LIBRARY

A WEINBERG PROJECT

THE BALTIMORE LIBRARY PROJECT

LITERATURE REVIEW

The Harry and Jeanette Weinberg Foundation

BALTIMORE CITY PUBLIC SCHOOLS

SharpInsight

The Baltimore Library Project is a multi-year collaborative effort of the Harry and Jeanette Weinberg Foundation, Baltimore City Public Schools, and more than 30 partners to build or transform Baltimore City Public School libraries. This literature review was developed by Sharp Insight, LLC as one component of an evaluation of the Baltimore Library Project.

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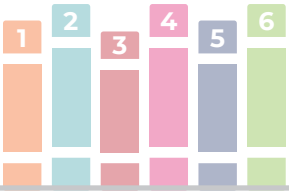


TABLE OF CONTENTS

NOTE: ALL OF THE BOOK ICONS AT THE TOP OF THE PAGES ARE CLICKABLE TO ASSIST WITH NAVIGATION THROUGH THE DOCUMENT.

INTRODUCTION

The Baltimore Library Project (Library Project) is a public-private partnership of the Harry and Jeanette Weinberg Foundation, Baltimore City Public Schools (City Schools), and dozens of nonprofit and corporate partners. The Library Project's goal is "to transform inner-city school libraries into inspirational spaces in order to impact educational achievement" (The Harry and Jeanette Weinberg Foundation, 2021).

Public-private partnerships have been increasingly used to facilitate school infrastructure funding (Gopalon, 2013; Gurn, 2016; Nisbet, 2021). The Baltimore Library Project represents a unique public philanthropic partnership, which differs from many traditional partnerships. In addition to library renovations, the Baltimore Library Project is focused on enhancing library quality and programming, rather than owning or operating the library infrastructure.

To assess the impact of the project, Sharp Insight, an external evaluation firm, was contracted to undertake two evaluation studies. These studies seek to gain an in-depth understanding of the implementation of the libraries in Library Project schools and collect comparative information about non-Library Project schools, which in turn will provide valuable and actionable information about successes, challenges, and best practices regarding the financing, building, and use of the libraries. The objectives for the overall evaluation are listed on the following page.

In the summer of 2021, Sharp Insight, LLC conducted a literature review to inform both evaluation studies. This document summarizes the literature from an extensive review of research on school library best practices and existing models of school library financing.

Baltimore Library Project: Proposed Research Objectives *As a result of the Baltimore Library Project studies, researchers will be able to determine…*
The **unique characteristics** of: **1.** Baltimore Library Project schools (e.g., design, systems/technology, program, staffing, utility) **2.** The Baltimore Library Project's capital investment and partnership models
The **impact** of the Baltimore Library Project on: **1.** School environments, students, and staff **2.** Direct capital investments, construction funding, and construction processes of school libraries
Strengths of the Baltimore Library Project with respect to: **1.** Library design, systems/technology, and implementation of program and staffing models **2.** Capital strategies and partnership models
Challenges and/or limitations of the Baltimore Library Project with respect to: **1.** Library design, systems/technology, and implementation of program and staffing models **2.** Capital strategies and partnership models
How **COVID-19** and the transition to **virtual/hybrid education** impacted the Baltimore Library Project's: **1.** Library design, systems/technology, and implementation of program and staffing models **2.** Capital strategies and partnership models
Recommendations for improvement of the Baltimore Library Project with respect to: **1.** Library design, systems/technology, and implementation of program and staffing models **2.** Capital strategies and partnership models
Best practices in sustainability of: **1.** Library design, systems/technology, and implementation of program and staffing models, such as those of the Baltimore Library Project **2.** Infrastructure and partnerships created as a result of innovative capital strategies and partnership models, such as the Baltimore Library Project
Opportunities for **scaling and replication** of the Baltimore Library Project within and/or beyond City Schools with respect to: **1.** Library design, systems/technology, and implementation of program and staffing models **2.** Capital strategies and partnership models

METHODS

Given the research objectives, a search of multiple search engines and databases was undertaken, including Google Scholar, Google Search, Library and Information Science Source, ERIC, and PsycINFO. The population included in the search was K-12 school libraries in the United States; sources from Canadian, British, and Australian contexts were included when the topic translated well to the U.S. context (e.g., incorporating e- readers in school libraries). A variety of school- and library-related key words were used in the searches.[1] Both peer-reviewed and grey literature[2] were included in the search. Searches were largely restricted to publications from 2010 to 2021 for the library best practices, but an expanded timeframe was used for library financing (2000 to 2021). Articles outside of these ranges were included for historical and context information or were seminal publications on the topic. Each source was downloaded and assessed for its inclusion in the literature review.

[1] Key words used separately and in combination in the search included: K-12 library staffing; staffing school libraries; impact of full- time librarians in public schools; school library support staff; designing public school libraries; school library best practices; public school library community impact; public school library stakeholders; libraries and school climate; virtual school libraries; measuring library impact on literacy; school libraries COVID-19; school construction; school funding; school facilities funding; school library funding; school library construction, school library renovation, public-private partnerships, and public philanthropic partnerships.

[2] Grey literature includes materials produced by organizations outside the traditional academic publishing and distribution channels (e.g., reports and guidelines from professional organizations, non-academic periodicals).

Several limitations of the literature review should be noted. It was difficult to find published and grey literature on the topic of school library construction and renovation and it is possible that some sources were indexed in other databases. While randomized controlled trials and meta-analyses are often considered the gold standard for investigating causation, these methods are not always ethically feasible in real-world research. The methodology for many of the studies cited are case reports using qualitative methods, consensus panels for best practices, and correlational studies using quasi-experimental designs with simple statistical methods (e.g., bivariate analyses or, less often, multivariate regression analyses). Although less rigorous for assessing causal relationships, taken together, they begin to build a body of evidence for improving school libraries.

Please note that some of the narrative that follows (e.g., numbered and bulleted lists, empirical support for recommendations) comes directly from the reviewed papers. As such, information made available through public presentation should be revised and/or appropriately credited to the original author(s).

SCHOOL LIBRARY BEST PRACTICES

OVERVIEW

School libraries are progressively becoming "the center of the school – not just for activities related to reading, but for professional development, adoption of technologies, and information literacy education" (Hanover Research, 2013). Researchers and professional organizations (e.g., the American Association of School Librarians [AASL]) have identified best practices for school libraries. These best practices are often incorporated into guidelines and standards (see AASL National School Library Standards). In the sections that follow, best practices are outlined in three domains: school library staffing, school library design, and virtual and hybrid school libraries.

SCHOOL LIBRARY STAFFING

Well-staffed school libraries are consistently associated with improved student achievement. The AASL (2019a) issued a position statement on appropriate staffing for school libraries. They identified the following minimum school library staffing requirements for an effective school library:[3]

1. One or more certified school librarians working full-time in the school library.
2. A specific number of additional school librarians as determined by the needs of the school's instructional programs, services, facilities, size, and number of learners and classroom educators.
3. In addition to qualified school library professionals, each school employs at least one full- time technical assistant, clerk, or paraprofessional to enable the school librarian to perform professional duties in the area of teaching and learning.
4. A district-level school library supervisor with school library certification or experience provides leadership, vision, and support for the building-level school libraries and school librarians.

[3] The Maryland Association of School Librarians (2019) provides similar guidance for appropriate staffing.

