and above	Below average	
Median and above	50	15	65
	77%	23%	100%
Below median	39	26	65
	60%	40%	100%
Total	89	41	130
	69%	31%	100%

Chi-square = 4.311, $p < .05$

A comparably positive and statistically significant relationship was found at the secondary level. (See Table 17.) Three out of four secondary schools (almost 75 percent) spending average or above amounts of time on cooperative planning were schools with higher-achieving students. Less than three out of five schools (almost 60 percent) with lesser commitments to cooperative planning between library media staff and teachers were in the high-achievement group. This relationship is also positive and statistically significant.

Table 17. CAT5 Test Scores by Time Spent Planning with Teachers for Alaska Secondary Schools, 1998

Time spent planning with teachers	CAT5 Test Scores		Total
	Average and above	Below average	
Median and above	41	15	56
	73%	27%	100%
Below median	33	23	56
	59%	41%	100%
Total	74	38	112
	66%	34%	100%

Chi-square = 2.549, p = .11, not statistically significant

In-Service for Teachers as a Predictor of CAT5 Test Scores

While librarians have an important role to play as in-service training providers for teachers at both elementary and secondary levels, it is something that primarily occurs currently in Alaska at the secondary level.

Juicing up Language Arts

In Alaskan villages, teachers are finding that the use of new technologies and subject-specific web sites results in more active learning. To better prepare new and returning language arts teachers for the use of technology in their classrooms, Roz Goodman, District Media Specialist for Southwest Regions School District in Dillingham presented two hands-on computer lab sessions titled "Online Language Arts Resources for Grades 3 - 8." During each session, teachers:

- received a disk with related language arts bookmarks
- reviewed a technology skill guide for uploading, using, and organizing bookmarks
- looked at links to district, state and world wide language arts resources
- spent time evaluating the content and usefulness of one site
- orally shared their web site evaluation with the rest of the group

The result? Students and teachers agree Language Arts is more fun when technology-based language arts resources become part of the program.

Time Spent on In-Service for Teachers by CAT5 Test Scores

Crosstabulation indicates that secondary schools whose library media programs spent staff time on this activity were much more likely to have above average percentages of students scoring proficient and above. This relationship is both positive and statistically significant. (See Table 18.)

Among secondary schools, more than four out of five (over 80 percent) whose library media programs spent staff time providing in-service training to teachers were among the higher achieving schools. Just over half of the schools (about 55 percent) whose LM staff spent no time providing in-service training to teachers were among the higher-achieving schools.

Table 18. CAT5 Test Scores by Time Spent Providing In-Service Training to Teachers for Alaska Secondary Schools, 1998

Time spent providing in-service to teachers	CAT5 Test Scores		Total
	Average and above	Below average	
Any	38	9	47
	81%	19%	100%
None	40	30	70
	57%	43%	100%
Total	78	39	117
	67%	33%	100%

Chi-square = 7.112, $p < .01$

Library Media Program Usage

According to **Information Power**, the fundamental role of the school library media center (LMC) is to provide "access to the full range of information resources and services" and to encourage students to read, view, and listen "for understanding and enjoyment." The LMC is intended to support "the learning of all students and other members of the learning community"—i.e., administrators, teachers, and other staff—regardless of their learning abilities, styles, and needs. For purposes of this study, usage of the library media program is represented by two indicators: student visits for information skills (IS) instruction per capita and total staff visits per capita. Each of these measures of usage is predicted by a combination of other antecedent conditions, such as the hours the LMC is open, the level of librarian staffing, and the amount of library media staff time given to the key activities identified above. In turn, each of these measures affects academic achievement.

Librarian Staffing as a Predictor of LMC Usage

Interestingly, the level of librarian staffing is predictive of different types of usage at each school level. At the elementary level, staffing levels predict student visits for library/IL instruction, while, at the secondary level, they predict staff visits. Notably, the latter are not limited to staff visits to the LMC space, but include "remote" uses of librarian and LMC services by administrators, teachers, and other school staff from their offices, classrooms, labs, or elsewhere in the facility.

Librarian Staffing as a Predictor of Student Visits for Library/IL Instruction

One of the most important contributions made by library media staff to a young student's education is helping the child begin to develop basic information literacy skills. Just as elementary teachers play a key role in introducing children to the rudiments of reading, writing, and mathematics, so library media staff introduce them to the basic skills they will need to become capable information consumers—and producers.

Librarian Staffing by Student Visits for Library/IL Instruction

At the elementary level, crosstabulation indicates that the presence of a full-time librarian is essential to providing young children with ample opportunities to develop information literacy. This relationship is both positive and statistically significant. (See Table 19.)

Of elementary schools with a full-time librarian, more than three out of four (over 75 percent) report above average student visits for library/IL instruction. Substantial majorities of schools with either a part-time librarian or no librarian at all—in both cases, approximately two out of three (71 and 62 percent, respectively)—report lower student visits for library/IL instruction.

Table 19. Student Visits for Library/IL Instruction per Capita by Librarian Staffing Level for Alaska Elementary Schools, 1998

Staffing Level	Student Visits for IL/Librarian Instruction per Capita		Total
	Median and above	Below median	
Full-time	35	10	45
	78%	22%	100%
Part-time	4	10	14
	29%	71%	100%
None	31	51	82
	38%	62%	100%
Total	70	71	141
	50%	50%	100%

Chi-square = 21.332, $p < .001$

Differences in Student Visits for Library/IL Instruction by Level of Librarian Staffing

Comparison of means analysis for elementary schools indicates that schools with full-time librarians average one weekly library/IL instruction visit per student (.96), while schools with no librarian average about half that (.53). For schools with LMCs that are not professionally staffed, this comparison could be explained by a number of possibilities. Two possibilities are most obvious: either library/IL instruction is received by only half of the students in such schools on a weekly basis or library/IL instruction is received by all students, but only every other week. This finding is both positive and statistically significant ($t = 4.100$, $p < .001$).

Correlation of Librarian Staffing with Student Visits for Library/IL Instruction

Correlation analysis indicates that there is a positive, statistically significant relationship between level of librarian staffing and student visits for library/IL instruction, equally strong for both elementary and secondary levels. The higher the level of librarian staffing, the higher the number of student visits for library/IL instruction. (See Table 20.)

Table 20. Bivariate Correlation of Librarian Hours per 100 Students with Student Visits for Library/IL Instruction per Capita for Alaska Elementary and Secondary Schools, 1998

School Level	Number of schools	Pearson's r	Statistical significance
Elementary	141	.24	< .01
Secondary	123	.28	< .01

Librarian Staffing as a Predictor of Staff Visits

As **Information Power** emphasizes, a successful library media program is the product of collaboration between the school librarian and administrators, teachers, and other staff. It depends on cooperation and collaboration at every stage: curriculum development, planning, teaching, staff development, and evaluation. While it is often difficult for the librarian and other educators to meet face to face, a certain amount of direct interaction appears to be required, especially at the secondary level.

Correlation of Librarian Staffing with Staff Visits per 100 Students

Correlation analysis indicates that there is a positive and statistically significant relationship between librarian staffing and staff visits at the secondary level only ($r = .18$, $p < .05$). The higher the level of librarian staffing, the higher the number of staff visits.

LMC Hours Open as a Predictor of LMC Usage

According to the "information access and delivery" principles of **Information Power**, the library media program is responsible for providing "intellectual" and "physical access to information and resources for learning." The LMC's hours of operation, which represent the potential for such access, predict the actual utilization of library media collections and services, which, for elementary schools at least, is represented by student visits for library/information literacy (IS) instruction.

LMC Hours Open as a Predictor of Student Visits for Library/Information Literacy Instruction

The LMC's hours of operation are a consistent predictor of student visits for library/IL instruction. This fact suggests that most library/IL instruction—or, at least, most of what is recognized as such—still occurs in the context of the LMC facility.

Student Visits for Library/IL Instruction by LMC Hours Open

Crosstabulation indicates that LMCs with longer hours of operation report higher student visits for library/IL instruction per capita. This relationship is both positive and statistically significant. (See Table 21.)

More than three out of five LMCs (over 60 percent) with longer hours of operation also report more student visits for library/IL instruction. The reverse is also true. A comparable proportion of LMCs with shorter hours reports fewer student visits for library/IL instruction.

Longer hours of operation for LMCs make it possible for library media programs to fulfill another **Information Power** principle: providing "flexible and equitable access to information, ideas, and resources for learning." A natural consequence of shorter LMC hours is a loss of both flexibility and equity of access.

Table 21. Student Visits for Library/IL Instruction per Capita by LMC Hours Open for Alaska Elementary Schools, 1998

LMC Hours Open	Student Visits for Library/IL Instruction per Capita		
	Median and above	Below median	Total
Median and above	45	26	71
	63%	37%	100%
Below median	26	45	71
	37%	63%	100%
Total	71	71	142
	50%	50%	100%

Chi-square = 10.169, p = .001

Differences in Student Visits for Library/IL Instruction between Schools with Higher and Lower LMC Hours Open

Comparison of means analysis for elementary schools indicates that schools whose LMCs have longer hours average almost one weekly library/IL instruction visit per student (.81), while schools with shorter hours average a third less than that (.53). For schools with LMCs open shorter hours, this comparison could be explained by a number of possibilities. Two possibilities are most obvious: either library/IL instruction is received by only half of the students in such schools on a weekly basis or library/IL instruction is received by all students, but only every other week. This finding is both positive and statistically significant ($t = 2.909$, $p < .01$).

Correlation of LMC Hours Open with
Student Visits for Library/IL Instruction for Elementary Schools

Correlation analysis indicates a positive and statistically significant relationship for elementary schools between LMC hours open and student visits for library/IL instruction per capita per week ($r = .27$, $p = .001$). The longer the LMC's hours of operation, the higher the number of student visits.

