Show-Me Connection

- **Sponsored by:**
  - Missouri Department of Elementary and Secondary Education
  - Missouri State Library
  - MASL

- **Thanks to:**
  - Lisa Walters
  - Sara Parker
  - 782 Participants
Goal and Objectives

- To determine the relationship that school library media centers and services have on student achievement.
- Identify the specific components of school library media center services and Library Media Center Specialists that positively affect student achievement.
- To determine if other external factors affect student achievement.
States before Missouri

- Texas, Colorado, Pennsylvania, Alaska, Massachusetts, Iowa, Oregon
- Yes – School Library Media Centers affect student achievement
- Four major components
  - Program usage
  - Access to library resources
  - Resources (staffing level, collection size, program expenditures, technology)
  - Staff activities (leadership, collaboration, flexibility)
Missouri Student Achievement

- MAP index
  - % of students at different levels of proficiency in the different content areas
- Weighted by:
  - Number of reportable students (took test) in school grade and content area
- = Weighted Average MAP Index
Weighted Average MAP Index

- Determined for 2002 in three areas:
  - Overall = Reading + Non-Reading
  - Reading
  - Non-Reading – Social Studies, Communication Arts, Health & PE, Fine Arts, Mathematics, Science

- Statistical analyses found all three to be closely related and so used the Overall
Hypotheses

- Schools with Library Media Centers and Services display a positive relationship to the Weighted Average Map Index.
- Certain components of School Library Media Centers and Services have more of a relationship to the Weighted Average MAP Index than others.
- Although demographic characteristics have a high relationship to the Weighted Average MAP Index, they do not eliminate the positive relationships from the above two hypotheses.
Research Methodology

- Sample
- Core Data
- Questionnaire
- Community Demographics
- Data Aggregation
- Statistical Analyses
Sample

Core Data
2,243 School Buildings

Questionnaire Data
782 School Buildings

241 School Buildings that had all of data from both
Core Data

- School Building Level Data for 5 years
- Data Areas:
  - Student Data
  - Teacher/Administrator Data
  - Librarian Data
  - Library Media Data
  - Census of Technology
Questionnaire

- 8 sets of questions - 47 questions total
- Question Areas:
  - Respondent Information
  - Library Management
  - Library Staff
  - Service Hours
  - Staff Activities
  - Library / Loan Use
  - Library Technology
  - Library Collection
Community Demographics

- Census 2000
- At County Level not School District
Data Aggregation

- Core Data (CD) + Questionnaire (Q)
- Per Student due to differing school sizes
- Used to Create 11 Components of School Library Media Centers and Services
11 Components

- **Librarian Qualifications** (Education / Certification) – Q
- **Library Access** (Hours and Outside Access) – Q
- **Library Budget** (Total and Materials) – Q and CD
- **Library Space** (Square Footage and Seats) – CD
- **Library Staff Activities** (Learning and Teaching, Information Access and Delivery, Program Administration, Collaboration, Leadership) – Q
- **Library Usage** (Type and Flexibility of Student Use) – Q
11 Components

- **Library Management** (Use of Budget, Collection Development Policies, Relationship to Public Library, Mission/Goals/Objectives, Coordinator) – Q
- **Library Media Center Holdings** (Books, Periodicals, Catalogs, Online) – Q and CD
- **Library Staffing** (Hours of Paid Staff) – Q
- **Summer Reading Program** (Offered / Cooperatively) – Q
- **Technology** (Availability and Usage) – Q and CD
Statistical Analyses

- Statistical Significance
  - Extent to which the sample features represent the corresponding features in the population

- Relationships
  - Bivariate Correlation
  - Multiple Regressions
  - Incremental Partial Correlation Method
Analysis Areas

- School Demographics
- Community Demographics
- School Library Media Center Services
- 11 Components
## School Demographics

**Analysis of significant items**

<table>
<thead>
<tr>
<th>Item</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Free and Reduced Lunch</td>
<td>-.385</td>
</tr>
<tr>
<td>School Info via Internet</td>
<td>.327</td>
</tr>
<tr>
<td>Teachers with Masters Degree</td>
<td>.314</td>
</tr>
<tr>
<td>Black</td>
<td>-.290</td>
</tr>
<tr>
<td>Teachers with Certificate</td>
<td>.282</td>
</tr>
<tr>
<td>White</td>
<td>.269</td>
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<tr>
<td>Teacher Average Salary</td>
<td>.262</td>
</tr>
<tr>
<td>Student/Teacher Ratio</td>
<td>.261</td>
</tr>
<tr>
<td>Feedback Systems Used</td>
<td>.242</td>
</tr>
<tr>
<td>Attendance Rate</td>
<td>.240</td>
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</table>
So?

