What makes a good school library better? A research to practice approach to using evidence

By Carol A. Gordon

> *Snapshot*
>
> Through analysis of *The Massachusetts school library study: Equity and access for students in the Commonwealth* research Dr Gordon explores research approaches with a particular focus on action research and the value of evidence based practice.

Evidence-based Practice [EBP] empowers teacher librarians to use their professional knowledge and expertise to generate their own evidence and to use the tools of action research, as well as published findings of formal research, to evaluate their practice and take action to improve it. Todd argues that EBP hinges on two concepts that address teacher librarians' dispositions, decisions, and actions that result in positive change in their practice.

> ... the [school librarians'] conscientious, explicit and judicious use of current best evidence in making decisions about [school librarians'] performance. It is about using research evidence, coupled with professional expertise and reasoning, to implement learning interventions that are effective; and

> ... [the school librarian's] daily efforts put some focus on effectiveness evaluation that gathers meaningful and systematic evidence on dimensions of teaching and learning that matter to the school and its support community (Todd, 2015, p. 9).

How do I know I am setting the right goals? Are my goals addressing the needs of my school community?

Reflection is a critical piece of EBP as teacher librarians tackle difficult, and sometimes disturbing questions. How do I know I am setting the right goals? Are my goals addressing the needs of my school community? Am I interpreting my evidence to effect the best outcomes? Am I raising the profile of my school library to the benefit of all teachers and learners?

This article explores the methods and tools of action research and formal, empirical research using examples of quantitative and qualitative research findings from *The Massachusetts school library study: Equity and access for students in the Commonwealth*. A Logic Model from the Massachusetts study demonstrates how to use research findings to create a strategic plan for the continuous improvement of school library resources and services.

Methods and Tools of Action Research and Formal, Empirical Research

[What Makes a School Library Good? An Action Research Casebook Study](#) (Gordon, 2015) describes how teacher librarians can use evidence of their practice, such as usage statistics that quantify acquisitions, circulation, and scheduling calendars to create an annual report that documents attainment of goals and objectives of a strategic plan that is embedded in you library's annual report. This article, published in Synergy and uploaded to academic.edu has been downloaded over a thousand times because it provides a practical blueprint for integrating EBP into the daily routine of a school library through strategic planning. The annual report is an evidence-based advocacy document for raising awareness of how teacher librarians support their school's mission and needs through goal setting, data collection and analysis, and evaluation of progress. Using infographics, tables, graphs, photos, and narrative teacher librarians can tell their stories of reflection, action, evaluation, and more reflection. These reports document a recurring cycle of improvement as teacher librarians consider guiding questions such as:

The annual report is an evidence-based advocacy document for raising awareness of how teacher librarians support their school's mission...

- Am I setting the right goals?

- How will I know I have successfully attained my goals?

- Am I using the best evidence to evaluate the outcomes?

- Who can help me?

- What are reasonable timelines for my objectives, or the actions I will take to attain the goal?

- Who benefits from my strategic plan?

How do we communicate our strategic plans to our school communities...

- How do we communicate our strategic plans to our school communities and gather input from them that informs our future planning?

- How can we move our school libraries from good to better as I use the tools and methods action research and formal, empirical research?

Background to The Massachusetts Study Equity

The formal research study, *The Massachusetts School Library Study: Equity and Access for Students in the Commonwealth* (Gordon & Cicchetti, 2018) provides data in this article that serve as examples of research methods and tools for both empirical and action research when relevant. The study was initiated by the State Legislature that created a School Library Commission. The Legislature charged the Commission with designing and conducting a statewide study to

analyze and evaluate the access learners and teachers had to school library resources and services across urban, suburban, and rural school districts. A survey was administered to school librarians in public and private schools across the state as data were collected from over 700 public and private schools. Survey questions included closed, multiple choice items and open-ended, write-in items. Closed questions yielded numerical data that were analyzed by statistical tests. These questions addressed access to various dimensions of school library resources and services such as access to the teacher librarian, the school library, print materials, audio visual materials, digital resources, information technology, and funding, Open survey questions were analyzed numerically using percentages and qualitatively using content analysis to capture the barriers and enablers reported by teacher librarians in providing equitable access of students and teachers to school library resources and services. Examples of a variety of quantitative and qualitative research methods and tools are used from this study to illustrate how data is displayed to create a narrative.