LM Staff Activities as Predictors of LMC Usage

In addition to librarian staffing and hours of library media center (LMC) operation, two types of LM staff activities help to predict levels of LMC usage. These activities are delivering information skills (IS) instruction to students and planning cooperatively with teachers.

Time Spent on Library/Information Literacy Instruction as a Predictor of Student Visits for Library/IL Instruction

As for level of librarian staffing, library media staff time spent on library/IL instruction is a predictor of student visits for library/IL instruction at the elementary level.

Student Visits for library/IL instruction by
Time Spent on library/IL instruction

Not surprisingly, crosstabulation indicates that, where library media staff spend more time delivering library/information literacy instruction, students visit LMCs more frequently for that purpose. This relationship is positive and statistically significant. (See Table 22.).

Two-thirds of elementary schools (over 65 percent) where library media staff spend more time on library/IL instruction also have more student visits to LMCs for that purpose. Conversely, two-thirds of schools (over 65 percent) where library media staff spend less time on library/IL instruction have fewer student visits for that purpose.

Table 22. Student Visits for Library/IL Instruction per Capita by Time Spent on Library/IL Instruction for Alaska Elementary Schools, 1998

Time Spent on Library/IL Instruction	Student Visits for Library/IL Instruction per Capita		
	Median and above	Below median	Total
Median and above	47 67%	23 33%	70 100%
Below median	21 32%	45 68%	66 100%
Total	68 50%	68 50%	136 100%

Chi-square = 16.956, $p < .001$

Differences in Student Visits for Library/IL Instruction between Schools with Higher and Lower Time Spent on Library/IL Instruction

Schools where library media staff spend more time on library/IL instruction have higher student visits to the LMC for that purpose. Comparison of means analysis for elementary schools indicates that schools where library media staff spend more time on library/IL instruction average one weekly library/IL instruction visit per student (.89), while schools where library media staff spend less time on that activity average half as many such visits (.45). For schools where library media staff spend less time on library/IL instruction, this comparison could be explained by a number of possibilities. Two possibilities are most obvious: either library/IL instruction is received by only half of the students in such schools on a weekly basis or library/IL instruction is received by all students, but only every other week. This finding is both positive and statistically significant ($t = 4.698$, $p < .001$)

Correlation of Time Spent on Library/IL Instruction with Student Visits for Library/IL Instruction for Elementary Schools

Correlation analysis indicates that, for elementary schools, there is a positive, statistically significant relationship between library media staff hours spent on library/IL instruction and per capita weekly student visits for that purpose ($r = .43$, $p < .001$). The more time library media staff spend on library/IL instruction, the more visits students make to the LMC for that purpose.

Time Spent Planning with Teachers as a Predictor of Staff Visits

Just as the amount of library media staff time dedicated to information skills (IS) instruction encourages student visits to the library media center (LMC) for that purpose, so the time staff spend planning cooperatively with teachers encourages them to visit the LMC. This relationship is found at both elementary and secondary levels.

Teacher/Librarian Cooperation Pays Off

Every January, school librarian Linda Masterson at Goldenview Middle School in Anchorage works with four teachers on the "Passion Project." Eighth grade students choose a topic of particular interest, research it thoroughly using a variety of resources and present to their classmates via a Powerpoint presentation, display board, etc.

The quality of research that comes from these students during this month long project is outstanding because these four core teachers recognize the importance of collaborating with Linda in the library so that the students will have a positive research experience.

Differences in Staff Visits between Schools with Higher and Lower Time Spent Planning with Teachers

For both elementary and secondary schools where library media staff spend more time planning cooperatively with teachers, the rate of staff visits to the LMC relative to school size is higher. Comparison of means analysis indicates that,

for elementary schools where more time is spent on cooperative planning, there are 12 staff visits to the LMC weekly for every 8 such visits where less cooperative planning takes place. This finding is both positive and statistically significant ($t = 2.259$, $p < .05$).

A similar pattern was found at the secondary level, where rates of weekly staff visits to the LMC relative to school size were 14 and 9, respectively, for schools where more and less cooperative planning takes place. This finding is also positive and statistically significant ($t = 1.978$, $p = .05$).

Correlation of Time Spent Planning with Teachers with Staff Visits for Elementary and Secondary Schools

The more time library media staff spend planning cooperatively with teachers, the higher the rate of weekly staff visits to the LMC. Correlation analysis indicates that, at both elementary and secondary levels, there is a positive, statistically significant relationship between cooperative planning time and staff visits to LMCs. This relationship is almost twice as strong and even more significant at the secondary level. (See Table 23.)

Table 23. Bivariate Correlation of Time Spent Planning with Teachers and Staff Visits per 100 Students for Alaska Elementary and Secondary Schools, 1998

School Level	Number of schools	Pearson's r	Statistical significance
Elementary	135	.30	< .001
Secondary	118	.36	< .001

LMC Usage as a Predictor of CAT5 Test Scores

Of the two key types of LMC usage considered in this analysis—student visits for information skills (IS) instruction and staff visits—only the first may be identified as a predictor of academic achievement, and that relationship exists only at the elementary level.

Student Visits for Library/IL Instruction per Capita as a Predictor of CAT5 Test Scores

Student Visits for Library/IL Instruction per Capita by CAT5 Test Scores

Crosstabulation indicates that, for elementary schools where students visits for library/IL instruction are higher, academic achievement is also higher. This relationship is both positive and statistically significant. (See Table 24.)

Nine out of ten schools (over 85 percent) with high rates of student visits are high-achievement schools. Schools with lower rates of student visits are divided equally (50 percent each) between the higher and lower achievement groups.

Table 24. CAT5 Test Scores by Student Visits for Library/IL Instruction for Alaska Elementary Schools, 1998

Student visits for library/IL instruction	CAT5 Test Scores		Total
	Average and above	Below average	
Median and above	59	10	69
	86%	14%	100%
Below median	32	32	64
	50%	50%	100%
Total	91	42	133
	68%	32%	100%

Chi-square = 19.374, $p < .001$

Differences in Student Visits for Library/IL Instruction between Schools with Higher and Lower CAT5 Test Scores

At the elementary level, higher achieving schools average almost twice the rate of student visits for library/IL instruction of lower achieving schools. Comparison of means analysis for elementary schools indicates that high-achievement schools average almost one weekly library/IL instruction visit per student (.81), while low-achievement schools average almost half as many such visits (.43). For lower achieving schools, this comparison could be explained by a number of possibilities. Two possibilities are most obvious: either library/IL instruction is received by only half of the students in such schools on a weekly basis or library/IL instruction is received by all students, but only every other week. This finding is both positive and statistically significant ($t = 3.963$, $p < .001$).

Correlation of Student Visits for Library/IL Instruction with CAT5 Test Scores

The greater the weekly number of student visits for library/IL instruction, the higher the level of academic achievement. Correlation analysis indicates a positive, statistically significant relationship between student visits for library/IL instruction per capita and CAT5 test scores at the elementary level ($r = .33$, $p < .001$).

Research Rocks!

How is blues music related to rock and roll? How have electronic synthesizers affected the rock and roll sound? What will guitars look and sound like in the future? These are just a few of the topics students from ten Bering Strait School District villages explore during the two-week Research Skills component of the district's Information Literacy Workshop for college bound seniors. Students meet in the District Media Center in Unalakleet each night for 90 minutes. During that time each step of the Research Model is explained. Students then have time to work through the process and complete a research paper on their own.

Staff Visits per Capita as a Predictor of CAT5 Test Scores

Unexpectedly, a positive and statistically significant relationship was not found for staff visits and academic achievement. The assumption going into this study was that the staff visits variable was a counterpart to student visits for library/IL instruction (and other purposes)—a necessary figure to complete the picture of LMC usage by all members of the learning community. The fact that staff visits do not directly predict test scores suggests a different assumption. Perhaps, the relationship reported earlier between cooperative planning time and staff visits is not a one-way phenomenon. The assumed direction was that library media staff spending more time planning with teachers encouraged them to visit the LMC. It appears equally likely, in retrospect, that teachers who are predisposed to visit the LMC on their own initiative are also likely to be the ones inclined to plan cooperatively with library media staff. So, it may be that the good consequence of engaging in cooperative planning—as well as providing in-service training to teachers—is that the library media program becomes better integrated into the curriculum and classroom instruction. Unfortunately, the "success" of such integration is impossible to measure in terms of the relatively gross statistics on resources and services employed in this study.

Cooperation with the Public Library

One of the **Information Power** "Program Administration" principles is that a successful library media program requires "effective management of human, financial, and physical resources." One of the "Learning and Teaching" principles is that library media programs provide essential links to the "larger learning community." Most library media programs cultivate a variety of partnering and networking opportunities with organizations beyond their own buildings.

For most library media centers (LMCs), the most obvious opportunity for cooperation is a relationship with the local public library. Such relationships may involve any combination of a variety of activities, such as:

- electronic network links (such as shared catalog access),
- book talks by public library staff at the LMC,
- homework alerts to the public library from the LMC,
- referral of more complex reference questions from the LMC to the public library,
- bulk loans of books and other resources from the public library to the LMC, and
- perhaps most likely, a summer reading program at the public library.

Synergy Sizzles

First City Library is the name given to the automation system that now links the school, public and college libraries in Ketchikan, an island community in southeast Alaska. But the links between the school and public libraries extend beyond wires and equipment. Librarians work together as often as possible to serve the needs of Ketchikan's youth.

In the summer of 1999 Ruth Woodruff, school librarian at Ketchikan Middle School, teamed with the children's librarian from the public library, Charlotte Glover, to offer Teen Read, a four-week summer reading program for middle school readers. At a rate of one book per week, students read books from four different genres -- fantasy, historical fiction, adventure, and realistic fiction, then attended discussion sessions led by the two librarians.