The roles of the school librarian make them an integral part of a successful library. The AASL (2019c) states that school librarians provide five essential roles:

1. ***Leader:*** Providing leadership in technology integration across discipline areas (Cohen et al., 2020; Doiron, 2011; Rothman, 2017)
2. ***Instructional partner:*** Collaboration with other educators to design and implement literacy instructional strategies and technology integration (Cohen et al., 2020; New York Comprehensive Center, 2011)
3. ***Information specialist:*** Improving equitable access to learning with technology, connecting the school with the global community (Cohen et al., 2020; New York Comprehensive Center, 2011)
4. ***Teacher:*** Literacy instruction and development of student research skills, providing professional development aligned to learning standards (Cohen et al., 2020; New York Comprehensive Center, 2011)
5. ***Program administrator:*** Adaptation of the school library space to offer innovative programming, supporting diverse student learning with a library collection that reflects the characteristics of the school community (Cohen et al., 2020)

Ultimately, librarians "connect the dots between idea and action while bringing together teachers and students, affinity groups in the community, and even the world at large" (McGrath, 2015).

LIBRARIANS AND STUDENT ACHIEVEMENT

Multiple studies have found that simply having a full-time librarian in the library is associated with student academic gains. Lance & Hofschire's (2012) quasi-experimental analysis of 1,272 Colorado schools found that schools that either maintained or gained an endorsed librarian (Colorado's language for certification) between 2005 and 2011 tended to have more students scoring advanced in reading in 2011 and to have increased their performance more than schools that either lost their librarians or never had one. Even when controlling for poverty, both endorsed, both endorsed and non-endorsed librarians had positive and statistically significant correlations with reading scores. In Kansas, Dow et al. (2012) analyzed 2.5 million student assessment results from 1,389 schools and found that students in schools that maintained higher and more stable librarian staffing levels demonstrated higher proficiency in five subject areas (i.e., reading, math, science, history/government, and writing). Nationally, Lance & Hofschire's (2011) correlational study found that states that gained librarians between the 2004-2005 and 2008-2009 school years saw increases in National Assessment of Educational Progress (NAEP) fourth-grade reading scores compared to all states and especially compared to states that lost librarians. In addition to analyses of all students, this pattern was true for poor students, Black students, and Hispanic students. Notably, English language learners in all states and in states that lost librarians saw declines in NAEP scores but states that gained librarians saw no difference in the scores of these students.

IMPACT OF OTHER LIBRARY STAFF

As outlined above, full-time librarians are important for student achievement. The AASL staffing guidelines (2019a) also state the need for additional library staff, including paraprofessionals, clerks, and assistants. Notably, the presence of these staff members alone may not be sufficient. In one analysis of over 1,500 schools in Colorado, library assistants working without the supervision of a trained school librarian had no impact on reading scores (Lance & Hofschire, 2012). However, a descriptive correlational study of 3,528 schools in California found that library staffing levels of both professionals and paraprofessionals were significantly related to increases in the library services provided and increases in those services correlated with higher standardized test scores (Achterman, 2008). One explanation for the impact of library staff is their support of certified librarians with the day-to-day operations of managing the library, which frees librarians to focus on instructional collaboration with teachers (Farmer, 2006).

SCHOOL LIBRARY DESIGN

AASL (2019b) issues a position statement about the role of school libraries. They note that instruction and services provided through the school library are developed around six essential shared foundations:

1. ***Inquire:*** Inquiry and investigation are at the core of the school library. Through scaffolding the use of an inquiry-based model of learning, the school library offers multiple opportunities for learners to integrate new and existing knowledge.

2. ***Include:*** An effective school library includes diverse and inclusive resources, programs, and services that meet the needs of all learners; represents various points of view on current and historical issues; and provides support across a wide range of interest areas with opportunities for learners to recognize themselves.

3. ***Collaborate:*** An effective school library encourages broadening personal knowledge and creating interconnected learning opportunities through collaboration. Users of the school library collaborate effectively, sharing ideas and information in a responsible and ethical manner.

4. ***Curate:*** An effective school library includes a professionally curated collection of resources selected based on their authority, currency, relevance, scope, and relationship to other items in the collection. Using this selection model, users of the school library are encouraged to examine the authority and bias of authors or producers of information when curating resources for personal and academic use.

5. ***Explore:*** An effective school library provides learners with a venue to explore questions that arise out of personalized learning opportunities and out of individual curiosity and interest. The school library focuses on the development of a culture of reading, supports reading for learning and personal enjoyment, and provides opportunities for learners to read for pleasure. To meet the needs of all learners, the school library provides a wide variety of resources in multiple formats.

6. ***Engage:*** Effective school libraries help learners engage with the principles of safe and effective information skills and provide opportunities for learners to develop competencies in a space that allows learners to share and disseminate information.

The design of school libraries can support or hinder each of these foundations.

PHYSICAL DESIGN COMPONENTS

Today's libraries – and the libraries of tomorrow – "must provide versatile spaces that support a wide range of users' learning and research activities while accommodating rapid advances in information technology" (Head, 2016). Ideally, to meet the varied instructional needs and learning styles of instructors and students, learning spaces are designed to provide different types of areas and grouping arrangements (Farmer, 2017). In addition, items within these environments should support modification and customization that reflects users' interests and needs (Farmer, 2017; Head, 2016). Oblinger (2006) synthesized many of the key features of effective learning spaces:

- ***Flexibility*** that can provide quick reconfiguration to meet changing educational tasks, needs, and is amenable for student customization
- ***Decentralization*** that allows learning to flow from classroom to corridors and eating spaces, so that students can co-construct knowledge, so that learning and living commingle
- ***Ergonomic comfort*** for both younger and older bodies is becoming more commonplace; at least some furniture should be adjustable
- ***Stimulating*** to the senses, using engaging visuals, varied levels, unexpected areas or pathways, a sense of nature (e.g., organic shapes, texture, greenery, reflective surfaces)
- ***Ubiquitous technology*** to support access to active, social learning, for example, Wi-Fi, plug-and- play, numerous outlets, "smart" classrooms with presentation and online conferencing capabilities, and 24/7 presence

The school library is uniquely positioned to provide a range of learning experiences: group learning, individual learning spaces, social learning, immersive environment, and virtual exploration (Farmer, 2017; Grigsby, 2015). Thus, library facilities should be planned purposefully to optimize learning experiences (Farmer, 2017).

As school libraries evolve to serve as an inviting space for students, they are increasingly adopting design features more commonly associated with bookstores, including: cafés, lounge furniture, and attractive displays of books (Hanover Research, 2013). As one public high school on Martha's Vineyard, Massachusetts executed a library improvement project, the multi-sectoral committee compiled desired features for the new library, including small group spaces; a main room designed for flexible, concurrent uses; a café; vibrant colors; exhibition space for students' creations; a centralized area for access to borrowed devices; and more (McGrath, 2015). Research on classroom design may be useful in understanding the elements of school libraries that support student achievement. For example, in their review of literature about how the physical classroom environment influences student achievement, Cheryan et al., 2014 note that inadequate lighting, noise, low air quality, and deficient heating in the classroom are significantly related to worse student achievement. Further, the thoughtful layout of the space (e.g., arrangement of seating areas) and the objects and décor (e.g., plants, posters of important historical figures) can positively impact student achievement.