Action Research Tools and Methods

The idea of participatory, or action research evolved from the work of Kurt Lewin who is known as the father of social psychology and the founding father of change management, including experiential learning, field theory, and group dynamics. Lewin was influenced by Gestalt psychology to develop his theory that individual personalities, interpersonal conflict, and situational variables were important factors in effecting change. While controversy around Lewin's research still rages among researchers in the fields of psychology and sociology, it is clear that his work with veterans, prisoners, and addicts in post-World War Two America supports his theory that individuals can affect social outcomes that we have come to know as grass roots change.

The distinguishing feature of action research is that it is local. It is not concerned with the generalizability of findings to a larger population. This type of research is practical and personal. It uses many of the tools of formal research such as literature reviews, surveys, interviews, case studies, participant observation and journaling, focus groups, oral history, usage statistics, and document, or content analysis. These methods empower teacher librarians to gather and analyze evidence that can inform the improvement of practice and the demonstration of the worth of the library to the school community.

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The feature that distinguishes action research from scientific, or formal research is the absence of 'the sample' of research participants. Scientific research typically chooses a sample of participants who are representative of a larger population. For example, a formal study of teacher librarians in the state of Victoria might consist of only 25 percent of the actual population of teacher librarians in the state. This would be a large enough sample for formal researchers to claim it is a representative sample and the findings of the research can be generalized from the sample to the entire population of Victoria. Members of the sample can be chosen purposefully for

specific characteristics such as ethnicity, gender, age, native language, income, and/or socio-economic background. These characteristics are dictated by the research question that drives the investigation.

A sample can also be randomly selected. In action research the population to be studied could consist of one person, as in a case study, or the population of an entire school.

Statistical analysis is not usually used in action research studies since statistical tests require data from large samples. Table 1 illustrates the use of descriptive statistics expressed as percentages.

Table 1: School Librarians' Length in Current Positions

0-5 years 6-10 years	**Early Career [0-10]** 47%8% 22%4%	**70.2%**
11-15 years 16-20 years	**Mid-Career [11-20]** 15%0% 9%8%	**24.8%**
21-25 years 26-30 years 31+ years	**Late Career [21-31]** .9%	**4.6%** 2.5% 1.2%
NA		.4%
	n-541	

Only 24.8% of school librarians are mid-career, yet mid-career employees tend to be productive and innovative workers who sustain a high level of expertise as well as a high level of commitment and involvement in their jobs. [Hall, 2002] The high rate of retirement in recent years accounts for less than 4.6% of late career school librarians who have been in their current position for 21 to 31+ years. Retirees also account for the high number of early career librarians. The preponderance of early career librarians, indicates a workforce in need of extensive training and mentoring.

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The text to the right of Table 1 provides an analysis of the findings which includes a citation from formal research that suggests why it is important to have a high number of mid-career school librarians. The analysis explains that a high rate of retirements in recent years accounts for the low number of late career librarians. Analysis also points out that the high number of early career librarians indicates the need for extensive professional development. This narrative reflects the expertise and professional experience of the teacher librarian/researcher who has the proprietary knowledge that informs the stories that only she/he can tell.

The notation n=521 at the bottom of Table 1 reports the number of participants in the survey.

NA=.4% at the bottom of the table indicates that four-tenths of a percentage of those who took the survey did not answer this survey item.

While Table 1 is a summary of the responses to one of the survey questions in a formal research study, it could also be a summary of responses in an action research survey.

Formal Research Tools, Methods, and Analysis

Unlike most action research, formal research is grounded in a theoretical or conceptual framework. This framework identifies constructivist learning theory proposed by Piaget, Dewey, Vygotsky, Bruner and Ausubel theorizes that people actively construct their own knowledge and use their prior knowledge to build new knowledge. The conceptual framework, shown in Figure 1, presents a user-centric school library model where Learner Outcomes are central to all the logistical functions of the school library as reflected in the vocabulary used to describe those functions.

