

# **Causality of School Libraries and Student Success: Literature Review Using a Mixed Research Synthesis Method**

**Laura Pasquini<sup>1</sup> and Barbara Schultz-Jones<sup>2</sup>**

<sup>1</sup>Department of Learning Technologies, University of North Texas

<sup>2</sup>Department of Information Science, University of North Texas

**Abstract:** Three independent, concurrent meta-syntheses of education policy, theory, and best practices research compiled a corpus of scholarship-related student success, learning, and achievement. These efforts relate to the research question, “To what extent do the causal relationships between school-based factors and student learning offer possible causal relationships between school libraries and student learning?” This empirical literature collection was compiled using a mixed research synthesis approach: a review of “mixed” objects of synthesis as well as the mode of synthesis of research published between 1985-2016. The process and results are detailed.

**Keywords:** K-12 education, school librarians, learner, success, impact, mixed research synthesis

## **1. Introduction**

School librarians are hindered from engaging in current articulations of evidence-based school librarianship because they work in learning environments, yet rarely do they contribute to, empirical examinations of how their evidence-based practices may be part of the educational research canon. Beyond levels of evidence expected and required in all school environments, librarians must expand beyond the solid foundation of correlational studies (Gaver, 1963; Lance, Wellborn, & Hamilton-Pennell, 1993; Scholastic, 2016) to develop research methodology approaches that investigate the cause and effect relationships between school librarians and positive learner outcomes.

## **2. Evidence in School Librarianship**

Over the past few decades, the evidence-based practice (EBP) movement within school librarianship has been in response to a challenge from Todd (2006) as initiated during the 2001 International Association of School Librarianship (IASL) annual conference. From this point, school librarianship researchers have focused on EBP to make informed decisions with regard to setting the

foundation for research and practice in the field. The three powerful constructs of evidence for practice, in practice and of practice have provided a framework to approach practices designed to impact student learning. EBP has encouraged accountability and strengthened the empirical rigor of scholarly work within school library programs and school library research. From Todd's initial challenge he has continued to strengthen and respond to this call (Todd, 2009, 2015) to encourage school library research to expand beyond research design tactics. Scholars in school librarianship are focusing on studying accountability rather than advocacy through the questions and design approaches embedded within the methodology (Lyon, 2009).

Professional library associations and organizations may also include research among the competencies expected of librarian practitioners (Marshall, 2006). For example, the recent U.S. National School Library Standards (AASL, 2018) not only emphasize the role of school librarians in learning, professional assessment, and school library program evaluation; they also itemize a comprehensive appendix of evidence sources and ways to present results. In fact, school librarianship is the site where EBP in librarian research techniques and practice converge. To determine how and why school librarians affect learners' outcomes, school library researchers must apply the rigor required by EBP, in its current policy interpretations, to the leadership and professional practices in which they engage.

### **3. Moving Towards Causality in School Library Research**

There are a number of significant issues for school librarians, specifically those who view their roles as being vital within the educational system, to demonstrate their impact on student learning outcomes (AASL, 2014; IFLA, 2015). As active members of the education community, school librarians focus on developing information literate students who accept responsibility for their role in society. School librarians provide this focus in a learning environment that is nurturing, inspiring, supportive and strongly connected to the curriculum. Since the school library includes everyone in the school, teachers and students alike, the role can be perceived as dissipated by the breadth of reach, rather than deep in its alignment with the school's educational goals and objectives. The focus of many correlational studies in school librarianship has been to demonstrate the relationship between student success (as evidenced by State test scores) and a number of school library factors (qualified school librarian, quality collection, operational hours, etc.).

Todd's (2009) model values the research to practice cycle, which honors the many ways to impact student achievement and learning that can be measured without the use of a scientific experiment. By giving school library research methodological categories, Todd (2009) has incrementally moved school library research toward measured levels of evidence. Todd's (2015) holistic model of EBP for school librarians suggest the inclusion of:

- *Foundation – Informational*: formal, existing research that builds school librarianship professional practice;
- *Process – Transformational*: applications and/or actions observed in the field by or related to school librarianship practice and/or school libraries themselves; and
- *Outcomes – Formational*: study impacts and outcomes of evidence to close the gap for school librarianship, which may be the result of interventions, inputs, activities, and processes.