One way that library design can support student achievement is by fostering opportunities for sustained silent reading (SSR). SSR programs are generally characterized by daily, uninterrupted time to read where students choose their own books without any requirement that they finish them. Further, students are not required to take tests or write book reports about what they read (Gardiner, 2001). SSR is regarded as a beneficial component of a school reading program, with decades of research illustrating the relationship between SSR and improved student attitudes toward reading (Chua, 2008; Krashen, 2006). Yoon's (2002) meta-analysis found empirical support for SSR affecting students' attitudes about reading. Further, although SSR programs shorter than six months were no different from those six or more months in duration, there were statistical indications that grade level matters: SSR is a more effective approach to improving attitudes toward reading for students in 3rd grade and below compared to students in 4th grade and above. SSR typically takes place within the context of the classroom and does not appear to be widely offered as a service of the school library (Hanover Research, 2013). Further, there is some evidence that students in under-resourced neighborhoods may have access to fewer books or books that they want to read (United States Department of Education, 2014; Neuman & Moland, 2019). Thus, there may be an opportunity for school libraries to incorporate design elements that foster sustained silent reading (e.g., designated spaces for students to read without distraction), which may help level the playing field for students with limited access to books.

Student engagement with the library also appears to be connected to library design. In one study by Maxwell & French (2016), two traditional elementary school libraries were replaced with more open, flexible, and adaptable shared educational spaces space (called "learning commons" in the study). Compared to the old libraries, students went to the learning commons more often and were more likely to work with other schoolmates there. Additionally, the new learning commons supported increased use of library resources and active learning (Maxwell & French, 2016). Specific design elements have also been connected to student engagement. For example, posting student artwork and other forms of student personalization in public and semi-public areas of the school appears to generate a feeling of identification (i.e., emotional engagement) with the school for elementary school-aged children (Killeen, Evans, & Danko, 2003; Maxwell & Chmielewski, 2008).

ACCESS TO THE LIBRARY

Another component of a well-designed school library is how easy it is to access. In their position statement on school library scheduling, the AASL (2019) noted that "the fundamental elements of a responsive school library that enable the school librarian to act quickly and effectively to meet the curricular needs of educators and learners" are 1) flexible, open, unrestricted, and equitable access to the school library and resources on an as-needed basis; 2) opportunity for school librarians to collaborate as full instructional partners who co-plan, co-teach, and co-assess with classroom educators; and 3) 24/7 access to digital school library resources.

Studies find that the more students can access libraries, as measured by the library's operating hours or the weekly number of hours that the library is staffed, the higher their test scores (Achterman, 2008; Baumbach, 2003). For example, in an analysis of public schools in California, Achterman (2008) found that the number of hours that the school library was open was positively correlated to 4th grade language arts, 8th grade language arts and social studies, and 11th grade language arts and U.S. history standardized test scores, even in models that included student-level (e.g., parent education) and school-level (e.g., average teacher salary) variables. Further, there is evidence for the benefits of school libraries having flexible scheduling. In an analysis of 65 schools in southern California, Farmer (2006) found that flexible access to the library was moderately correlated ($r>0.5$) with student reading scores and, in combination with program planning, accounted for 35% of the variance in student reading scores. Additionally, in their analysis of 657 schools in Illinois, Lance, Rodney, & Hamilton-Pennell (2005) found that, although elementary schools (16 hours) have fewer hours per week available for flexible scheduling than do middle (30 hours) and high schools (35 hours), 5th graders in those elementary schools with more flexibly scheduled libraries performed 10% better in reading and 11% better in writing on state standardized tests. One proposed mechanism for this association is that open timetables allow for collaborative teaching with depth (Klinger et al., 2009). Accessible libraries are also important for supporting students from under-resourced families. The school library can provide a safety net for low-income students by offering resources they do not have at home; one analysis of a nationally-representative sample of 5,233 students found that lower-income students report making greater use of school library resources than their middle- or high-income peers (Adkins, 2014). However, when school library access is limited, it seems unlikely that school libraries alone can level the playing field (Adkins, 2014).

VIRTUAL AND HYBRID SCHOOL LIBRARIES

As youth in the U.S. grow increasingly comfortable with personal technology, school libraries are working to provide them with access to computers and digital media. Libraries are being called upon to assist students in developing skills related to navigation and analysis of diverse sources as more information moves to the digital format (Hanover Research, 2013). These efforts have arguably been more important during the COVID-19 pandemic when students have not been physically at school.

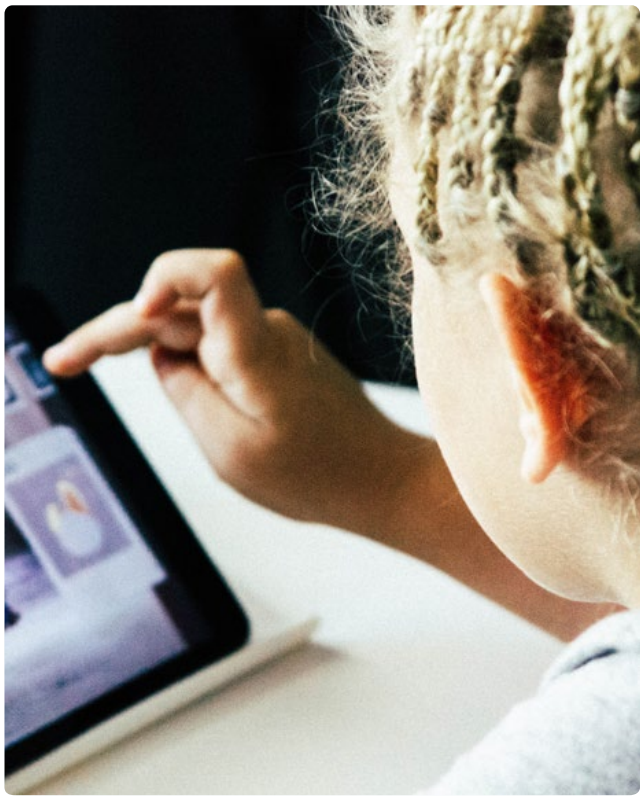
TECHNOLOGICAL INFRASTRUCTURE

School libraries are offering computers and digital databases of information to meet students' need for 24/7 access to information (Hanover Research, 2013). It is also becoming increasingly common for libraries to offer portable, digital devices and to connect with students using social applications (Hanover Research, 2013). Since digital technologies are so appealing to today's youth, small-sample and pilot research seems to support the value of e-readers as a factor in motivating young readers to read more (Maynard, 2010; Strout, 2010) with some preliminary evidence they may be particularly valuable in motivating reluctant readers (Ash, 2010; Carter, 2010; Fasimpaur, 2004). E-readers also have been used in exploratory qualitative research examining children's reading comprehension (Larson, 2010). In Union et al.'s (2015) mixed methods case study of third grade students, the 16 students in the class that used e-readers saw statistically significant improvements in their reading scores where the 65 students in the control group did not. Although the effect of e-reader usage on reading scores was not significant after controlling for baseline reading scores, e-reader usage was significantly associated with improved English/language arts scores. Key themes from the qualitative component included: 1) improved student focus and reading comprehension, 2) demonstrable technological skills in operating the e-readers, 3) no issues with damaged or lost e-readers, 4) buy-in and support from the principal was instrumental, and 5) parental involvement in the use of the e-reader was "extremely valuable." Evidence from this work suggests e-readers offer more than just portability and storage capacity; they may support readers through their use of multiple tools and text features such as text-to-speech options, dictionaries and note-taking capabilities (Larson, 2010).