Figure 1. A Conceptual Framework for the School Library
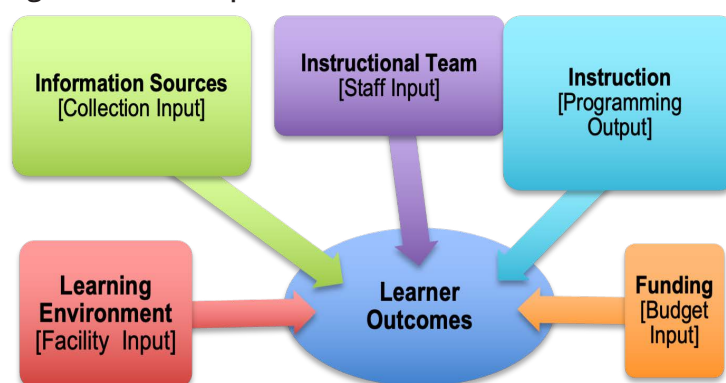
[Gordon, 2017]

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Formal research always states research questions that set the boundaries for data collection and analysis. Table 2 shows the questions that guided the research of the Massachusetts study. While not required, it is a good idea for action researchers to develop a question that will guide the design of their action research.

Table 2. Research Questions

Research Questions	
1. What is the status of school libraries in the Commonwealth of Massachusetts with regard to access to staffing, the library facility, information resources, information technology, funding, and instruction and help?	This is a quantitative research question that requires the collection of numerical data. Closed multiple choice survey questions elicit quantifiable data.
2. What are the barriers and enablers that school librarians encounter when they deliver library resources and instruction/ help to their school communities?	This is a qualitative research question that requires the collection of verbal data that elicit extended, written responses.

3. How can school library programs be further developed to ensure that the programs reflect changing technology?	This question guides the analysis of all the data collected in the study, both quantitative and qualitative.

In formal research studies it may not be possible to study the entire population of a city, state or country so a sample of the population is chosen, either purposefully or randomly, to represent the population. Quantitative statistical tests can determine whether findings from the sample can be generalized to the population. The results of statistical tests must meet required levels to be labeled statistically significant. Table 3 displays quantitative data that was analyzed by a statistical test. The test used in this analysis is the Pearson's Chi Square.

Table 3. Comparison of Electronic, Remote Access to Library Catalogues by District Types

Test	Results	Findings
Pearson's CHI SQUARE	$\chi^2 (1) = 25.79$, $p < .001$.	Significantly fewer urban school libraries have access to the library catalogue than suburban school libraries
	$\chi^2 (1) = 5.39$, $p = .02$.	Significantly fewer rural school libraries have access to the library catalogue than suburban school libraries
	$\chi^2 (1) = 1.372$, $p = .242$.	No significant difference was found in electronic remote access to the library catalogue between urban and rural school libraries

The analysis in column 3 of the table interprets the statistical notations in column 2. The findings are what we would expect: Fewer urban and rural school libraries have access to the library catalogue than suburban school libraries. This could be explained by poor access to the school library itself, poor staffing and by the likelihood that students in urban and rural school libraries do not have access to the catalogue from a school library website, or they may not have internet access at home. This is confirmed by data in Table 4 that show significantly fewer rural and urban school libraries have a library website and there is no significant difference between urban and rural school libraries' access to the library catalogue.

Table 4. Comparison of School Libraries with Websites by District Types

Test	Results	Findings
Pearson's CHI-SQUARE	Urban/Suburban $\chi^2 (1) = 27.89$, $p < .001$	Significantly fewer urban school libraries have a library website than suburban school libraries,
	Rural/Suburban $\chi^2 (1) = 7.72$, $p = .005$	Significantly fewer rural school libraries have a library website than suburban school libraries,
	Urban/Rural $\chi^2 (1) = .97$, $p = .325$	There were no significant differences in having a library website between urban school libraries and rural school libraries,
n=521		

While practitioners may rely on the work and findings of researchers in their field, are well versed in their profession, and are valued for their expertise and the evidence that is generated by their work, they may be reticent to use quantitative statistical analysis and research methods that involve guidelines for validity and reliability of methods and results. This is okay. However, it is important that school librarians read and understand the findings of statistical analyses. As we can see from the data excerpted from the Massachusetts study descriptive statistics and qualitative methods can accurately represent data collected through action research. Most of the tools for gathering and displaying data in formal research are transferable to action research, especially in the case of qualitative methods such as interviews, case studies, and observation. Content analysis is a strong qualitative tool that uses color coding to mark categories that emerge from print content. These methods are well-suited to action research that is local and usually involves a small number of participants. However, qualitative data can in some instances be representative when there is a larger number of participants, as in focus groups that consist of people who share knowledge or experience in the specific area of interest.