"At first the kids seemed hesitant to speak up," admitted Ruth Woodruff, "but they soon realized that through discussion of each book, they gained valuable insight into themselves and others." Due to the program's success the two librarians plan to continue the program.

Librarian Staffing as a Predictor of Cooperation with the Public Library

An obvious predictor of cooperation between LMCs and public libraries is the level of librarian staffing. All of the types of cooperation listed above are more likely to occur as a product of collegial dialogues in which one of the participants is a professionally trained, licensed/certified librarian.

Crosstabulation indicates that the higher the level of librarian staffing at both elementary and secondary levels, the more likely there is a cooperative relationship between the LMC and the public library. This relationship is both positive and statistically significant. (See Tables 25 and 26.)

At both levels, nine out of ten LMCs with full-time librarians (about 90 percent) have such relationships. For elementary schools with no librarian at all, the odds are slightly higher (56 percent) that such a relationship will be absent. Two-thirds (67 percent) of secondary schools with no librarian lack a working relationship with a public library.

Table 25. Relationships between Public Libraries and Alaska Elementary Schools by Librarian Staffing Level, 1998

	Relationship with Public Library		
Staffing Level	Relationship (formal or informal)	No relationship/ no library	Total
Full-time	26 93%	2 7%	28 100%
Part-time	3 75%	1 25%	4 100%
None	14 44%	18 56%	32 100%
Total	43 67%	21 33%	64 100%

Chi-square = 16.453, $p < .001$

Table 26. Relationships between Public Libraries and Alaska Secondary Schools by Librarian Staffing Level, 1998

	Relationship with Public Library		
Staffing Level	Relationship (formal or informal)	No relationship/ no library	Total
Full-time	23 85%	4 15%	27 100%
Part-time	5 100%	0 0%	5 100%
None	9 33%	18 67%	27 100%
Total	37 63%	22 37%	59 100%

Chi-square = 18.770, $p < .001$

Cooperation with the Public Library as a Predictor of CAT5 Test Scores

In turn, LMC-public library cooperation is a predictor of academic achievement. Crosstabulation indicates that, where such cooperation exists, test scores are higher. This relationship is both positive and statistically significant. (See Table 27.)

Four out of five elementary schools (almost 80 percent) whose libraries have either formal or informal relationships with their public libraries are schools with higher percentages of students scoring proficient or above on the CAT5 tests of reading, language arts, and mathematics. Conversely, almost two-thirds of schools (65 percent) whose LMCs had no relationship with the local public library or that were located in communities without a public library were low-achievement schools.

Table 27. CAT5 Test Scores for Alaska Elementary Schools With and Without Relationships With Public Libraries, 1998

Relationship with Public Library	CAT5 Test Scores		Total
	Average or above	Below average	
Relationship (formal or informal)	33 77%	10 23%	43 100%
No relationship or no public library	6 35%	11 65%	17 100%
Total	39 65%	21 35%	60 100%

Chi-square = 9.201, $p < .01$

This relationship is also strong at the secondary level. Schools whose LMCs have public library links are far more likely to be among high-achievement than low-achievement schools—four out of five (over 80 percent). For schools whose LMCs either have no public library links or are located in communities without public libraries, the odds of being among high-achievement schools are almost 50-50. This relationship is also positive and statistically significant. (See Table 28.)

Table 28. CAT5 Test Scores for Alaska Secondary Schools With and Without Relationships With Public Libraries, 1998

Relationship with Public Library	CAT5 Test Scores		Total
	Average or above	Below average	
Relationship (formal or informal)	30 83%	6 17%	36 100%
No relationship or no public library	10 48%	11 52%	21 100%
Total	40 70%	17 30%	57 100%

Chi-square = 8.083, $p < .01$

Online Access to Information

One of **Information Power's** "learning and teaching" principles is that the library media program should integrate uses of technology into the learning and teaching processes. Doubtless, the most revolutionary technological innovations of the past decade have been the diffusion of widespread popular access to the Internet and the remarkably rapid development of the World Wide Web. The level of electronic networking these innovations have enabled has been both unprecedented and, largely, unanticipated. There is substantial evidence that this new kind of access to information can play an important role in expanding the educational horizons of all students and in leveling the playing field for at risk students.

Participation in electronic networking requires two essential components: the ability to transmit information electronically and the channels for doing so. For many—if not most—library media centers (LMCs), this translates as a data-worthy telephone line and a computer with a modem or equivalent capabilities.

Crosstabulation indicates that the overwhelming majority of secondary schools with LMCs that have their own touch-tone telephone lines scored average or above on the CAT5 tests of reading, language arts, and mathematics, while the majority of schools with LMCs without phone lines scored below average. This relationship is both positive and statistically significant. (See Table 29.)

Three out of four schools (almost 75 percent) where LMCs have telephone lines are high-achievement schools. Conversely, two-thirds of schools (almost 65 percent) without phone lines in their LMCs scored below average on the CAT5 tests.

Isolated Villages? Not When It Comes to School Libraries!

Marty Osredker, district librarian for Bering Straits School District utilizes technology to serve rural communities isolated by distance and extreme geographic conditions.

Students can interact and compete with their peers in other school districts and statewide via audio-conferenced Battle of the Book competitions.

Marty makes site visits to help upgrade technology in school buildings.

She helps students realize the wealth of materials available to them from other libraries and through on-line computer access. Alaska has negotiated statewide license agreements with EBSCO, Electric Library and InfoTrac Health Resources. Free access to these databases has brought the world of information into each school, library, and home in Alaska.

The challenges of providing quality services to small Alaskan villages are great but surmountable, thanks to librarians like Marty as well as the technological tools promoted by the Bering Straits School Library Program.

Table 29. CAT5 Test Scores for Alaska Secondary Schools With and Without Touch-Tone Telephones in Library Media Centers, 1998

Touch-Tone Telephone	CAT5 Test Scores		Total
	Average or above	Below average	
Present	70	25	95
	74%	26%	100%
Absent	8	14	22
	36%	64%	100%
Total	78	39	117
	67%	33%	100%

Chi-square = 11.196, p = .001

Likewise, secondary schools where LMCs have Internet-accessible computers are more likely to have higher percentages of students scoring proficient or above on the CAT5 tests. Schools that score higher on the CAT5 tests tend to be those with telecomputing capabilities—i.e., computers with modems. This relationship is positive and statistically significant. (See Table 30.)

Three out of four schools (almost 75 percent) whose LMCs have Internet-accessible computers were high-achievement schools. Schools without Internet access in the LMC were divided equally between the high- and low-achievement categories.

Table 30. CAT5 Test Scores for Alaska Secondary Schools With and Without Modems in LMC Computers, 1998

Modem/Equivalent	CAT5 Test Scores		Total
	Average or above	Below average	
Present	65	25	90
	72%	28%	100%
Absent	13	13	26
	50%	50%	100%
Total	78	38	116
	67%	33%	100%

Chi-square = 4.522, p < .05

These findings indicate that technological tools as basic as the telephone and as complex as Internet-accessible computers are essential to the success of library media programs in enabling high academic achievement by students.

Collection Development Policy with Review Provisions

The "Information Access and Delivery" principles of **Information Power** stipulate that an effective library media program must be governed by appropriate policies, procedures, and practices, and a strong commitment to intellectual freedom.

Policy to the Rescue!

Although Anchorage serves a large and diverse student population, the Anchorage School District has fought few censorship battles. Library Resources Manager Ruth Jean Shaw credits this to the district's comprehensive collection development plan and reconsideration policy on controversial materials.

While titles such as **Roll of Thunder, hear My Cry, A Light in the Attic** and **Lulu and the Witch Baby** have been challenged over the years, the reasons for purchase and the reconsideration process are most often discussed and the issue resolved at the building level.

When school library purchases are made in accordance with a board-approved collection development plan, it becomes much easier to support the purchase of specific titles.

Even when the censor is not at your door, a good collection development policy helps librarians use their funds to target the best purchases, assuring intellectual freedom and access to information from all sides of an issue.

One of the most important policies a library media program can have is its collection development policy. The resources chosen for the building collection must support the school's curriculum, promote achievement of learning goals by students, and address the diverse learning abilities, styles, and needs of all members of the learning community—students, teachers, administrators, and others. Resources in the building collection can only achieve these ends if they are chosen according to clearly stated and equitably applied criteria rather than the personal tastes of individual school librarians, teachers, administrators, or donors.

Inevitably, whatever resources are selected and however those decisions are made, someone—eventually—will disagree. The annals of intellectual freedom are full of stories about school librarians who have dealt with challenges to such wide-ranging works as **Catcher in the Rye, Daddy's Roommate**, and almost anything by Judy Blume. Every library should have a collection development policy that includes provisions for reviewing materials when requested by an administrator, teacher, parent, student, or others.

Crosstabulation indicates that, high-achievement schools tend to have LMCs with collection development policies that provide for reconsideration of materials. This relationship is positive and statistically significant at both elementary and secondary levels. (See Tables 31 and 32.)

At both elementary and secondary levels, three out of four schools (75 and 74 percent, respectively) that have collection development policies that address the issue of how to handle "challenges" or "reconsideration" requests were schools that had above average percentages of students passing the CAT5 tests. Schools whose library media programs lacked such policies were roughly equally divided between the high and low-scoring groups.