In a study examining the implementation of a school-wide e-reader program, Rothman (2017) provides a handful of recommendations. First, investments in digital devices, e-book vendors, etc. should wait until the school librarian has determined how (and whether) students will use e-books and how students will access them. Once e-readers are purchased, librarians should train students and teachers to access public library collections and public-domain e-books. E-readers are not static; students should learn to find and access sources for e-books that interest them. Thus, Rothman (2017) recommends against offering students preloaded e-readers; these simply serve as an alternative medium for reading and limit students' opportunities to gain essential skills in the use of the device. Finally, in environments with limited access to dedicated e-reading devices and tablets, recommendations included teaching students how to download e-reading and fanfiction apps on their smart-phones and introducing public library and open-source e-collections through tutorials and online instructions (Rothman, 2017).

Increasingly, K-12 schools are implementing one-to-one laptop programs, in which all students in a given class, grade level, school, or district are provided laptops. In some instances, these laptops are intended for use throughout the school day; in other instances, students are permitted to bring the devices home with them. School libraries and librarians can support the development and implementation of such programs. Kuzo (2015) described the crucial role of their school's librarian in the rollout of a one-to-one laptop program. The librarian collaborated with school and district administrators to develop a summer institute that addressed both the device-related and pedagogical concerns of teachers. The library served as the hub for the program with library staff providing technical assistance and building access to online content and resources for student and teachers alike (Kuzo, 2015). Similar to e-readers, laptop programs have demonstrated effectiveness in improving language arts skills in general student samples. In Zheng et al.'s (2013) analysis of 2,158 upper elementary students from two school districts (one in California and one in Colorado), the students in California showed improvements in their English/language arts test scores during during years with both partial and full laptop programs. In Colorado, however, gains in writing test scores were not statistically significant. Notably, in both districts, at-risk student groups (e.g., students of color and low-income learners) showed significant gains in writing skills. Further, these subgroups of students tended to use the laptops more frequently than their peers for a variety of learning purposes.

CHANGES TO SERVICES



Boyer & Kelly (2014) note that although digitized collections, resources, and learning object repositories exist, their integration with information fluency skill instruction is just beginning. In the services that they offer, libraries are moving "from content to facilitation" of individual learning, calling for libraries to move to "integrated services, one stop shop information points" (Boyer & Kelly, 2014). Researchers and librarians have started outlining considerations for schools and/or districts as their school libraries evolve. For example, schools should create virtual libraries where curated resources are available to learners regardless of class format (Boyer & Kelly, 2014; Morley, 2021). Additionally, these libraries should have an established presence on social media and other outlets where students and faculty look for information (Boyer & Kelly, 2014).

Libraries and librarians should also create a virtual presence, meeting students where they are and providing assistance through things like tutorials and real-time personal assistance (Boyer & Kelly, 2014). In the time of COVID-19, Morley (2021) described ways of adapting to keep students connected to the school library. This included creating a Skip-the-Scan program which allowed for online ordering of physical books that library staff would then drop off in classrooms. Morley (2021) also developed how-to videos that walked students through browsing and borrowing from the digital library. The adjustment to hybrid also involved the development of a website for each school library where students could access library news and information. Finally, Morley (2021) formed an asynchronous book club for the students and joined classes virtually to teach information literacy lessons.

SCHOOL LIBRARY INFRASTRUCTURE AND FINANCING

OVERVIEW

Public-private partnerships (PPPs) have been broadly defined as arrangements through which private partners provide infrastructure assets and services that are usually provided by the government (Organisation for Economic Co-operation and Development, 2007). PPPs have been used for a variety of infrastructure projects around the world, including projects to build roads and bridges, manage waste, and more recently, in education (Gopalon, 2013). While government has traditionally been the primary funder of education, its ability to provide modern, equitable infrastructure and services has fallen short. Although the focus of the Baltimore Library Project is on school libraries, the literature related to infrastructure and funding focuses more on schools in general. Where possible, findings specifically about libraries are included. This literature review will examine the traditional funding streams for education and how public-private partnerships have been used to fill government funding gaps. As mentioned in the Introduction, the Baltimore Library Project represents a unique public philanthropic partnership focused on enhancing the quality and programming of the school libraries in addition to improving the library infrastructure.

STATUS OF U.S. SCHOOL INFRASTRUCTURE

Schools have a primary purpose of educating children and are viewed as a critical component of our national infrastructure. Beyond educating our children, schools also serve as important hubs for community engagement, such as providing facilities for community meetings, social service programs, health clinics, voting, and emergency centers and shelter (American Society of Civil Engineers [ASCE], 2021; Filardo et al., 2018; U.S. Government Accountability Office [US GAO], 2020). Currently, schools represent the second largest sector of public infrastructure spending, surpassed only by highways (ASCE, 2021). In the United States, there are about 84,000 public schools, with about 100,000 buildings, and it is estimated that nearly 50 million children and 6 million adults occupy school buildings each school day (ASCE, 2021; US GAO, 2020).

School buildings should provide safe and healthy spaces for learning. School infrastructure requirements change over time and school buildings must be updated to handle increasing and/or shifting enrollments, comply with new standards for health such as removing lead and asbestos, reduce environmental impact, support educational reforms such as reducing class sizes, serve students with special needs and physical disabilities, implement safety and security measures, and provide access to current technology (Filardo, 2016).

Many factors can impact student performance, such as the quality of the teaching staff, presence of support staff, class size, and access to materials (PricewaterhouseCoopers & Great Britain Department of Education and Employment, 2000). Additionally, the physical infrastructure of a school can play a role in student performance. As evidenced in a variety of studies ranging from case studies to literature reviews to correlational and regression analyses, capital improvements have been linked to increases in academic performance, student and teacher motivation and pride, improved attendance, increased enrollment, teacher retention, parent engagement, and increased home prices (Buckley et al., 2005; Filardo et al., 2018; Gibson & Davies, 2008; Neilson & Zimmerman, 2014; PricewaterhouseCoopers & Great Britain Department of Education and Employment, 2000; Rintala, 2009). In New Haven, CT, principals felt that capital improvements to libraries and HVAC systems were important to student success (Neilson & Zimmerman, 2014).

The American Society of Civil Engineers (2021) gave the U.S. education infrastructure a grade of "D+" based on the current physical condition of schools and their needed improvements. The average age of school buildings in 2013 was 44 years old and districts have been challenged to keep up with the maintenance and building needs (Filardo, 2016). A survey of a nationally representative sample of school districts (US GAO, 2020) found that 54% of districts reported that they needed to update or replace at least two building systems (e.g., security, roofing) in many of their schools. The most common need was to update or replace dated HVAC systems, which can affect air quality and increase potential for mold. During site visits that accompanied the survey, school district officials reported that they must balance the need for buildings that support health and safety with the desire for their schools to have modern educational spaces and features, such as collaborative workspaces, labs, and common areas. A related issue is that national data on school infrastructure conditions are limited and dated (ASCE, 2021).

Despite the benefits of healthy and modern school infrastructure and the identified need for physical improvements, one estimate suggested that a $38 billion gap exists between what has been historically spent on capital construction for upgrading and building schools and what is needed to bring schools up to modern standards (Filardo, 2016). Another gap of $8 billion is estimated between historical spending on maintenance and operations and what is needed based on current standards.

TRADITIONAL SCHOOL CONSTRUCTION AND RENOVATION FINANCING

Financing of public education in the United States has traditionally been a governmental responsibility (Gordon, 2012). However, the specific funding mechanisms for school construction and renovation projects varies across the U.S. and within states. This is due to the U.S.'s largely decentralized education system, in which the states have final constitutional authority (Frisch, 2017; Gordon, 2012). States have typically allowed local districts to play a dominant role in governance and finance of primary and secondary education (Frisch, 2017; Gordon, 2012). It is believed that local control allows school systems to design instructional approaches and facilities that best fit their needs (21st Century School Facilities Commission, 2018).