What do the qualitative data from the Massachusetts study look like?

This section addresses Research Question 2 of the study: What are the barriers and enablers school librarians face to deliver library resources and instruction or help to their school communities, i.e., students, teachers, and administrators? Respondents supplied extended written answers to this survey question that were categorized and summarized. The researchers used the constant comparative method and color coding to analyze these verbal data shown in Table 5.

Table 5. Barriers to Student Access to the Library Program

Theme	Needs expressed by respondents in response to this question
Content v. skills-based curriculum	Many respondents acknowledged that general education teachers are under enormous pressure to cover content-based curriculum. This pressure negatively impacted interest in collaborating on lessons designed to integrate skills-based curriculum and informational literacy skills. Participants reflected this in statements that expressed their feelings of not being 'valued.'
Perception of library skills-based curriculum as an 'extra'	Expressed as teachers not having time to collaboratively plan lessons.
General lack of appreciation expressed about many (but not all) administrators who did not 'value' the library or library instructional curriculum	Reflected in statements of administrative disinterest, low priority of the library in budgeting for staff, support staff for extended hours, budgeting for collection development, and in scheduling the librarians' time and library for non-library and non-instructional tasks.

Lack of engagement with specific subsets of students	METCO populations identified by 2 participants as not being regular users of the school library, and the need for specific outreach. English as a Second Language and Special Education students identified as requiring extra outreach and collection development due to language barriers and schedule barriers due to specialized services.
Value placed on the role of instructional technology specialist over the school librarian	Great value placed on instruction of platforms (Google, Scratch, etc.) and maintenance of computer carts and laptops in 1:1 schools over information/digital/citizenship literacies.
Value of free access to pleasure reading	Participants reported a decrease in book talks and free reading assignments due to increased curriculum pressure, especially in ELA. Pleasure reading not noted as a priority in the schools of these participants.

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Moving from Data to Action

After the survey data were analyzed the Commission on School Libraries tackled the job of creating recommendations, based on the quantitative and qualitative findings of the study, that would be disseminated to school administrators, teacher librarians, the Department of Elementary and Secondary Education (DESE), the Board of Library Commissioners which functions as the state library, and the general public. Such exposure created an opportunity to raise awareness of the role of school libraries in educating youth and the extent of equity, or inequity, in access to school library resources and services.

Since this scientific study followed guidelines for formal academic sampling and research the findings could be generalized from the sample of participating teacher librarians to the general population of teacher librarians in Massachusetts. The study provides a Logic Model (Table 6) that contains recommendations indicated by the findings of the study. These recommendations become the goals of a strategic plan. The excerpted section of recommendations from the study focus on Access to Information Technology. The recommendations made by the School Library Commission became the **HOW?** in the Logic Model. The research data that informs each recommendation provided the **WHY?** or the data that provided rationale for each recommendation. The Logic Model also provides logistics of **WHO?** will take action and **WHEN?** actions will be taken over a three-year period.

Table 6. A Logic Model Using Recommendations from the Massachusetts Study to Improve Access to the Internet and Digital Devices in School Libraries

HOW TO IMPROVE ACCESS TO INTERNET AND DIGITAL DEVICES? Recommendations become the Goals	WHO? Executes the Plan?	WHEN? Timelines	WHY? Data from the Study that Supports the Recommendations
Goal 1. Increase access to the internet in school libraries guided by an audit that identifies schools with inadequate IT infrastructure and bandwidth to support instruction.	DESE, Teacher Librarians, IT Specialist	Year 1	Only 64.5% of teacher librarians report that the bandwidth in their schools is sufficient to support instruction.

Statistically fewer urban school libraries have adequate bandwidth compared with suburban school libraries.