In an educational community that has been challenged by governing agencies to use a high standard of research with experimental and quasi-experimental research designs, the correlational studies do not exert a strong presence. Morris and Cahill (2016) for example, found that of 159 research articles examined for methodology, only 19.5% were solely quantitative studies, 33.33% employed mixed methods, and 47.17% were qualitative approaches. Additional studies of research conducted in school librarianship produces similar results of the quantity of descriptive, qualitative work in comparison to a minority of empirical research studies (Johnston & Green, 2018; Mardis, 2011; Neuman, 2003).

Designing and including more studies that utilize substantial quantitative approaches could uncover specific dimensions or factors that directly relate a school librarian's actions to student learning. The evidence, in other words, could be very compelling if specific factors could be isolated in a cause and effect relationship. This might mean synthesizing a combination of qualitative, quantitative, and mixed methods studies, to integrate, understand, and confirm the depth of these investigations and offer insights into future scholarship in this arena (Heyvaert, Maes, & Onghena, 2013). In identifying causal implications of student achievement from previous academic studies, we can identify the context and issues left to establish evidence for school librarianship.

#### **4. Background and Purpose of Study**

The purpose of the literature review method used in this study is to document educational policies and practices that may have implications for school librarianship research and to explore what promising methods might propose an actionable agenda to further school library research related to causal impact of student success. The outcome of this integrative approach to empirical literature analysis and synthesis resulted in a corpus of scholarship-related student success, learning, and achievement related to central themes for school librarian scholarship. Research findings from this literature analysis present how evidence of causal impact may be able to influence school librarianship practices that are accessible and have the potential to be impactful. In looking at students' in-school and out-of-school learning experiences, which includes the school library, it is essential to understand the causal role of school librarianship. There is minimal empirical evidence in educational research to offer insight into how school librarianship contributes to student learning. In this

study, three independent teams worked concurrently and then integrated the meta-syntheses they collected of empirical research regarding education policy, theory, and practices to identify activities and evidence that could be used to demonstrate causal relationships between school libraries and student outcomes.

## **5. Methodology**

The American Association of School Librarians (AASL) proposed a research agenda, as part of their 2014-2015 Causality: School Libraries and Student Success (CLASS) II grant project. In this section we describe the approaches utilized to answer the research question, specifically to outline methodological procedures for the literature review scope, collection, and analysis.

### **5.1 Scope of the Review**

The CLASS II initiative commenced in late 2015 with three teams of researchers from University A, University B, and University C. These research teams include school librarian educators, methodology specialists, practicing school librarians, and doctoral scholars. Each team was charged with implementing the first two areas of research shown in Figure 1: *Foundational Research* and *Exploratory Research* using the guiding research question: “What causal relationships between school-based malleable factors (i.e., aspects within the school environment that can be controlled) and student learning are present in published research?” (Masked Reference, 2018a). We began our independent research team investigations by taking a cue from evidence-based medicine and EBP, and using a promising method for building on school librarianship’s existing research base to understand current education policy, theory, and best practices. Once aggregated, the meta-syntheses results were integrated and refined into a list of possible causal features that may be present in school librarians’ actions and activities that occur within the school library.

To compile the initial corpus, we followed a systematic approach between three research teams to search and identify studies with causal impact for student success within elementary, middle or high school education environments as outlined in Masked Reference (2018c). All publications were to be empirical investigations that included experimental studies with random assignment for participant intervention and control groups or quasi-experimental research design with nonrandom assignment of participants for intervention or comparison groups. The literature search sought out peer review publications written in English between 1985 through 2016 and also included peer-reviewed education research databases, such as the U.S. Institute of Education Sciences (IES) and What Works Clearinghouse (WWC). Papers that gathered and analyzed primary or secondary data in their investigation were also included in this corpus.