In an analysis of school financing between 2003 and 2014, Filardo (2016) found that states and localities each contributed about 45% toward school operating costs, with the federal government contributing about 10% localities. However, the proportions of contributions change substantially when funding for capital expenses was examined. For capital expenses, which generally include constructing, acquiring, or renovating buildings, the local contribution was estimated at 82%, the state contribution at 18%, and the federal share was less than 1% (Filardo, 2016). Similar results were found in the GAO survey (2020) of school district representatives who identified that funding for school facilities came primarily from local sources, followed by state funding, with minimal federal funding.

Because capital expenses are needed only periodically, they are not usually paid for out of operating funds (Filardo, 2016). Most districts finance capital expenses so that the costs are paid out over time. In 2013, districts reported a total of over $400 billion in long-term debt with payment of $17 billion in interest payments (Filardo, 2016). However, the amount of debt varies greatly across states.

LOCAL ROLE IN SCHOOL FUNDING

Several different funding mechanisms have been identified for local contributions for capital expenses, but property taxes are usually the main source of local funds (McGuire & Papke, 2012; US GAO, 2020). Not all school districts have the authority to raise property taxes and some states have capped property taxes (Nisbet, 2021), which limits the amount of revenue from this source. In 2004, property taxes provided over 80% of revenue for school districts in 17 states and over 50% of revenue for 32 states, with only 6 states receiving revenue from other local sources (McGuire & Papke, 2012). Property taxes have been criticized because of challenges maintaining assessed values in line with current market values (McGuire & Papke, 2012).

Alternatively, some states use sales tax revenue for capital expenses (Verstegen, 2016), but arguments exist against this because of its regressive nature (McGuire & Papke, 2012). Other local sources include bonds, grants, and public-private partnerships (GAO, 2020).

STATE ROLE IN SCHOOL FUNDING

Most states provide some funding for school infrastructure, but some states provide little to no financial support (Filardo & Vincent, 2017; Verstegen, 2016). Typically, funding for infrastructure is separate from the state's funding strategies for school operations (Verstegen, 2016). Most commonly, states issue project grants. In some states, these grants are equalized such that state funds help compensate for districts that do not generate as much in local tax revenue as other districts. Other state funding mechanisms for capital projects include debt service grants, inclusion in the major operating funding system, state loans and bond guarantees for locally issued bonds, targeted funding for aging schools, and lottery proceedings (Verstegen, 2016). It should be noted that sometimes equalization efforts have resulted in reduced state funding, and economic downturns can further impact state contributions (Frisch, 2017; Nisbet, 2021).

In Maryland, the Interagency Committee on School Construction (IAC) oversees the Public School Construction Program (21st Century School Facilities Commission, 2018). Each year, local school districts develop and submit a plan that includes an analysis of future facility needs based on projected enrollment and current condition of schools. The IAC makes decisions about which projects to fund based on merit and the projected level of available funds. The state pays at least half of eligible costs of school construction and renovation projects based on a funding formula that accounts for the local school system's wealth and ability to pay.

FEDERAL ROLE IN SCHOOL FUNDING

The federal government plays a small role in funding school operations and supporting programs designed to eliminate disparities based on income, race, ethnicity, and disability, but its role in school construction and renovation is even more limited (Jackson & Johnson, 2021; Shohfi, 2020). Federal support for school construction and renovation has included both direct and indirect support (Shohfi, 2020).

Direct support is provided through grants, loans, and other federal programs that provide financial support for school construction, renovation, or repair. Historically, the Works Progress Administration financed new school construction and renovation after the Great Depression (Shohfi, 2020). Other federal efforts have provided school capital funds for disaster relief, areas affected by federal activities, and for certain populations such as Native Americans and children of military personnel. The Consolidated Appropriations Act in 2001 provided funding for renovation and repairs after emergencies, for improving disability access and for local education authorities that enrolled high numbers of students connected to federal lands, high poverty areas, and rural areas; however, this program was not permanently authorized (Shohfi, 2020). A more recent, one-time appropriation for school construction and renovation was made available through the American Recovery and Reinvestment Act in 2009 (Shohfi, 2020).

Indirect support is more widely available and it is given primarily through the exemption of federal income taxation on the interest on state and local governmental bonds used to finance school construction and renovation (Shohfi, 2020). An alternative is the provision of tax credit bonds, which provide a tax credit or direct payment proportional to the bond's face value instead of providing a tax exemption (Driessen, 2021). These have been designated for specific purposes, such as school construction, school renovation, and energy conservation. The first tax credit bonds were Qualified Zone Academy Bonds (QZABs),[4] which were introduced as part of the Taxpayer Relief Act of 1997. These bonds could be used by individual public schools, through their participating state and local governments, for school renovation, equipment, training teachers, and course materials but not for new construction (Driessen, 2021). Eligible schools needed to be located in an empowerment zone or enterprise community and have at least 35% of students qualify for free or reduced school meals. Schools also needed to be a "Qualified Zone Academy," which is a school that provides rigorous educational programs to prepare students for college or the workforce (Driessen, 2021). In addition, QZABs required a partnership between the school district and a private or nonprofit organization, with the partner contributing 10% of the value of the money borrowed to enhance the project (The School Superintendents Association, 2019). The authority to issue these types of tax credit bonds was eliminated by the Tax Cuts and Jobs Act in 2018 (Driessen, 2021). Pending legislation for school construction includes the Moving Forward Act of 2020, which includes authorization for grants and tax credit bond for construction and repair of schools (Driessen, 2021), and the Reopen and Rebuild America's Schools Act of 2021 (Jackson & Johnson, 2021), which includes both grant funding and subsidized bonds.

[4] This was the initial funding mechanism used in the Baltimore Library Project.

EQUITY ISSUES IN FUNDING

Public schools serve a vital function in providing education to support the growth and success of all children (Gopalon, 2013). Schools in areas with high concentrations of poverty disproportionately serve children of color and often have the greatest need for building repairs and modernization to meet current educational needs (Filardo & Vincent, 2017; Jackson & Johnson, 2021). These schools often pay more for emergency maintenance and repairs (Filardo & Vincent, 2017; US GAO, 2020) and energy costs (Filardo & Vincent, 2017).

Because most capital funding for schools relies on local property taxes, the ability to pay for school construction and renovation is tied to community wealth, which leads to systemic inequities in facilities and perpetuates existing privilege (Filardo et al., 2018; Levine, 2019). In challenging economic times, property values can decline, causing school districts to lose local revenue leading, in turn, to program cuts or a search for alternative funding (Levine, 2019). A dramatic increase in income-segregated neighborhoods has been observed since the 1970s, which further exacerbates inequities related to property tax revenue (Nisbet, 2021).

High-need, low-income communities typically receive the least funding for school facilities (Filardo et al., 2018). Filardo and colleagues (2018) reported on a national study that examined 146,000 school facility projects from 1995 to 2004 and found, which found that projects in high-wealth zip codes had more than three times the capital investment than those in low-wealth areas. A recent report indicated that schools in low-income areas were more reliant on state funding and spent 30% less per student than more affluent districts (Jackson & Johnson, 2021). These inequities worsen in the face of disasters, such as hurricanes, floods, and more recently COVID-19, because older facilities in poorer repair are more vulnerable to problems (Filardo et al., 2018; Jackson & Johnson, 2021).