68.1% of school librarians report they do not have video streaming and rely on outdated analog modes.

A statistically significant number of rural school libraries have less access to video streaming than rural and suburban schools.

Data indicate a wide disparity among schools for student access to computers in the library. 72.4% of school librarians reported no policy exists in their schools to ensure every student has 24/7 access to a computer. |
Goal 2. Seek partnerships and funding, subsidies, and in-kind donations in the public and private sectors of communication and IT industries to fund the installation of state-of-the-art technological infrastructure in all schools.	DESE, Teacher Librarians, IT Specialist	Year 2	
Goal 3. Develop strategies and phase out reliance on analog media and devices in school libraries and replace them with digital media, digital devices and video streaming.	DESE, Teacher Librarians, IT Specialist	Year 2	
Goal 4. Identify school libraries that are not adequately equipped to provide access to computers and other digital devices.	DESE, Teacher Librarians, IT Specialist	Year 3	

Goal 5. Design and apply a metric for existing and desired number of computers and other devices to student population and create targets that represent an adequate number of computers/devices for elementary, middle, and high schools. The metric includes a one-to-one computer policy for economically disadvantaged students.	DESE, SLS, IT Specialist	Year 3	Significantly fewer urban school libraries reported student access to information technology in their school libraries than suburban school libraries. Although 95.2% of school libraries have internet access, internet access for almost 40% of students is poor. Only 25.6% of librarians said that 41-80% of students had access. Fig. 55 shows 72.4% of respondents said their schools do not have a one-child-one-computer policy. Only 10.4% are actively planning to implement it. 16.3% of respondents responded, 'not applicable.'
Goal 6. Seek funding through budgeting and ESSA [Every Child Succeeds Act], e-grants, foundations, and other sources to improve access to an adequate number of computers and mobile devices to support instruction.	DESE, Teacher Librarians, IT Specialist	Year 3	72.4% of respondents said their schools do not have a one-child-one-computer policy. Only 10.4% are actively planning to implement it. 16.3% of respondents responded, 'not applicable.'
Goal 7. Develop needs assessment and funding guidelines through collaborative initiatives with English Language Learners [ELL], Special Needs personnel, and MBLC, for the installation of adaptive technologies, core collections, funding, and advocacy that accommodate diverse special needs of disabled students.	DESE Teacher Librarians, IT, Special needs personnel, MBLC (Massachusetts Board of Library Commissioners)	Year 3+	A low number of librarians reported the acquisition of adaptive technologies [fig. 60] to accommodate learning difficulties of special needs students and struggling readers. A typical comment: 'We do not have appropriate materials and technology for English Language Learners and Special Education learners.'

The Logic Model serves as an outline for teacher librarians to customize to the needs and priorities of their school communities. Qualitative commentary shown in Table 5 generated verbal data that serves as a starting point for a strategic plan. These descriptive data are important to the interpretation and understanding of findings that can inform the types of goals and actions teacher librarians will take to improve, for example, access to their school libraries' resources and services. Alternatively, teacher librarians may choose to design their own action research initiatives or customize the data to meet the needs and priorities of their school communities.

Data from the Massachusetts Study go beyond the walls of the school library to address conditions within and outside of the school library. Improvement requires a team approach and coordination with other teacher librarians, school principals, classroom teachers, Departments of Education, or Legislators. Teacher librarians can reach out to sectors of their communities including human resources, children's services, recreation departments, local colleges, as well as businesses and non-profits that have a vested interest in an information and technology literate youth. They can find strong rationales for their goals by expanding their reading to include research in other fields of study and disciplines such as Education, Information Technology, Management, Psychology, Social Work, Literacy, and Digital Equity. They can also improve their practice by looking at the literature for public and special libraries to solve problems and identify areas of improvement and potential collaborations and partnerships.

When teacher librarians reach this level of evaluation of their school libraries, they are not only making their libraries better. They are making their libraries essential.

The full research report, including all survey questions, methodologies and findings, and the complete *Logic Model for Strategic Planning to Support and Fund School Libraries* can be accessed from **https://mblc.state.ma.us/programs-and-support/youth-services/school-libraries/ma-sls-2018.pdf**

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