To be inclusive of relevant studies and grants examining student outcomes, one team reviewed the WWC as it conducts broad, ongoing searches of education research databases and websites to identify a wide range of empirical

investigations and “reviews exiting research on different programs, projects, practices, and policies in education” (IES, 2019). Relevant studies from the WWC were screened to ensure eligibility of design, per the Every Student Succeeds Act (ESSA) strong and moderate evidence standards (e.g. randomized controlled trial, quasi-experimental design, regression-discontinuity designs, or single-case designs) from the guidelines set out by the United States Department of Education (2016). Using these parameters for review, conceptual, theoretical, and literature review papers did not meet the inclusion criteria.

### **5.2 Data Collection**

This empirical collection was compiled using a mixed research synthesis (MRS) approach; that is, a review of “mixed” objects of synthesis (i.e., the findings appearing in written reports of empirical qualitative, quantitative, and mixed methods studies) as well as the mode of synthesis (i.e., the qualitative and quantitative approaches used in the studies) of research published between the designated time span (1985-2016).

The MRS method was selected as the appropriate approach to meet the goal of aggregating published research that identified causal relationships between school-based malleable factors and student learning. The MRS method has been used extensively in public health research (Sandelowski, Voils, & Barroso, 2006) to identify the impact of professional actions and was deemed applicable to the education body of research. Evidence summaries and the process of identifying specific variables was instructive for our approach. Unlike the mixed methods research synthesis (MMRS) conducted by Heyvaert et al. (2011), our modification of the MRS method examined only quantitative evidence to determine the effective factors in an implementation chain of interventions, programs, and policies (Pawson, 2006) for causal impact.

Using the MRS method and scope of search criterion, researchers kept track of their searches conducted by recording date, source, search string and filters, citation, and number of results. All three teams maintained publication documents and spreadsheets with their own data collection in a shared computer folder. As independent teams, we conducted searches of appropriate databases and library catalogs to identify applicable empirical research. With systematic analysis and synthesis of literature, we also utilized Google Scholar with the same key words to identify any grey literature existing beyond publisher databases and institutional library collections. The papers were reviewed for relevance and scope.

## **6. Data Analysis and Synthesis**

Researchers then aggregated the corpus of 362 total publications retrieved during the data collection phase. Using an integrated MRS design, with a top-down configuration synthesis method, the publications in this corpus were aggregated from the three research teams to be further analyzed for inclusion in the corpus. A targeted domain found in the empirical literature was grouped by

findings viewed as answering the same research questions or addressing the same aspects of a specific phenomenon (Sandelowski et al., 2006). Each article was rated according to the Every Student Succeeds Act (ESSA) classification of evidence standards for educational interventions (United States Department of Education, 2016) to give priority to strong (experimental) and moderate (quasi-experimental) causal research designs. An integrated MRS with top-down configuration entails counting, tabulating, diagramming, and narrating thematically diverse individual findings, or sets of aggregated findings, into a coherent theoretical rendering.

As Table 1 shows, each team took complementary approaches to aggregating and synthesizing existing experimental and quasi-experimental causal research. Guidelines and standards played a major role in contributing to the research process (Masked Reference, 2018b).

**Table 1. CLASS II team mixed research synthesis aggregation and individual team review.**

Team	<u>MRS Action Step</u>		
	Search Methods and Approach	Aggregation & Number of Publications	Individual Team Synthesis
A Research Team	<ul style="list-style-type: none"> <li>• Reviewed practice guides, intervention reports, and studies included from WWC</li> <li>• Considered only WWC studies that met design standards with or without reservations and had significant results.</li> <li>• Included intervention guides, database articles, theory, and policy reports with about 406 publications to review</li> </ul>	<p>n=168 (125 strong; 43 moderate evidence)</p> <p>N=129 aggregated for final corpus</p>	<ul style="list-style-type: none"> <li>• WWC-assigned domains: behavior; early childhood; English learners; literacy; mathematics; path to graduation; science; and teacher excellence</li> </ul>