Philanthropic support in education could be a strategy to provide needed funds to schools; however, it can take many forms, including public school foundations, parent-teacher organizations, and booster clubs (Gazley, 2015). Most philanthropic funding of these kinds remains local, again giving wealthier school districts an even greater advantage (Gazley, 2015).

STATE AND FEDERAL FUNDING SOLUTIONS

Alternative strategies must be considered to increase funding for capital expenses related to schools. One suggested strategy is to look to states to find state-level solutions (Filardo, 2016; Filardo & Vincent, 2017; The Hunt Institute, 2021). Some states are working to provide dedicated revenue to support school infrastructure, such as New Mexico's use of revenue from oil and gas reserves and Ohio's use of tobacco settlement revenue (Filardo, 2016).

As mentioned above, in Maryland, the state pays at least half of eligible costs of school construction and renovation projects based on a funding formula that accounts for the local school system's wealth and ability to pay (21st Century School Facilities Commission, 2018). The 21st Century School Facilities Commission Final Report emphasized the importance of the state's role in focusing resources to areas that have low wealth. A report on the State of School Facilities (Jacobs, 2012) in Baltimore City identified that $2.4 billion would be needed to ensure educational adequacy, improve facility conditions, correct deficiencies, and account for 10-year life cycles costs, with recommendations that 50 school facilities would need to be replaced. In 2013, the 21st Century School Buildings for Our Kids proposal was passed, which set a goal to renovate or replace all City School Buildings in ten years (21st Century Schools, n.d.). A partnership between Baltimore City Schools, the State of Maryland, The Maryland Stadium Authority, and Baltimore City was formed to redesign and rebuild city schools.

In addition, the recently passed Blueprint for Maryland's Future legislation has a stated priority of addressing equity in Maryland's schools (Maryland Association of Boards of Education, 2021). One component of the new legislation includes an updated formula for per-pupil funding, with adjustments for special education, English learners, and economically disadvantaged students, with new accountability measures to ensure that funding reaches the students.

However, working at the state level alone will likely not be enough to address equity issues because of the great variation between states. In fact, legal decisions have been needed to clarify to states that the condition of school facilities is part of the state domain for providing an adequate and equitable education (Filardo & Vincent, 2017).

Since school facility inequities reflect deep systemic problems, the need exists for a broad systems approach, with clearly defined responsibilities at the local, state, and federal levels (Filardo & Vincent, 2017). As part of this approach, some call for an increased role of the federal government in school capital funding to ensure equity across states and to help provide resources to those districts with the greatest needs (Filardo et al., 2018; Jackson & Johnson, 2021).

PUBLIC-PRIVATE PARTNERSHIPS (PPPS)

Another strategy for financing school infrastructure costs is to leverage outside funding sources, such as through public-private partnerships (PPPs; 21st Century School Facilities Commission, 2018; Filardo, 2016). As defined earlier, PPPs are arrangements through which private partners provide infrastructure assets and services that are usually provided by the government (Organisation for Economic Co-operation and Development, 2007). Ideally, PPPs involve risk- and reward-sharing, sharing of skills and assets, and mutual learning between the partners (Gurn, 2016; Nisbet, 2021).

In the education sector, PPPs vary in both partner types and activities (Gopalon, 2013; Nisbet, 2021). Partners can include corporations, local businesses, philanthropic organizations, community organizations, and non-profit organizations (Gopalon, 2013; Hansen, 2012; Rodrigues & Zucco, 2018). PPPs have included the following activities (Gopalon, 2013; Patrinos et al., 2009):

- Private organizations support education through philanthropic activities, such as donations of resources or time
- Government agencies guide policy and provide financing, while the private sector delivers education services to students by managing and operating the school (e.g., charter schools)
- Government agencies provide subsidies to private schools to fund student placement (e.g., voucher programs)
- Private sector partners are contracted to provide teacher development or curriculum design
- Government agencies contract private companies to build and maintain school buildings.

With respect to PPPs for school construction, the government usually contracts a private company to build and/or maintain school buildings over a long term, often 25 to 30 years (Patrinos et al., 2009). In the most common arrangement, called build-operate-transfer, the private sector finances, designs, constructs, and operates a public school and at the end of the contract period, the ownership is transferred to the government (Patrinos et al., 2009). The government typically retains the responsibility for delivering core educational services.

The private partners are selected through a competitive bidding process (Patrinos et al., 2009). The contract specifies the services that the private contractor must deliver and the related standards, with payments contingent on the private contractor successfully meeting the contract requirements. This contrasts with traditional procurement models for infrastructure, in which government agencies hire a contractor for the construction phase but retain responsibility for maintenance and operations after the facility is built (Rodrigues & Zucco, 2018). These are short-term design-and-construct contracts.

A few studies compared traditional procurement of infrastructure projects with PPPs; however, these studies noted that it is often challenging to find appropriate comparison projects. Results in the UK and Australia showed that PPP projects experienced fewer delays and were less likely to go over-budget than traditionally funded contracts (Rodrigues & Zucco, 2018). Other researchers have also found that schools have been built faster and at lower cost using PPPs as compared to traditional financing (Guhse, 2001).

In addition to the potential time and cost savings, other benefits to PPPs for school construction have been identified (Patrinos et al., 2009). PPPs are viewed positively for their ability to expand the capacity of what the government can accomplish (Nisbet, 2021). Some school construction has taken place using PPPs when no funding was available through traditional funding streams (Guhse, 2001). By partnering with private companies to construct school facilities, the government is relieved of having to make up-front capital investments all at once and the government agency can pay incrementally over the contract term (Patrinos et al., 2009). Another benefit is that the private partner takes on a share of the responsibility and risk as part of the contract (Patrinos et al., 2009). Further, partnerships can provide interdisciplinary skill sets and resources to assist educators who are not familiar with the planning, design, and construction of school buildings and ongoing facilities management needs, thus relieving school staff of these responsibilities so they can better focus on helping students learn (Filardo & Vincent, 2017; Patrinos et al., 2009).

Despite the benefits, concerns have been raised about PPPs (Nisbet, 2021). While some see PPPs as having the ability to innovatively reshape schooling, others contend that PPPs bypass public policy processes (Black, 2009; Gurn, 2016; Hansen, 2012; Nisbet, 2021), particularly in the case of large philanthropic donors interested in charter schools and voucher programs (Black, 2009; Gurn, 2016; Hansen, 2012; Nisbet, 2021). In these cases, equity issues can arise within a district as per pupil spending is increased by donations to charter schools. Another concern relates to the marketization of schools seen in some partnership arrangements in which corporations provide financial resources to a school in exchange for advertising space, marketing opportunities to teachers or students, and exclusive contracting (Black, 2009; Gurn, 2016). Additional concerns relate to whether enough attention is paid to effectiveness, impact, and sustainability of private funding (Hansen, 2012).

Gurn (2016) recommends resisting the urge to uniformly praise or disparage PPPs, recognizing that at times private partners might provide strategies and resources that can lead to more equitable solutions for student learning, and at other times, educators might need to challenge predatory practices of some private partners. Gurn (2016) stressed the need to be both critical and fair when assessing the interest, aims, and effects of each partnership.

Gopalon (2013) recommends four critical lenses through which to examine PPPs: (1) scope: whether a PPP seeks to improve a specific aspect of education or represents a comprehensive approach to addressing systems problems; (2) scale – whether the PPP is a pilot or a large-scale policy-driven effort; (3) method – whether the PPP uses a top-down/take-over approach or works in a complementary manner; and (4) motive: whether the PPP is motivated by self-interest or by the larger public interest. Gopalon (2013) believes that partnerships can be an asset to educational reform, especially when the partners support a comprehensive, collaborative systems approach and share a strong commitment to public education.