Table 31. CAT5 Test Scores for Alaska Elementary Schools With and Without Collection Development Policies Providing for Reconsideration of Materials, 1998

Reconsideration Policy	CAT5 Test Scores		Total
	Average or above	Below average	
Present	72	24	96
	75%	25%	100%
Absent	13	16	29
	45%	55%	100%
Total	85	40	125
	68%	32%	100%

Chi-square = 9.318, $p < .01$

Table 32. CAT5 Test Scores for Alaska Secondary Schools With and Without Collection Development Policies Providing for Reconsideration of Materials, 1998

Reconsideration Policy	CAT5 Test Scores		Total
	Average or above	Below average	
Present	57	20	77
	74%	26%	100%
Absent	15	14	29
	52%	48%	100%
Total	72	34	106
	68%	32%	100%

Chi-square = 4.809, $p < .05$

Community and School Predictors of Academic Achievement

Of course, levels of academic achievement by students are affected by a wide variety of factors beyond the library media center (LMC). Conditions in the LMC's school and in the school's community exert tremendous influence.

Per pupil expenditures and the teacher-pupil ratio are probably the two most generally recognized school factors relating to student performance. It is generally believed that students perform better where schools are well-funded and where teachers have small enough classes to give individual students maximum attention.

Differences from one community to another that affect student performance include the level of educational attainment in the adult population (including, most especially, parents), the economic status of the community, and the extent of its cultural diversity. It is often observed that students tend to perform better in school

- where cultural and language differences within the community do not increase the challenges of helping all students to do their best,
- when their parents and other adults in the community are well-educated, and
- where the community is prosperous enough to support its schools well.

This study began with five community measures: the percentage of school children who are Alaska Natives, the percentage of adults who are high school graduates, median household income, the percentage of students eligible for the National School Lunch Program, and the percentage of the community population living below poverty level. At both elementary and secondary levels, correlation analyses found that these five measures were highly correlated with each other. (See Tables 33 and 35.) Consequently, factor analysis was utilized to reduce those five measures to a single factor score for each school level, hereafter referred to as the community factor. (See Tables 34 and 36.)

Table 33. Correlation Matrix for Community Indicators for Alaska Elementary Schools, 1998

Pearson correlation (r) Significance (p) Number (N)	Percent Alaska Native	Percent high school graduates	Median household income	Percent eligible for NSLP	Percent below poverty level
Percent Alaska Native	1.000 ------- 142				
Percent high school graduates	-.863** .000 127	1.000 ------- 131			
Median household income	-.535** .000 136	.524** .000 124	1.000 ------- 139		
Percent eligible for National School Lunch Program (NSLP)	.691** .000 136	-.709** .000 124	-.645** .000 139	1.000 ------- 139	
Percent below poverty line	.675** .000 136	-.688** .000 124	-.705** .000 139	.735** .000 139	1.000 ------- 1139

** Correlation is significant at the 0.01 level (2-tailed).

Table 34. Factor Analysis of Community Indicators for Alaska Elementary Schools, 1998

Variable	Factor Loading
Percent Alaska Native	.871
Percent high school graduates	-.890
Median household income	-.773
Percent eligible for National School Lunch Program (NSLP)	.866
Percent below poverty line	.873

Principal component analysis, initial eigenvalue = 3.660, percent of variance explained = 73.2%

Table 35. Correlation Matrix for Community Indicators for Alaska Secondary Schools, 1998

Pearson correlation (r) Significance (p) Number (N)	Percent Alaska Native	Percent high school graduates	Median household income	Percent eligible for NSLP	Percent below poverty level
Percent Alaska Native	1.000 ------- 121				
Percent high school graduates	-.801** .000 104	1.000 ------- 109			
Median household income	-.509** .000 116	.455** .000 104	1.000 ------- 121		
Percent eligible for National School Lunch Program (NSLP)	.632** .000 115	-.632** .000 103	-.701** .000 120	1.000 ------- 120	
Percent below poverty line	.626** .000 116	-.618** .000 104	-.729** .000 121	.730** .000 120	1.000 ------- 121

** Correlation is significant at the 0.01 level (2-tailed).

Table 36. Factor Analysis of Community Indicators for Alaska Secondary Schools, 1998

Variable	Factor Loading
Percent Alaska Native	.837
Percent high school graduates	-.848
Percent eligible for National School Lunch Program (NLSP)	.869
Median household income	-.792
Percent living below poverty level	.869

Principal component analysis, initial eigenvalue = 3.577, percent of variance explained = 71.1%

Initially, all school and community predictors of academic achievement were considered—along with the ratio of librarian hours per 100 students (i.e., the librarian-pupil ratio). The lone statistically significant predictor of the community, school, and library variables considered was the community factor (See Table 37.) This lone predictor accounts for 25 percent of the variation in CAT5 test scores among elementary school students.

Table 37. Regression Model Summary Including All Community and School Predictors and Librarian-Pupil Ratio for Alaska Elementary Schools, 1998

Predictor	R Square	R Square Change	F Change	Statistical Significance
Community factor	.250	.250	36.023	$p < .001$

Excluded variables: teacher-pupil ratio, librarian-pupil ratio, instructional expenditures per pupil

As there is little a school can do to change these conditions in the larger community, another analysis—including only the potential school predictors (per pupil expenditures and teacher-pupil ratio) and the librarian-pupil ratio—was conducted at the elementary level. (See Table 38.) Its results indicate that the librarian-pupil ratio alone accounts for eight percent of test score variation at the elementary level. Taking into consideration the librarian-pupil ratio, neither per pupil expenditures nor teacher-pupil ratio explained more test score variation.

Table 38. Regression Model Summary Including All School Predictors and Librarian-Pupil Ratio for Alaska Elementary Schools, 1998

Predictor	R Square	R Square Change	F Change	Statistical Significance
Librarian-pupil ratio	.080	.080	11.162	$p = .001$

Excluded variables: teacher-pupil ratio, per pupil school expenditures

At the secondary level, similar initial analyses found that, when all available variables are considered, community factors alone explain 29 percent of test score variation. (See Table 39.)

- When all community predictors are excluded, per pupil expenditures is the single strongest school predictor of test score variation at nine percent. (See Table 40.)
- When only the librarian-pupil ratio and the teacher-pupil ratio are included, the first explains about four percent and the second 4.5 percent of test score variation. (See Table 41.) At the elementary level, a favorable teacher-pupil ratio did not emerge as a positive predictor of academic achievement, but at the secondary level, it and the librarian-pupil ratio are predictors of academic achievement.

Notably, although the relationship is still positive and statistically significant, the percent of test score variation explained by the librarian-pupil ratio is much smaller at the secondary level. One possible explanation for this weaker relationship is the marginal size of the secondary school sample—and, more specifically, the small number of such schools reporting lower achievement levels. Possibly, there is something to this finding. A similar decline in the positive influence of school librarians in the later grades was found in the original Colorado study.

Table 39. Regression Model Summary Including All Community and School Predictors and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998

Predictor	R Square	R Square Change	F Change	Statistical Significance
Community factor	.289	.289	35.848	$p < .001$

Excluded variables: teacher-pupil ratio, librarian-pupil ratio, instructional expenditures per pupil

Table 40. Regression Model Summary Including All School Predictors and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998

Predictor	R Square	R Square Change	F Change	Statistical Significance
Per pupil expenditures	.092	.092	11.141	$p = .001$

Excluded variables: teacher-pupil ratio, librarian-pupil ratio

Table 41. Regression Model Summary Including Teacher-Pupil Ratio and Librarian-Pupil Ratio for Alaska Secondary Schools, 1998

Predictor	R Square	R Square Change	F Change	Statistical Significance
Librarian-pupil ratio	.039	.039	4.508	$p < .05$
Teacher-pupil ratio	.085	.045	5.414	$p < .05$

Conclusions and Recommendations

This study identified several positive, statistically significant relationships between characteristics of school library media programs and academic achievement by students. Most of these relationships concern the direct and indirect effects of professionally trained librarians on student performance. Conditions associated with the presence of a librarian and higher CAT5 test scores include: spending more time delivering library/information literacy instruction, planning cooperatively with teachers, and providing in-service training to teachers as well as having a working relationship with the local public library. In addition, the study found evidence that test scores are higher for schools equipped to provide online access to information via their library media programs and operate their LMCs under collection development policies that identify objective procedures and criteria for handling reconsideration requests.

Specific relationships confirmed by this study are summarized below and illustrated in Figure 1.

Librarian Staffing

- Where there is a librarian, the percentage of students with proficient and above test scores tends to be higher.
- Schools with full-time librarians tend to have higher test scores than schools with part-time librarians.
- Accordingly, schools with a part-time librarians tend to have higher test scores than schools with no librarian.

Library Media Center Hours Open

- Higher levels of librarian staffing are associated with longer LMC hours of operation, higher levels of library media staff activity, higher student usage, and consequently higher test scores.

Staff Activities

- The higher the level of librarian staffing, the greater the percentage of library media staff hours dedicated to
  - delivering library/information literacy instruction to students,
  - planning instructional units cooperatively with teachers, and
  - providing in-service training to teachers and other staff.

- Regardless of level of librarian staffing, the more library media staff time devoted to these activities, the higher the test scores.

Library Media Program Usage

- The more often students receive library/information literacy instruction in which library media staff are involved, the higher the test scores.

Partnerships, Technology & Policies

Higher test scores also tend to be associated with

- cooperative relationships between LMCs and the public libraries,
- library media programs that have the facilities required to reach the Internet and the World Wide Web—and
- collection development policies that address reconsideration of materials.

In addition, this study weighed the relative effects on academic achievement of librarian staffing, other school characteristics (i.e., per pupil spending, teacher-pupil ratio), and community conditions (i.e., adult educational attainment, cultural diversity, poverty). While community conditions proved to have the strongest impact at elementary and secondary levels and instructional expenditures per pupil proved a strong factor at the secondary level, the positive effects of the librarian-pupil ratio outweighed both per pupil expenditures and teacher-pupil ratio at the elementary level and added to the effects of teacher-pupil ratio at the secondary level.