B Research Team	<ul style="list-style-type: none"> <li>• Identified effective practices from <i>Visible Learning: A Synthesis of Over 800 Meta-analyses Relating to Achievement</i> (Hattie, 2009)</li> <li>• Searched EBSCO, Scopus, Google Scholar, and JSTOR for articles 1) available in English; 2) peer-reviewed, published after 1985-2016; 3) centered on school aged children without disabilities.</li> <li>• Snowballed citations from articles and Hattie (2009) bibliography.</li> </ul>	<p>n=184 (179 strong; 9 moderate evidence)</p> <p>N=170 aggregated for final corpus</p>	<ul style="list-style-type: none"> <li>• Created a concept map of broad domains that influence student achievement to the following domains: teacher characteristics, classroom practices, group work, student characteristics, etc.</li> </ul>
C Research Team	<ul style="list-style-type: none"> <li>• Systematic literature search of Scopus with keywords “school librar*” + “caus* AND school* AND/OR learn* AND/OR achiev*” within scope of review centered on school libraries; included backward referencing search and discovery</li> </ul> <p>Coded 18 themes related to school librarians’ role; found 76 papers</p>	<p>n=13 (4 strong; 9 moderate evidence)</p> <p>N=8 aggregated for final corpus</p>	<ul style="list-style-type: none"> <li>• Coded articles by concept domains: learner, learning environment, librarian roles, strategy, subject Area or discipline, non-school library faculty, school administration</li> </ul>

To accommodate the team approach to MRS, we added two additional steps to the traditional MRS process. This process combined team aggregations and synthesis to identify a single corpus for synthesis. Based on this integrated approach using the MRS method and ESSA classification standards, we found 53 out of scope publications and 2 duplicate papers. Through the aggregation of publication documents and itemized lists of citations, the combined corpus eliminated any duplicate papers and produced a dataset of 310 papers of studies that contain causal education research studies.

### 7. Inter-Team Synthesis Findings and Implications for EBP in School Librarianship

During the synthesis phase we identified 310 papers fitting the ESSA criteria, with 95% of the corpus containing strong (n=296) standards of evidence. About half of these empirical papers (50.3%) were published within the last decade (2005-2015), with the majority of publications (n=226) in the corpus being academic journal articles and peer-reviewed educational research reports (n=70). Academic publications were often in journals related to Education, Educational Research, Child Development, and Library Science, with the top five journals listed as *Review of Educational Research*, *Journal of Educational Psychology*, *Educational Evaluation and Policy Analysis*, *American Educational Research Journal*, and *Journal of Educational Research*. In looking at the geographic region of origin for each study, the majority of the investigations were in the United States (83.5%). That being said, the corpus included studies from the Netherlands, Germany, Finland, Great Britain, Norway, Belgium, Israel, Japan, Hong Kong, Singapore, Canada, Australia, and New Zealand.

In discussing the central concepts and content within the corpus, the inter-team synthesis identified fourteen domains to categorize these publications. Some publications may have more than one domain assigned, based on the empirical study and summary of findings. Table 2 provides an overview and itemization of each domain.

**Table 2. Domains within the CLASS II corpus.**

Domain	Definition of Domain	Number of Publications
Classroom Practices	Pedagogical philosophy, class management, curriculum design, etc.	77
School Characteristics	Learning environment, state/district location, level, type, etc.	58
Student Characteristics	Defining the student population, needs, at risk, or other learner type	50
Teacher Characteristics	Instructional methods, education, training, experience, etc.	44
Technology	Tools, systems, and applications to include learning with technology	15
Group/Peer Work	Peer-to-peer learning, group projects, team-based learning	14
Leadership	School administrative leadership, direction and strategy	13
Assessment	Evaluation and measurement of learning; test scores; grade improvement	12
Librarian/Library Role	How/Where the librarian is positioned within school/program planning	12



Policy	Regulations, protocols, and stipulations related to school mandates.	12
Tutoring	Support for learning beyond classroom time; scheduled student support	10
Collaboration	Partnership within schools for instructional support, design, etc.	8
Professional Development	Programs and initiatives for on-going training and learning of staff	7
Discipline	Subject area, focus of instructional content, etc.	5