Sectoral blurring between government, business, and philanthropy has occurred as businesses and philanthropic organizations take a greater social role in government (Black, 2009). Philanthropic organizations utilize models from the business world, such as with venture philanthropy efforts.

Similarly, corporations have demonstrated increased commitment to social responsibility (Black, 2009), although they may ultimately profit from branding benefits of their altruism (Gurn, 2016) and by helping support the creation of a future skilled workforce (Black, 2009).

Some partnership quality indicators include having a shared vision with realistic goals, shared decision-making and responsibility, a long-term commitment with adequate resources, good strategies for communication, and equality, transparency, and trust between partners (Black, 2009; Brown, 2001). In addition, understanding the kind and degree of impact expected from the partnership is important (Black, 2009).

EXAMPLES OF PPPS RELATED TO SCHOOL AND LIBRARY INFRASTRUCTURE

PRIVATE FINANCE INITIATIVES IN THE UNITED KINGDOM

Private Finance Initiatives (PFIs) are a form of PPP used in the United Kingdom to fund school capital projects. In a comparison of 57 schools rebuilt via PFI to 32 schools rebuilt using conventional financing, researchers found higher rates of improvement in student attainment in the PFI schools (Rintala, 2009). Attendance data was also compared with a slightly smaller sample (52 PFI schools and 29 conventional schools). Findings showed a reduction in unauthorized absences in PFI schools and an increase in absences in conventional schools (Rintala, 2009). While this report did not provide definitive reasons for the increased performance of the PFI schools, one infrastructure practitioner hypothesized several factors that could contribute to the success of PFI schools: PFI projects mandate appropriate building maintenance so perhaps the environmental quality of the buildings was more conducive to learning and educators could focus on teaching; the initial designs of PFI schools incorporated more teacher and stakeholder input, leading to higher satisfaction; the extensive process of approving a PFI initiative leads to more consideration around budget allocation and this budgetary prudence might have an indirect effect; and finally, commercial incentives in PFI help ensure that work is completed as scheduled and caused fewer disruptions in education.

A case study report (Gibson & Davies, 2008) looked at the experience of the first PFI-funded school in the UK, the Victoria Dock Primary School. This study involved a partnership between the school and a local construction company. All partners agreed that the partnership was successful, and they based this on teacher and student feedback, increased enrollment at the school, inspection reports, and student performance. Interviewees noted that the new facilities were high-quality, well- maintained, and conducive to learning. The partnership also was able to provide extras that would not have come with traditional funding, such as an improved playground and a restocked library.

However, education experts who were interviewed were not sure how much student performance could be attributed to simply having a new facility versus the fact that it was funded via PFI.

Factors attributed to the success of the project were having partners who shared a commitment to community improvement, the involvement of users and stakeholders in the partnership planning process, being a small-scale project, having an openness to new ideas and ways of working together, having a shared recognition of the long-term aspects of the partnership, and open and frequent communication (Gibson & Davies, 2008). Interestingly, participants felt that the positive working relationships were more critical than having a tightly specified contract, which is often a key recommendation for PPPs. However, this project was extremely local and the first of its kind and all partners were committed to its success. This was particularly true of the construction company, which hoped that success here could build their reputation and allow them to secure future projects. Participants generally felt that the project could not be replicated to the same degree because of the unique factors of being the first such project and having local partners.

The interviewees identified challenges to the partnership, with one being the negative image that people have about PFI in general, and there was opposition in and around their community to this arrangement. The construction company identified that the bidding and procurement process is time consuming and costly, especially for companies that do not ultimately win the contract.

NEW YORK CITY'S REACH PROJECT

The Fund for Public Schools is dedicated to improving public education in New York City (New York City Global Partners, 2010). The Fund aims to secure funding for systemic education reform initiatives, create partnerships and programs to support schools, raise public awareness about the public schools, and strengthen the relationship between the Department of Education and the private sector. Several recent initiatives supported school libraries (Fund for Public Schools, 2005). The Fund operated a competitive grant program called Library REACH, which allowed public schools to apply for up to $10,000 to improve school libraries. As of 2010, the Fund awarded 216 grants to public school libraries. The Shop for Class program was a week-long event in which participating NYC retailers donate a portion of their sales to the Fund. It also served to raise community awareness and support for public schools. Proceeds from Shop for Class were used to purchase more than 300,000 books for public school libraries. Another initiative, Get Organized New York, was a city-wide tag sale, which raised over $500,000 for school libraries and sports programs. It provided funds for Project REACH and for substantial renovations of 14 school libraries. The Fund identified that clear tracking of key project deliverables, project milestones, and reporting requirements with NYC Department of Education and with funding partners was a key component of project success. This enabled early detection of any at-risk initiatives and allowed for corrective action. A more recent infrastructure project provided grants for establishing playgrounds at city schools (Fund for Public Schools, 2019).

REBUILDING SCHOOLS IN NEW ORLEANS

New Orleans saw widescale devastation to its civic infrastructure after Hurricane Katrina in 2005. School infrastructure in New Orleans was struggling before Hurricane Katrina. After the hurricane, damage was sustained in all 124 public schools, with minor damage to 32 buildings, severe damage to 74 schools, and total destruction of 18 schools (21st Century School Fund, 2006). Months after the hurricane, New Orleans had still not submitted a comprehensive recovery plan to the Louisiana Recovery Authority, which was established to oversee and distribute federal recovery funds (Abramson et al., 2012). The Recovery Authority asked two foundations, the Rockefeller Foundation and the Greater New Orleans Foundation, to work with the city to create a plan. The foundations met with the mayor's office, the city council, and the city planning commission to devise a recovery strategy; however, the negotiations were difficult due to city officials' distrust that the Rockefeller Foundation was truly nonpartisan and because the partnership came about because of the government's supposed inability to develop the plan on their own (Abramson et al., 2012).

Ultimately, a facilities masterplan was developed, which also included plans to rebuild and improve about 85 schools (Bingler, 2010). A key strategy was engaging more than 10,000 citizens to help develop what became the Unified New Orleans Plan (Abramson et al., 2012). The foundations continued to support government's efforts and to raise additional private funds to implement the plan. New Orleans has been considered a model city in urban innovation (Abramson et al., 2012).

SUSTAINABILITY OF INITIATIVES

Few articles discussed sustainability of initiatives. With respect to infrastructure, PPPs using the build-operate-transfer model have long-term arrangements that ensure that buildings are maintained over the duration of the contract. Traditional funding models do not provide for ongoing maintenance and repair needs, and only 17 states provide districts with funding support for maintenance and operations (US GAO, 2020).

An unresolved issue for PPPs focusing on educational programming is determining who is responsible for sustaining initiatives funded or started through PPPs (Black, 2009). Many foundations assume that the government will maintain successful initiatives that were started under the partnerships (Black, 2009). A study in Australia found that it was more common for philanthropic organizations to fund new initiatives rather than provide a second round of funding to existing, effective initiatives (Black, 2009). Short-term support can have a negative impact on schools, especially schools serving disadvantaged students because they will often enter into multiple projects they cannot sustain in order to inject resources into the schools (Black, 2009). Piecemeal funding of school initiatives through PPPs might serve to exacerbate inequities if these opportunities are not ultimately made available to all schools (Black, 2009).

SUMMARY OF FINDINGS AND RECOMMENDATIONS

This section synthesizes the key findings and recommendations from the literature review. The recommendations presented in this section reflect those provided by the researchers and practitioners in the literature.