The data presented several difficulties for accounting for community, school and library variables simultaneously. First, these three sets of conditions are all highly correlated with each other. Small remote communities with low educational attainment and high poverty also have small schools with few if any library services. Conversely, large urban communities tend to have high educational attainment, relatively low poverty, and superior library services. Separate analyses for these and other community types are not possible, because the number of observations would be very small for each community type.

These factors make it impossible to demonstrate with this data set the statistical significance of the effect of library services on test scores, while controlling for community characteristics. That does not mean that the relationship is absent or not significant; the data do support the hypothesis of library services having a positive effect. However, to accurately estimate the strength of that effect in a statistically significant manner would require a larger data set for all types of communities, and possibly more in-depth examination of the few library services offered in small rural schools.

Recommendations for Action

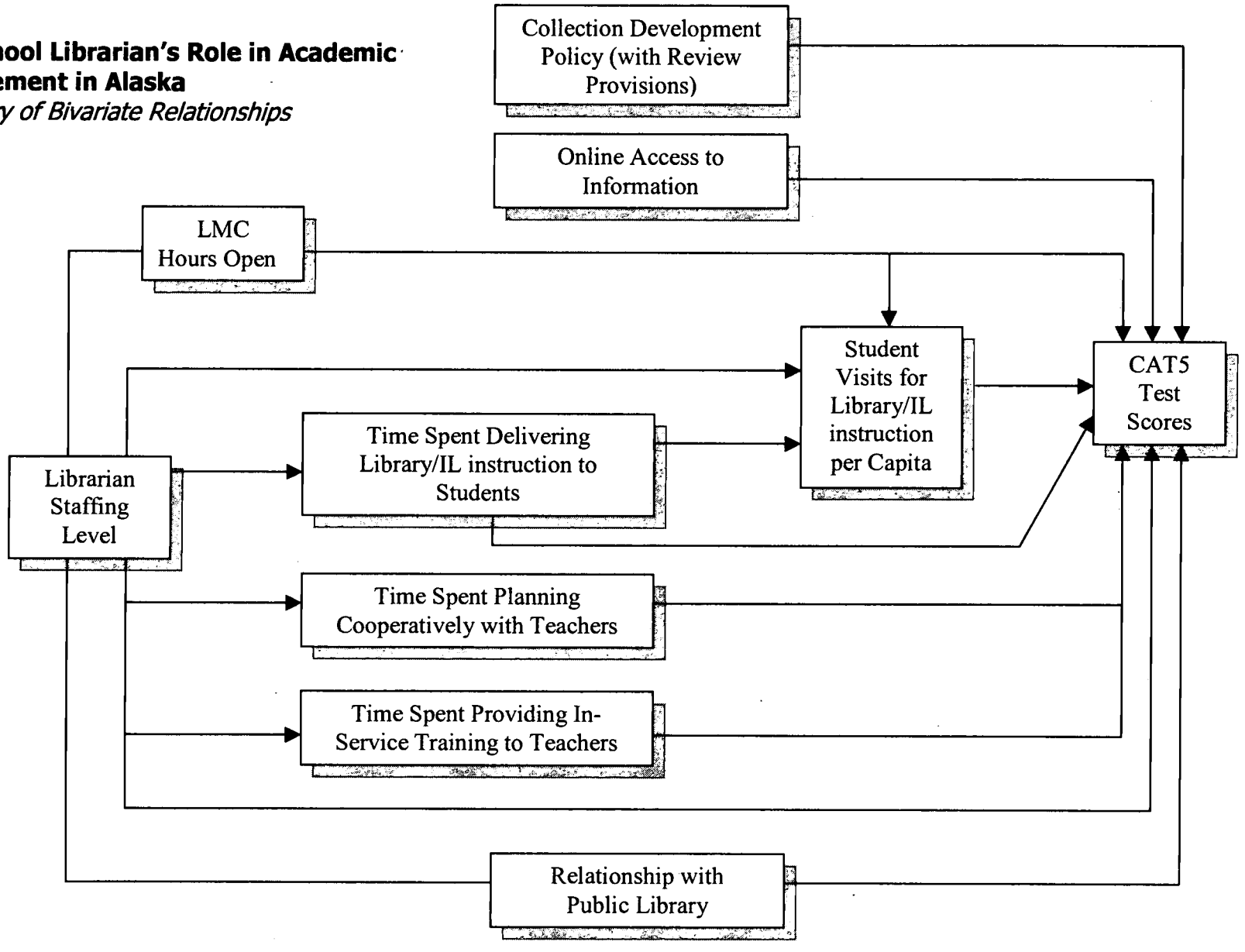
Based on these findings, the following actions by Alaska public schools are recommended as means of raising student achievement levels:

- Even the smallest public school districts should employ at least one professionally trained librarian to oversee the library programs in each school. Larger schools should have their

own professionally trained librarian. Where it is impossible to have a professionally trained school librarian at a small or isolated site, a three-quarter or half-time position is recommended.

- District and building administrators should adopt policies, arrange schedules, and otherwise create opportunities for collegial interaction that facilitate cooperative and collaborative relationships between classroom teachers and library media staff.
- When the location of public libraries makes it possible, every LMC should have a relationship—be it formal or informal—with its local public library. This relationship may include, but should not be limited to: shared online catalogs, book talks by public library staff at the LMC, homework alerts from the LMC to the public library, bulk loans of public library materials, and a summer reading program at the public library.
- Every school district should have a comprehensive collection development policy for its LMCs that includes procedures for reconsideration of materials selections.
- Every LMC should have access to the computer equipment and telecommunications capabilities required for online access to information, especially the Internet and the World Wide Web.

The School Librarian's Role in Academic Achievement in Alaska
Summary of Bivariate Relationships



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74

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List of Participants

District	School
Alaska Gateway School District	Tok School
Aleutians East Borough School	Sand Point School
Anchorage School District	Abbott Loop Elementary
	Airport Heights Elementary
	Alpenglow
	Aurora Elementary
	Bartlett High School
	Bayshore Elementary
	Birchwood Elementary
	Campbell Elementary
	Chester Valley Elementary
	Chinook Elementary
	Chugach Optional Elementary
	Chugiak Elementary
	Chugiak High
	College Gate Elementary
	Creekside Park Elementary
	Denali K-8 School
	Dimond High
	East High
	Fairview Elementary
	Fire Lake Elementary
	Gladys Wood Elementary
	GoldenView Middle School
	Government Hill Elementary
	Gruening Middle School
	Homestead Elementary
	Kennedy Elementary
	Lake Otis Elementary
	McLaughlin Youth Center
	Mirror Lake Middle School
	Mount Spurr Elementary
	Mountain View Elementary
	Muldoon Elementary
	North Star Elementary
	Northern Lights ABC Elementary
	Ocean View Elementary
	O'Malley Elementary
	Polaris K-12 School
	Ptarmigan Elementary
	Romig Middle School
	Russian Jack Elementary

District	School
Anchorage School District	Sand Lake Elementary
	Scenic Park Elementary
	Service High School
	Susitna Elementary
	Taku Elementary
	Tudor Elementary
	Ursa Major Elementary
	Ursa Minor Elementary
	West High School
	Willard Bowman Elementary
	Wonder Park Elementary
Bering Strait Schools	Aniguiin School
	Hogarth Kingeekuk Sr. School
	Martin L Olson School
	Tukurngailnguq School
	Wales-Kingikmiut School
	White Mountain School
Chatham Schools	Angoon School
	Gustavus School
Copper River School District	Glennallen Elementary School
	Glennallen High School
Cordova School District	Cordova Jr./Sr. High School
Craig City Schools	Craig Elementary
	Craig Middle/High School
Denali Borough School District	Anderson School
	Cantwell School
	Tri-Valley School
Dillingham City School District	Dillingham Middle/High School
Fairbanks North Star Borough	Anderson Elementary
	Barnette Elementary
	Ben Eielson Jr/Sr High
	Denali Elementary
	Howard Luke Academy
	Ladd Elementary
	North Pole Elementary
	North Pole High School
	North Pole Middle School
	Pearl Creek Elementary
	Salcha Elementary
	Tanana Middle School
	Ticasuk Brown Elementary
	Two Rivers Elementary
	University Park Elementary
	Weller Elementary

District	School
Fairbanks North Star Borough	West Valley High School
	Woodriver Elementary School
Galena City School	Galena School
Haines Borough School District	Haines Elementary School
	Haines High School
Hoonah City Schools	Hoonah Community/School
Juneau-Douglas School District	Auke Bay Elementary
	Dzantik'I Heeni Middle S
	Floyd Dryden Middle School
	Gastineau Elementary
	Glacier Valley Elementary
	Harborview Elementary
	Juneau Douglas High School
	Mendenhall River Elementary
	Riverbend Elementary
Kake City Schools	Kake School Community
Kashunamiut School District	Chevak School
Kenai Peninsula Borough School	Homer High School
	Homer Middle School
	Kalifornsky Beach Elementary
	Kenai Central High School
	Kenai Middle School
	McNeil Canyon Elementary
	Mt. View Elementary School
	Nikiski Jr/Sr High School
	Nikolaevsk School
	North Star Elementary School
	Paul Banks Elementary School
	Razdolna Elementary School
	Redoubt Elementary School
	Sears Elementary School
	Seward Elementary School
	Seward Middle/ High School
	Skyview High School
	Soldotna Elementary School
	Soldotna High School
	Soldotna Middle School
	Sterling Elementary School
	Susan B English School
	Tustumena Elementary School
	West Homer Inter. School
Ketchikan Gateway Borough Schools	Ketchikan High School
	Schoenbar Middle School
Klawock City School District	Klawock City Schools