School/student demographics, particularly free and reduced lunch at 13.8%, exert a statistically significant impact on student achievement.
Community Demographics

Analysis of significant items

<table>
<thead>
<tr>
<th>Item</th>
<th>Relationship</th>
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</thead>
<tbody>
<tr>
<td>Poverty Level</td>
<td>-.268</td>
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<tr>
<td>Household Income</td>
<td>.265</td>
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<tr>
<td>Less than High School Education</td>
<td>-.246</td>
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<tr>
<td>College Degree</td>
<td>.221</td>
</tr>
<tr>
<td>High School Diploma</td>
<td>-.205</td>
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<tr>
<td>Population</td>
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</tbody>
</table>
So?

Community demographics, particularly poverty level at 7.2%, exert a statistically significant impact on student achievement.
School Library Media Center Services Analysis

- 40 Factors (All 11 component variables)
- Correlated to Weighted Average MAP Index?
- How much?
- Significantly?
School Library Media Center Services Analysis

Determining Association to Student Achievement

Multiple Regression
Adjusted “$R^2$”

Other variables could have affected

Incremental Partial Correlation

Less chance that there are other variables that could have affected
Multiple Regression Adjusted "R^2" = 12.6% Statistical Significance

Yes

True for sample and population

0.003
School Library Media Center Services
Partial Correlation Analysis

Non SLMCS

School Demographics
Community Demographics

Adjusted “R²”
40.1%

Non SLMCS

School Demographics
Community Demographics

Adjusted “R²”
10.6%

10.6% of variance in MAP Index not explained by Non SLMCS is associated with SLMCS

VS

Non SLMCS

School Demographics
Community Demographics

Adjusted “R²”
50.7%

SLMCS

11 components
So?

School library media center services exert a 10.6% statistically significant impact on student achievement.
## 11 Components

<table>
<thead>
<tr>
<th>Components</th>
<th>Level</th>
<th>Adjusted $R^2$</th>
<th>Significant</th>
<th>External Partial (non LMS)</th>
<th>Internal Partial (Other Components)</th>
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</thead>
<tbody>
<tr>
<td>Library Usage</td>
<td>1</td>
<td>++</td>
<td>Strong</td>
<td>++</td>
<td>+</td>
</tr>
<tr>
<td>Summer Reading</td>
<td>2</td>
<td>+</td>
<td>Strong</td>
<td>+</td>
<td>+</td>
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<tr>
<td>Library Access</td>
<td>3</td>
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<td>Yes</td>
<td>+</td>
<td>+</td>
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<td>Library Budget</td>
<td>4</td>
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<td>Yes</td>
<td>+</td>
<td>0</td>
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<tr>
<td>Technology</td>
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<td>Yes</td>
<td>+</td>
<td>0</td>
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<tr>
<td>Components</td>
<td>Level</td>
<td>Adjusted $R^2$</td>
<td>Significant</td>
<td>External Partial (non LMS)</td>
<td>Internal Partial (Other Components)</td>
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<td>Librarian Qualifications</td>
<td>5</td>
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<td>0</td>
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<tr>
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<td>6</td>
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<td>0</td>
<td>+</td>
<td>0</td>
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<td>Library Management</td>
<td>7</td>
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<td>0</td>
<td>0</td>
<td>0</td>
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<tr>
<td>Library Staff Activities</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>
Usage

- Consistent Use of Library
- Checked Out Materials and Books
Summer Reading Program

- Happens
- Cooperation with Public Library is a Plus
Access

- Anywhere
- Anytime
Conclusions

What Significantly Impacts Student Achievement?

- School Library Media Centers
- Consistent Usage
- Checked Out Books and Materials
- Summer Reading Program
- Access
Next Steps

- Pat yourself on the back
- Watch for more information
How School Library Media Centers Impact Student Achievement

2002 - 2003