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From these themes, we can identify central issues and potential interventions that school librarians have the potential to lead and/or support, with regards to positively impacting student success in education. Implications from this synthesis identify that learners benefit from linking new knowledge to prior knowledge (Guthrie, McRae, & Klauda, 2007), and are often successful in learning environments with direct, explicit and systematic instruction in small groups when introducing new materials or ideas (Bangert-Drowns & Bankert, 1990; Wilson & Sindelar, 1991; Fuchs, Fuchs, Phillips, & Hamlett, 1995; Tournaki, 2003; Fuchs et al., 2013). School librarians can also support hands-on experiences that connect learning from the classroom to real world and familiar experiences (Hattie, Marsh, Neill, & Richards, 1997). Additional classroom and teacher practices include contextualizing the lesson through questioning and use of other metacognitive techniques (Rosenshine, Meister, & Chapman, 1996). This might include strategies for tutoring, collaboration, and group work to allow for frequency of instruction and repetition of instruction to reinforce a concept over time (McKeown, Beck, Omanson, & Pople, 1985; Fuchs et al., 1995; Smith, Baker, & Oudeans, 2001; Kannass, Columbo, & Wyss, 2010; Jones & Reutzel, 2012). For example, we know that exposure to vocabulary is often acquired through reading, listening, and even writing after an explicit vocabulary instruction or specific introduction to a word or phrase (Stahl & Fairbanks, 1986; Goodson, Wolf, Bell, Turner, & Finney, 2011).

The school library also presents a modification to the learning environment, which often can reduce problem behavior and offer interventions for personalized instruction (Randolph, 2007; Bradshaw, Mitchell, & Leaf, 2010). The type of instructional intervention can be a repeated lesson, extended time within a school subject, technology-based instruction on a topic, or even reinforcement through formative, corrective feedback (Bangert-Drowns, Kulik, Kulik, & Morgan, 1991; Kluger & DeNisi, 1996).

Reviews of the empirical causal research not only suggest promising areas of intervention for students, as school librarians can be strong partners and resources for teachers. Well-prepared school staff, whether it is a teacher, administrator, or librarian, is critical for reaching a variety of student populations. School librarians are an asset to the educational system, with

traditional education certification, between two to five years of teaching experiences, and now an advance degree in library science (Hawk, Coble, & Swanson, 1985; Tournaki, 2003). The lasting effects of high-quality instruction and learner support can help students navigate future learning paths. School librarians can be part of the intensive and individualized interventions for students struggling in math or reading (Darch, Carnine, Gersten, 1984; Wilson & Sindelar, 1991; Guthrie et al., 2007), which may support vocabulary development and improvement across various instructional activities (Goodson et al., 2011; Lance & Hofschire, 2011, 2012). That being said, the librarian role may also be a resource to help instructional development of knowledge, skills, and abilities for visual presentations, deep level inquiry, reflection, and problem-solving experiences (Rohrbeck, Ginsburg-Block, Fantuzzo, & Miller, 2003; Newell, 2008). For teachers and school librarians, partnerships and collaboration is one of the best pedagogical interventions to enhance instruction, practice, and resources to meet the needs of diverse schoolchildren (Myhill, Hill, Link, Small, & Bunch, 2012). This might be a researcher-practitioner partnership where the school librarian can offer training and support for the classroom planning and teacher instruction (Heller et al., 2011).

## 8. Conclusion

Interventions for student learning outcomes in education are critical for improving education. This particular empirical review is well suited for understanding causal impacts that school libraries and librarians may be able to impact for learning. The findings of this aggregated and synthesized MRS method not only offer key themes for causal research for school libraries and learning, but also offer strategies for other scholars who wish to utilize the MRS methodology to expand systematic literature reviews in library research. We anticipate the themes found from this study will build the foundation for subsequent systematic, causal investigations of school libraries as learning spaces and add to causal research collaborations between library science and educational scholars. We hope this work advances EBP in librarianship and contributes to improve learning outcomes for school stakeholders in K-12 education. This project could offer models of causal research design in schools, and it has the potential to move educational scholars beyond correlational studies or research methodology.

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