District	School
Kodiak Island Borough School	Chiniak School
	East Elementary School
	Kodiak High School
	Main Elementary School
	North Star Elementary (Kodiak)
	Peterson Elementary School
Lake and Peninsula Schools	Chignik Lagoon School
	Levelock School
Lower Kuskokwim School District	Akiuk Memorial School
	Akula Elitnaurvik School
	Anna Tobeluk Memorial School
	Chaptnguak School
	Chief Paul Memorial School
	Dick R Kiunya Memorial School
	Kwethluk Community School
	Kwigillingok School
	Lewis Angapak School
	Mikelnguut Elitnaurviat
	Nelson Island Area School
	Nuniwaarmiut School
	Paul T. Albert Memorial
	Z John Williams School
Lower Yukon School District	Kotlik School
	Mountain Village School
	Pilot Station School
	Pitkas Point School
	Sheldon Point School
Matanuska-Susitna Borough Schools	Colony High School
	Colony Middle School
	Cottonwood Creek Elementary
	Finger Lake Elementary
	Glacier View Elementary
	Goose Bay Elementary
	Houston Jr/Sr High
	Iditarod Elementary
	Pioneer Peak Elementary
	Sherrod Elementary
	Snowshoe Elementary
	Susitna Valley High School
	Swanson Elementary
	Talkeetna Elementary School
	Trapper Creek Elem. School
	Wasilla Middle School
	Willow Elementary

District	School
Mt. Edgecumbe High School	Mt Edgecumbe High School
Nome City Schools	Nome-Beltz Jr/Sr High
North Slope Bor. School District	Alak School Barrow High School Harold Kavelook School Hopson Middle School Ipalook Elem. School Kali School Meade River School Nunamiut Tikigaq School
Northwest Arctic Borough Schools	Kiana School McQueen School Selawik School
Pelican City School	Pelican School
Petersburg City Schools	Petersburg Middle/High School Rae C Stedman Elementary School
Sitka School District	Baranof Elementary School Blatchley Middle School
Skagway City Schools	Skagway School
Southeast Island Schools	Thorne Bay
Valdez City Schools	Herman Hutchens Elementary Valdez High School
Wrangell Public Schools	Wrangell Elementary School Wrangell High School
Yakutat School District	Yakutat High School
Yukon-Koyukuk School District	Andrew K Demoski School Bettles School Merreline A Kangas School Minto School

SURVEY OF SCHOOL LIBRARY MEDIA CENTERS IN ALASKA 1998
Please Respond by November 6,1998

Dear <<salutation>>,

This survey is part of an effort by the State Library and the Department of Education to measure the effect that school library programs have on the achievement levels of Alaskan students. We will not be using the information you give us to compare schools, districts or programs. Instead, our researcher, Keith Lance, will analyze the data to assess the importance of libraries in our schools. In these days of increasing calls for accountability, it is vitally important that we have reliable data demonstrating the value of our school libraries and librarians.

I realize that every week is a busy time for you, but please choose a week in October (in the survey, we call it a *typical week*) to do the counts and fill in the rest of the form. If you are responsible for more than one school, please fill out the survey for each library separately. Most of the questions can be answered quickly by using your knowledge of your library and how it operates. Some will require that you do a count of materials, visits, or services.

Complete the survey and remove the separate back page (which has your address). Refold the completed survey, leaving our address and the return stamp showing. Tape the survey closed (please don't staple) and mail. Don't hesitate to call me if I can answer any questions for you about the survey, or if I can help you in any other way with your important job of providing library services to your students. I appreciate your taking the time to fill out and return this questionnaire.

Sincerely,

Della Matthis, AK State Library
School Library Coordinator
Telephone: voice 800/776-6566
fax 907/269-6580
e-mail: dellam@muskox.alaska.edu

Part A - Respondent Information

Please check the information below, add any that is missing and correct any that is wrong.

A1. School Name:	<<schname>>	
A2. Address: <<street>>	A3. City: ((cty>>	A4. Zip code: <<zip>>
A5. School Level: Lowest Grade ___ Highest Grade ___	<<lowgrade>> – <<higrade>>	
A6. Type of Library (check one)	☐ School library only	☐ Combined School/Public Library
A7. District Name:	<<district>>	
A8. Name and Title of Respondent : <<fname>> <<lname>> <<title>>		
A9. Phone	A10. Fax	A11. E-mail:

Part B - Hours Of The Library Media Center

Please Choose One Full Week In October To Represent A Typical Week

Questions in parts B-D often refer to a **typical week** (not per day). As your **typical week**, please choose a week in October with no holidays, school-wide testing or major school programs scheduled. **Supervised** open hours means that the responsible adult who is in charge of the library is present.

How many hours is the library open:	Hours per **Typical Week** Supervised	Unsupervised
B2. In a typical school week during school hours?		
B3. In a typical school week after school hours?		
B4. In a week during the summer months?		

Part C - Library Media Staff

For each category, tell us how many staff and how many total staff hours per typical week. Include only hours worked in the library. In categories with more than one staff person, add up all their hours for "Total Person-Hours". For example, if two people are reported as "other paid staff" and one works 20 hours per week and the other 10, report 30 total person-hours per week. For paid staff, report the number of hours for which they are paid, *not* the extra time they spend. Please be sure to list each person under only one category.

For each category below, how many staff are there, and how many total person hours per typical week do they work?	Number of People	Total Person-Hours
Paid staff		
C1. School library media specialist with an Alaska endorsement or MLS		
C2. Certified teacher with 18 or more hrs of library media courses but no endorsement		
C3. Certified teachers with less than 18 hrs of library media courses		
C4. Contracted library media services out-of-district staff		
C5. Certificated technology staff considered part of library staff		
C6. Principal		
C7. Clerical or library aide (who performs only library duties)		
C8. Clerical or other aide (who has other school duties as well as the library)		
C9. Total Paid Staff (Sum of lines C1-C8)		
Volunteers		
C10. Adult volunteers		
C11. Student workers		
C12. Total volunteer workers (Sum of lines C10-C11)		

Part D - Paid Staff Activities

Look for directions on how to select a typical week at the top of Part B. The information we are asking for in Part D is usually not kept as part of your library records, so you will have to use your best judgement to estimate. The total of the staff hours should reflect the total hours listed for all the staff in Part C9. So, again, staff hours for any one person can't total more than the hours for which they are paid.

How many hours in a typical week do paid staff spend on each of the following activities?	Total Staff Hours per **Typical Week**
D1. Identifying and providing materials for instructional units developed by teachers	
D2. Planning instructional units with teachers	
D3. Maintaining/repairing audio/visual equipment	
D4. Managing computers/library automation/school or library computer network	
D5. Providing information skills instruction to individuals or groups, independently of classroom teachers	
D6. Teaching cooperatively with classroom teachers	
D7. Providing in-service training to teachers/other staff	
D8. Evaluating students' work (grading student aides, correcting work assigned in library.	
D9. Providing reading motivation activities (book talks, readers' advisory, reading contests, Battle of the Books, etc.)	
D10. Managing collection development (selection, weeding, ordering, cataloging)	
D11. Completing miscellaneous management tasks (circulation, shelving, processing, displays, bulletin boards)	
D12. Other school duties (committee meetings, playground or lunch duty, etc.)	
D13. Other: (Please describe)	
D14. Total Paid Staff Hours	

Part E - Use of Library Media Services in A Typical Week

Part E asks about both visits to and circulation of materials from the library. **For visits, count each visitor**, whether part of a group or an individual, and whether scheduled or unscheduled. **For circulation, count each item actually checked out** of the library through your circulation system.

Please count how many visits of each of the following types your library receives in a typical week (the one you choose in October):	Number
E1. Student visits for **instruction by library staff**	
E2. Student visits to use library-based technology	
E3. All other Student visits (recreation, individual materials selection)	
E3. Staff contacts for resources, planning, assistance (even if made outside the library)	
E4. Staff visits to use library-based technology	
E5. All other visits:	
E6. Total individuals visiting (total of E1, E2, E3, E4, E5)	
How many materials are checked out of the Library Media Center in a typical week?	
E7. Materials from school collection, total items circulated (include all formats)	
E8. Materials obtained from outside the library (e.g., interlibrary loans, intra-district loans, commercial document delivery services)	
E9. Materials loaned to other libraries	

Part F- Library Media Collection

Part F asks about the size of the collection. Include duplicate copies of titles in the count.

How many of each the following types of items does the library own?	**Number**
F1. Print volumes (count an encyclopedia set as one volume)	
F2. Current magazine subscriptions (print and microfiche)	
F3. Current newspaper subscriptions	
F4. Electronic copies of encyclopedias and reference titles (CD-ROM or laser disk)	
F5. Electronic full text or index services on CD (Services like InfoTrac or Magazine Index equal one subscription)	
F6. Electronic full text or index services on line (Services like Dialog or Electric Library equal one subscription)	
F7. Video materials (cassettes and disks)	
F8. Other audiovisual materials (filmstrips, media kits, etc.)	
F9. Computer software packages (either single or multiple disk) whether for library/classroom use or circulation	

Part G – On Line Access to Information

Does the Library Media Center have:	Circle One:	
G1. Stand-alone local public access catalog (card or electronic) If an electronic catalog, which program do you use: _____	YES	NO
G2. On Line district wide automated catalog If yes, which program do you use: _____	YES	NO
G3. On Line bibliographic databases such as WLAN or LaserCat	YES	NO
G4. Other **On Line** databases such as Dialog, Wilson, IAS, or Electric Library, for which you pay a subscription		
G5. Links to a local area network (LAN) serving the school	YES	NO
G6. Links to a wide area network (WAN) serving the district	YES	NO
Which of these items are available in the Library Media Center?	Circle One:	
G7. Telephone with touch tone service	YES	NO
G8. Photocopier	YES	NO
G9. FAX	YES	NO
G10. Computer modem (internal or external)	YES	NO
G11. E-mail availability for librarian	YES	NO

For each group, please check the level of access they have to the Internet: No Access, Text only access, or full (graphics capable) World Wide Web access:

Check ONLY the highest level of access for each type of user:	No Access	Text-only Internet access or SLED	World Wide Web Internet access (graphics capability)
G12. Students			
G13. Library media staff			
G14. Teachers /Other Staff			

Part H - Annual Expenditures for 1997-98 for LMC

Part H asks how much was spent in several categories, and of that amount, how much was from regular school budget funds, and how much from other sources, such as PTAs, grants and donations. Include only expenditures for materials and equipment that are included in the library inventory and for which the librarian is responsible.