Key Findings

School Library Best Practices

1. Full-time, certified librarians are key to maximizing the impact of school libraries.
2. Well-designed school libraries bolster student engagement and learning.
3. Virtual and hybrid school libraries are growing in popularity as students increasingly require use of technology during COVID-19 and beyond.

School Library Infrastructure and Financing

1. School buildings provide the infrastructure to support the education of children, but many are in disrepair and lack modern educational spaces to support learning.
2. Construction and renovation of school buildings are funded primarily through local sources (e.g., property taxes), supplemented by additional state funding and minimal federal funding.
3. Reliance on property taxes, which are tied to community wealth, can perpetuate inequities in school infrastructure.
4. Public-private partnerships are a promising alternative funding mechanism that can help close the funding gap for school construction and renovation, especially when all partners share a common commitment toward educational goals.

RECOMMENDATIONS FOR SCHOOL LIBRARY BEST PRACTICES

STAFF LIBRARIES WITH FULL-TIME LIBRARIANS

Given the myriad ways that librarians can impact library effectiveness and student achievement, it is important that school libraries have, at a minimum, a full-time librarian. The expertise of these staff members in the roles that AASL outlines (leader, instructional partner, information specialist, teacher, and program administrator) makes them knowledgeable and versatile team members.

Administrators and teachers must be well-informed about the different ways school librarians can support student learning (Cohen et al., 2020).

SUPPORT LIBRARY STAFF IN ALL OF THEIR ROLES

Professional development for school librarians should be expanded to focus more on school librarian leadership and teaching and learning (Cohen et al., 2020). Professional development is necessary to enable librarians to serve as knowledgeable experts in the area of information literacy. It is also important for library professionals to develop skills related to technology, communication, and collaboration (Hanover Research, 2013). Supporting librarians in their roles also means asking for their expertise during the development and implementation of library programs (e.g., school technology initiatives; Kachel & Lance, 2018). Kachel & Lance (2018) note that an increased need for instructional support positions to implement school reform or improvement initiatives impacts the changing role of school librarians; for the past 20 years, U.S. public schools have been hiring instructional coordinators while library staff full-time equivalents (FTEs) have been steadily cut. Finally, in the virtual library space, supporting library staff may also include building a professional learning network to provide teachers and students extended access to specialists in a number of fields (Boyer & Kelly, 2014).

DESIGN LIBRARIES TO BE FLEXIBLE AND COMFORTABLE

The literature suggests that optimal learning spaces are flexible, decentralized, provide ergonomic comfort, stimulate the senses, and provide ubiquitous technology. Further, Farmer (2017) specifically recommends including spaces for conversational learning (e.g., circular seating or virtual chat/classrooms with whiteboard space); group work (e.g., customizable spaces that facilitate privacy while inviting interaction); developing expertise (e.g., labs or simulations); action and reflection (e.g., display areas or discussion boards for threaded discussion); thinking and feeling (e.g., carrels or blog space); play, exploration, and projects (e.g., areas that can be messy); large-group events (e.g., spaces that can be easily modified for different purposes); and services (e.g., reference, technology, writing, thesis/research assistance, instructional design, and faculty development). Farmer (2017) provides detailed recommendations about design elements, including how to create a variety of learning spaces, how to organize collections, as well as considerations for lighting, signage, and security.

INCORPORATE TECHNOLOGY IN SCHOOL LIBRARIES

To meet the needs of today's students who have grown up in a digital world, school libraries must incorporate technology (Boyer & Kelly, 2014). This includes practices that have become mainstays of many school libraries (e.g., providing access to computers and the internet), as well as those gaining in popularity (e.g., e-reader and laptop initiatives). Importantly, the expertise of librarians and other library staff should be relied upon in the development and implementation of these initiatives. Further, when possible, the input of students, teachers, and families should be gathered in the development process to ensure that any technology roll-out will meet students' needs and have the intended effect (Rothman, 2017). The use of technology in school libraries has grown in importance during the COVID-19 pandemic and will likely continue to be a crucial aspect of keeping students connected to school (Morley, 2021).

RECOMMENDATIONS FOR SCHOOL INFRASTRUCTURE AND FINANCING

ALL SCHOOLS MUST PROVIDE SAFE, HEALTHY, EQUITABLE, AND UP-TO-DATE LEARNING ENVIRONMENTS

To provide a positive learning environment, all schools should meet modern building and infrastructure codes (American Society of Civil Engineers, 2021). A national systems approach has been recommended to accomplish this (Filardo & Vincent, 2017). This approach (Filardo & Vincent, 2017) focuses on:

- Governance and decision-making to ensure that well-developed codes, policies, and regulations exist to guide federal, state, and local roles and responsibilities
- Funding to ensure dedicated, stable, and adequate revenues for capital funding as well as for operations, maintenance, and repairs
- Development of mission statements and strategic plans that include school facilities
- Facilities planning with robust public engagement
- Data and information on school facility conditions that are collected in a timely, regular, and standardized way
- Facilities accountability that includes standards for facilities planning, management, equity, design, condition, utilization, and location of public school facilities with consequences for school districts whose facilities result in unhealthy or unsafe conditions and for school districts and contractors whose practices contribute to waste, fraud, or abuse of public funds.

Current governmental funding strategies, with a reliance on local funding, are inadequate to meet ongoing school infrastructure needs. Targeted federal funds are needed to help reduce structural inequities (Filardo et al., 2018). Alternative funding mechanisms, such as public-private partnerships, should also be utilized (21st Century School Facilities Commission, 2018; American Society of Civil Engineers, 2021).

PUBLIC-PRIVATE PARTNERSHIPS CAN BE AN EFFECTIVE MECHANISM TO SUPPORT SCHOOL CONSTRUCTION AND RENOVATION

Several of the articles cited in this review identified factors that helped support the success of PPPs. Some recommendations focus on the process of developing and awarding PPPs and others focus on ensuring implementation success.

Recommendations for developing and awarding PPPs include having clear policy and regulatory guidelines for guidelines for PPP-funded school construction with streamlined processes (Brown, 2001; Filardo & Vincent, 2017; Patrinos et al., 2009); government capacity to form and oversee PPPs, including the skills needed to design, develop, and manage the contracting processes (Patrinos et al., 2009); a competitive, fair, and transparent process for awarding contracts (Patrinos et al., 2009); and informed community debate to increase understanding of the role and impact of PPPs (Patrinos et al., 2009).

Recommendations for implementing successful partnerships include having a shared vision with clear and realistic goals (Black, 2009; Gibson & Davies, 2008; Gurn, 2016); a thorough analysis of the robustness of revenue streams and key project risks (Harris & Reidy, 2011); a contract with clearly defined deliverables, performance standards, and consequences for substandard performance (Gibson & Davies, 2008; Harris & Reidy, 2011); consideration of the equity impacts of the project (Patrinos et al., 2009); and long-term commitment (Black, 2009). Further, the literature points to shared decision-making and responsibility (Black, 2009); a clear understanding and acknowledgement of the power structures within the partnership (Gurn, 2016); trust and transparency (Black, 2009; Gibson & Davies, 2008; Gurn, 2016), openness to other's opinions and new ways of working (Gibson & Davies, 2008), and motivation for success (Gibson & Davies, 2008); routine and frequent communication (Black, 2009; Gibson & Davies, 2008; Harris & Reidy, 2011); and mechanisms for accountability (Black, 2009; Patrinos et al., 2009).

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