How much money was spent for:	From School Budget	From Other Sources
H1. Books and other print material (include magazines and newspapers)		
H2. Materials in electronic formats (e.g., software, CD-ROM, laser disk, locally-mounted databases) which are purchased		
H3. Electronic access to information (e.g., online database searching; Internet access) for which you pay a subscription fee		
H4. Non-print materials (e.g., audio, video, microform)		
H5. Other operating expenditures (e.g., author visits, teaching supplies)		
H6. Total Operating Expenditures (sum of H1 - H5)		
How much money was spent for:		
H7. Equipment (e.g., computers, CD-ROM drives and players, video cassette recorders)		
H8. Other capital purchases (e.g., furniture, shelving)		
H9. Total Capital Outlay (H7 + H8)		

Part I - Library Media Center Policies

Which written plans listed below does your **school** have?	Circle One:	
I1. Does your school have a written plan for the library media program ?	YES	NO
I2 Does your school have a written technology plan?	YES	NO
I3. If YES, does the school technology plan include the library media program?	YES	NO
I4. Does your school have a specific Information or Library Skills curriculum?	YES	NO
I5. If YES, how is it taught (Circle one)	a. Through the library media program only	b. Part of integrated curriculum with other staff	c. By classroom teachers only
For I6 and I7, which written policies may be found at the **school or district** level?	Circle One:	
I6. Does your library media program have a written collection development or materials selection policy?	YES	NO
I7. Does your library media program have a written policy for handling challenges or objections to materials?	YES	NO

I8. Have there been any challenges or objections to materials in your library media center's collection during the past year?	YES	NO

Part J - Library Media Center Management

Part J asks about the relationship between your school library and the local public library.

J1. What is the relationship of your library media program to the local public library ? Circle one:

Combined School/Public Library | No Local Public Library | No Relationship | Informal Relationship | Formal Agreement

If you answered:

Combined School/Public Library
or No Public Library
or No Relationship you are done!

If you answered:

Informal relationship
Formal Agreement
...Please continue

In which of the following ways do your school library and the local public library work together?	**Circle One:**	
J2. Are there electronic network links (such as shared catalog access) between your library and the local public library?	YES	NO
J3. Does the public library staff present booktalks at the school library?	YES	NO
J4. Does the school library provide homework alerts to public library?	YES	NO
J5. Does the school library direct reference questions to public library?	YES	NO
J6. Does the school library receive bulk loans from public library?	YES	NO
J7. Is there a summer reading program at the public library?	YES	NO
J8. Other (please specify)	YES	NO

Thank you for the time and thought you have put into completing this survey. This winter, we will be publishing the results and will be sure to share them with you. Your help lets us include all types of Alaskan school libraries and librarians in our study.

Remember to remove the separate back page (which has your address), which will leave our address and the return stamp showing. Refold the completed survey, tape it closed (please don't staple) and mail.

Test scores tend to be higher for all types of schools where

- there is a school librarian
- library staff spend more time
  - delivering library/information literacy instruction to students
  - collaborating with teachers on instructional units
  - training teachers in information access
- students visit the school library more frequently

Full-time librarians are more likely to engage in key instructional activities than either part-time librarians or non-librarian staff.

Test scores tend to be higher for all types of schools where the library

- is open longer hours
- has a cooperative relationship with the public library
- provides online access to information via the Internet and the World Wide Web
- has a policy regarding selection and reconsideration of books and other materials

All of these relationships are both positive and statistically significant.

These relationships cannot be explained away entirely by differences in

- school size
- school funding
- teacher staffing levels

While community conditions such as the education level of adults (especially parents), absence of cultural and language barriers, and economic prosperity are important, these are variables over which schools have no control.

The work of a school librarian has also been shown to be an important factor in high student achievement levels, and this variable we CAN control.

How a School Librarian Can Make a Difference

- keeping the library open longer
- providing more in-service to teachers
- planning with teachers
- delivering more library/information literacy instruction to students
- promoting more frequent student visits to the LMC
- building a stronger relationship with the public library

RESULTS:
Higher Test Scores

About the Study

This study was conducted by the Library Research Service (Denver, Colorado) under contract to the Alaska State Library and with the cooperation and collaboration of staff of the

- Alaska State Library,
- Alaska Department of Education and Early Development, and
- Institute for Social and Economic Research, University of Alaska, Anchorage.

The sample for the study included 211 public elementary and secondary schools in Alaska that included grades four, eight, and eleven—those to which the California Achievement Tests, Version 5, were administered during the 1997/98 school year.

All sample schools participated in the 1998 Survey of School Library Media Centers in Alaska.

Want higher test scores?

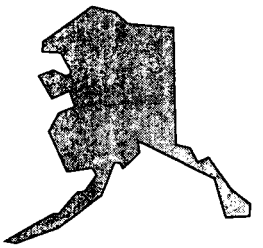
A school librarian can make the difference!

Results from

INFORMATION EMPOWERED

The School Librarian as an Agent of Academic Achievement in Alaska

The Impact of Alaska School Library Media Centers on Academic Achievement
Early Results Brief
No. 1, March 11, 1999 (revised May 25, 2000)



To Have or Have Not

How CAT5 Test Scores Vary With the Presence & Absence of School Library Media Specialists

In both elementary and secondary schools in Alaska, library media specialists (LMSs) play important roles as colleagues and partners of classroom teachers and as teachers and learning facilitators to students. While other types of staff may suffice to keep the library media center's (LMC's) doors open, such substitutions are not made in schools whose students excel academically.

Table 1. State Test Scores by Presence/Absence of School Library Media Specialist for Elementary Schools (i.e., 4th Grade), 1998

Presence/Absence of Library Media Specialist	CAT5 Test Scores Average or Above	Below Average	Total (n = 135)
Full-Time (35 or more hours per week)	82.6%	17.4%	100.0%
Part-Time (up to 35 hours per week)	66.7%	33.3%	100.0%
None	59.5%	40.5%	100.0%
Total	68.1%	31.9%	100.0%

Chi-square = 7.0, $p < .05$

The presence of a LMS appears to increase the chances of an elementary school scoring average or above on CAT5 tests for reading, language arts, and mathematics. Of schools without a LMS, only three out of five had higher test scores in 1998. Of schools with a full-time LMS, four out of five had higher scores. This difference is statistically significant. (See Table 1.)

What do qualified LMSs do that other kinds of elementary school library staff do not? During a typical week, when compared with alternative staff, elementary LMSs provide:

- more than seven additional hours delivering information skills instruction to students,
- almost one and a half extra hours of basic library services (e.g., circulation, cataloging, displays and exhibits),

- more than one additional hour of in-service training for classroom teachers, and
- an extra half hour of reading motivation activities.

To an even greater extent, the presence of a library media specialist (LMS) appears to increase the chances of a secondary school scoring average or above on state tests. Of schools without a LMS, barely half had higher CAT5 test scores in 1998. Of schools with a full-time LMS, nine out of ten had higher scores. This more pronounced difference is also statistically significant. (See Table 1.)

Table 2. State Test Scores by Presence/Absence of School Library Media Specialist for Secondary Schools (i.e., 8th & 11th Grades), 1998

Presence/Absence of Library Media Specialist	CAT5 Test Scores: Average or Above	Below Average	Total (n = 117)
Full-Time (35 or more hours per week	92.1%	7.9%	100.0%
Part-Time (up to 35 hours per week)	69.2%	30.8%	100.0%
None	51.5%	48.5%	100.0%
Total	66.7%	33.3%	100.0%

Chi-square = 17.9, $p < .001$

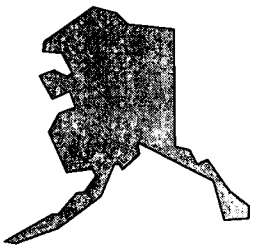
What do qualified LMSs do that other kinds of secondary school library staff do not? During a typical week, when compared with alternative staff, secondary LMSs spend more time:

- delivering information skills instruction to students,
- planning instructional units cooperatively with classroom teachers, and
- providing in-service training to teachers.

Plainly, it is better to have a library media specialist (LMS) than not to have one, and better to have a full-time one than a part-timer. Where such staff are found, test scores tend to be significantly higher.

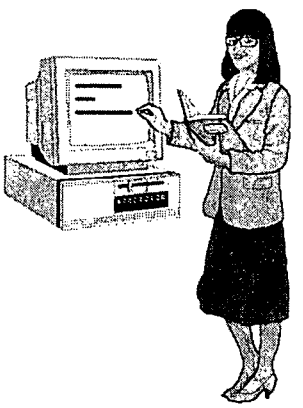
Direct questions about this Early Results Brief to:
Keith Curry Lance, Project Director
The Impact of Alaska School Library Media Centers on Academic Achievement
Tel.: 303 866 6737 – Fax: 303 866 6940 – e-mail: klance@sni.net
Web site: www.lrs.org

The Impact of
Alaska School Library
Media Centers on
Academic Achievement
Early Results Brief
No. 2, March 12, 1999 (revised May 25, 2000)

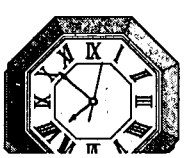


More Is Better

Higher Levels of Library Media Specialist
Staffing Predict CAT5 Test Scores



Early results from a study of the impact of Alaska's school library media centers on academic achievement are in. It is not just a matter of whether or not a school has a library media specialist (LMS). In 1998, CAT5 test scores for reading, language arts, and mathematics increased as the level of library media specialist staffing increased. This correlation is both positive and statistically significant.[1] The higher the number of weekly LMS hours per 100 students, the higher students score on tests (for 4th grade, r = .30, p = .001; for 8th & 11th grades, r = .20, p <.05).[2]



On the average, higher-scoring schools had twice the level of professionally-trained staff of lower-scoring schools. At schools with average or above CAT5 test scores, library media specialists were employed at the rate of more than four hours per 100 students (elementary, 4.9; secondary, 4.2) compared with only two hours (2.3, elementary; 2.1, secondary) per 100 students for schools that test below average.

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[1] The two professional credentials for library media specialists are the state's library media endorsement and the master's degree in library science. As part of the 1998 Survey of School Library Media Centers in Alaska, typical weekly hours for library media specialists were collected. Using enrollment figures, typical weekly hours of professionally-trained staff per 100 students were calculated and analyzed.

[2] 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 leads to 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. Where p < .001, there is less than one chance in 1,000 that the correlation demonstrated by the sample is not representative of the universe. Where p< .05, that chance is less than five in 100.

What do professionally-trained staff do that makes a difference? The answers to that question vary for elementary and secondary schools:

At better-staffed elementary schools, library media specialists focus on the basics of "information literacy." They ...

- spend more of their time planning and providing information skills instruction to students ($r = .40$, $p < .001$) and
- receive more visits per student for that purpose ($r = .24$, $p < .001$)

At better-staffed secondary schools, library media specialists are colleagues to classroom teachers, fully engaged in the design and delivery of instruction, and facilitators of learning to students, helping them to navigate an information-rich environment via both traditional and technological means. They also ...

- spend larger percentages of their time planning cooperatively with classroom teachers ($r = .26$, $p < .001$), and
- receive more visits per student for information skills instruction in particular ($r = .28$, $p < .001$).

Direct questions about this Early Results Brief to:

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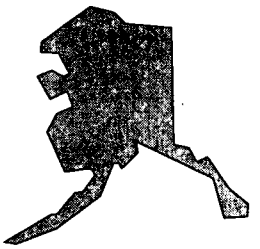
Web site: www.lrs.org

The Impact of Alaska School Library Media Centers on Academic Achievement
Early Results Brief
No. 3, April 8, 1999 (revised May 25, 2000)



"Wired" LMCs

Links Between the Presence of Telephones & Modems in LMCs and CAT5 Test Scores for Secondary Grades

Table 1. State Test Scores for Secondary Schools With & Without Touch-Tone Telephones in Library Media Centers, 1998

	CAT5 Test Scores		
Touch-tone telephone	**Average or above**	**Below average**	**Total**
Present	70	25	95
	74%	26%	100%
Absent	8	14	22
	36%	64%	100%
Total	78	39	117
	67%	33%	100%

Chi-square = 11.196, p = .001

Early results from **The Impact of Alaska School Library Media Centers on Academic Achievement** project indicate that students in secondary schools with "wired" LMCs earn higher test scores than students whose LMCs are "low-tech."

While it is difficult to imagine an effective LMC that lacks so basic an instrument of telecommunication as a telephone, there are, indeed, many schools in the state in just that position. Of LMCs with phones, three out of four served students who scored average or above on CAT5 tests for reading, language arts, and mathematics. Of LMCs without phones, two out of three served students who scored below average. (See Table 1.)

Table 2. State Test Scores for Secondary Schools With & Without Modems or Equivalents in Computers in Library Media Centers, 1998

	State Test Scores		
Modem	**Average or above**	**Below average**	**Total**
Present	65	25	90
	72%	28%	100%
Absent	13	13	26
	50%	50%	100%
Total	78	38	116
	67%	33%	100%

Chi-square = 4.522, p <.05

While a telephone line into the LMC may seem extremely basic, it not only enables library media staff to communicate with other libraries, but also with other information providers beyond the school building. But, a phone line alone is not enough. Early findings also indicate that secondary students whose LMCs have at least one computer with modem capabilities earn higher test scores than students whose LMCs do not provide them with access to the wealth of information available via the Internet and the World Wide Web. Of LMCs with telecomputing capabilities, three out of four served students who scored average

or above on tests. LMCs without telecomputing capabilities served students who split 50-50 on test performance: half scored average or above and half scored below average. (See Table 2.)

These findings indicate that technological tools as basic as the telephone and as complex as Internet-capable computers are essential to the success of today's school library media center.

Direct questions about this Early Results Brief to:
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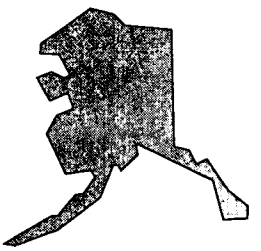
Web site: www.lrs.org

The Impact of Alaska School Library Media Centers on Academic Achievement
Early Results Brief
No. 4, April 12, 1999 (revised May 25, 2000)



The "Open" LMC

Links Between Collection Development Policies That Address Reconsideration Requests and CAT5 Test Scores

Table 1. State Test Scores for Elementary Schools With & Without Collection Development Policies Providing for Reconsideration of Materials, 1998

Reconsideration Policy	CAT5 Test Scores: Average or above	CAT5 Test Scores: Below average	Total
Present	72	24	96
	75%	25%	100%
Absent	13	16	29
	45%	55%	100%
Total	85	40	125
	68%	32%	100%

Chi-square = 9.318, $p < .01$

One of the most important documents produced by any library—but especially a school library media center—is its collection development policy. The materials chosen for an LMC collection must support the school's curricular, general reference, and professional development needs. They can only do that if they are chosen according to clearly stated and applied criteria rather than the personal tastes of individual librarians, teachers, or donors. Inevitably, whatever materials are selected and however those decisions are made, someone—eventually—will disagree. The annals of "intellectual freedom" are full of stories about school library media specialists who must deal with regular challenges to such wide-ranging books as **Catcher in the Rye**, **Daddy's Roommate**, and almost anything by Judy Blume.

Table 2. State Test Scores for Secondary Schools With & Without Collection Development Policies Providing for Reconsideration of Materials, 1998

Reconsideration Policy	CAT5 Test Scores: Average or above	CAT5 Test Scores: Below average	Total
Present	57	20	77
	74%	26%	100%
Absent	15	14	29
	52%	48%	100%
Total	72	34	106
	68%	32%	100%

Chi-square = 4.809, $p < .05$

Indeed, whether or not a library's collection development policy deals with this issue is probably a strong indicator of its overall quality. Early results of **The Impact of Alaska School Library Media Centers on Academic Achievement** project indicate that this is so. For both elementary and secondary schools, three out of four LMCs that have such policy provisions serve students who scored average or above on the CAT5 tests for reading, language arts, and mathematics.

The implication of these findings is that LMCs that have comprehensive collection development policies have materials that better meet the needs of their students, making them
better prepared to excel on state tests.

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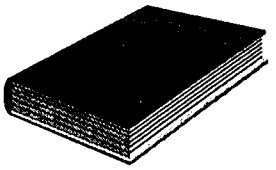
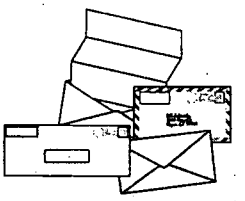
e-mail: klance@sni.net - Web site: www.lrs.org





The Impact of Alaska School Library Media Centers on Academic Achievement
Early Results Brief
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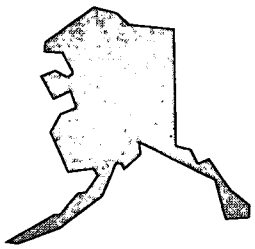

LMC-Public Library Partnerships

Links Between Relationships With Public Libraries and CAT5 Test Scores

Table 1. State Test Scores for Elementary Schools With Relationships With Public Libraries and Either No Relationship or No Public Library, 1998

Relationship With Public Library	CAT5 Test Scores: Average or above	Below average	Total
Relationship (formal or informal)	33 77%	10 23%	43 100%
No relationship/ no library	6 35%	11 65%	17 100%
Total	39 65%	21 35%	60 100%

Chi-square = 9.201, p < .01

Among elementary schools, more than three out of four LMCs that have working relationships with their public libraries serve students who earned average or above scores on CAT5 tests for reading, language arts, and mathematics. Conversely, almost two thirds of LMCs that lacked such partnerships served students who scored below average on state tests. (See Table 1.)

Cooperation among libraries in the same community tends to be strong. Among the most successful library partnerships are those involving school library media centers (LMCs) and their local public libraries.

Early results from **The Impact of Alaska School Library Media Centers on Academic Achievement** project indicate that there is a strong positive relationship between such relationships and student performance on state tests.

Table 2. State Test Scores for Secondary Schools With Relationships With Public Libraries and Either No Relationship or No Public Library, 1998

Relationship With Public Library	CAT5 Test Scores: Average or above	Below average	Total
Relationship (formal or informal)	30 83%	6 17%	36 100%
No relationship/ no library	10 48%	11 52%	21 100%
Total	40 70%	17 30%	57 100%

Chi-square = 8.083, p < .01

Similar, but even stronger, relationships between library partnerships and student performance were found at the secondary level. Among those schools, four out of five LMCs with formal or informal links to the public library served students who scored average or above on the CAT5 tests. LMCs that reported no such relationships served children whose scores were equally divided between average and above and below average. (See Table 2.)

Whatever the manifestations of these relationships—book talks, homework alerts, reference referrals, bulk loans, summer reading programs, etc.—it is clear that partnerships between LMCs and public libraries help to improve the academic performance of Alaska students.

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