



SCHOOL LIBRARIES INNOVATION

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School library programs have measured success by improved test scores. But how do next-generation school libraries demonstrate success as they strive to be centers of innovation and creativity? These libraries offer solutions for school leaders who struggle to restructure existing systems built around traditional silos of learning (subjects and departments) and prescribed curricula that aim to cover content. The Common Core State Standards call for a shift from content to process, from memorization to problem-solving. School libraries can lead schools to embrace innovation, think outside the box, engage in interdisciplinary and community collaboration, embrace

sudden learning opportunities, and address real-world problems. Innovative organizations “are ones that continually identify and adopt programs and practices, including the requisite organizational structures and cultures that help them better serve students” (Moreno, Luria, and Mojkowski 2013).

In the context of school reform “innovation” means divergent thinking, problem solving, and associated action. Divergent thinking requires a flexible learning environment where risk is encouraged:

Innovation means first different, then better. That is,

innovating is a fundamentally different way of doing things that results in considerably better, and perhaps different, outcomes. Both the “different” and the “better” must be significant and substantial. Educators need to think of innovating as those actions that significantly challenge key assumptions about schools and the way they operate. Therefore, to innovate is to question the “box” in which we operate and to innovate outside of it as well as within. (Washor 2011)

When innovation is evidence-based, it thrives in the trenches where practitioners try, test, and adapt new and different approaches. In such



cases innovation is balanced with evidence-based practice so educators can “plan an innovative project with research and assessment in mind. From the outset of a new service, [they] think about what the intended outcomes are and implement measures to determine success” (Koufogiannakis 2007, 109).

Innovative Teaching and Evidence-Based Practice

Design thinking, a cyclical and iterative process, supports innovation because it relies on evidence to discover meaningful solutions. Pioneered for education by Stanford’s dschool <dschool.stanford.edu> and adapted from the ground-breaking practice of the global consultancy design firm IDEO <www.ideo.com/about>, design thinking is an empathetic, evidence-based approach to problem solving. There are overlaps between design thinking and evidence-based practice models (Howard and

Davis 2011). Figure 1 illustrates the design thinking process as it is used for students to solve problems. To develop empathy for the needs of their “clients,” students work in design teams to interview the clients to collect evidence. Students cycle through iterative brainstorming in a process called “ideating” to come up with creative solutions to their clients’ design problems and then return to their original user group to test ideas and get feedback. The teams build prototypes or representations of one or more of their ideas to share with clients and return to their teams to redefine and focus their questions based on the insights gained. The process allows team members to reach solutions that are often radically different than those they would have devised, had they not developed empathy for their clients through this process.

A group of students at Martha’s Vineyard Regional High School (MVRHS) used design thinking

to redesign a courtyard adjacent to the school library. Although the courtyard was rarely used, the school community saw its potential as an outdoor learning space. Through design thinking students interviewed their peers and faculty and then built prototypes of the courtyard. In response to feedback the prototypes were modified.

Student-centered, project-based learning (PBL), like the Science, Technology, Engineering, and Math approach (STEM), is largely defined by interdisciplinary approaches to real-world problems. It engages students with the 4 Cs: creativity, collaboration, communication, and critical thinking. One could argue that project-based learning is essential to building a school-wide culture of innovation.

Design thinking, PBL, and other approaches that are learner-centered are pedagogies rooted in constructionist learning theory



(Papert and Harel 1991), which is an extension of constructivist theory (Piaget and Inhelder 1969). Both approaches posit that learning is active and social. Seymour Papert and Idit Harel wrote:

Constructionism—the N word as opposed to the V word—shares constructivism’s connotation of learning as “building knowledge structures” irrespective of the circumstances of the learning. It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it’s a sand castle on the beach or a theory of the universe. (1991, 1)

Students gain deeper knowledge by building tangible models as a way of testing their ideas. Educators can also benefit from design thinking to create learning environments that support constructionist teaching. School libraries have proven effective in enhancing the content-driven classroom, but they also have value in creating, supporting, and celebrating learner-centered pedagogies that need flexible

spaces. How can design thinking and evidence-based practice guide the redesign of a school library to create a learning environment that supports these innovative pedagogies?

Evidence-Based Library Redesign

At our public high school of seven hundred students on Martha’s Vineyard, Massachusetts, the school council called for updating the library. In September 2013 a Library Improvement Committee was formed, consisting of teachers, administrators, parents, students, and community members. The committee started with a common belief that the school library can and should improve student achievement and that new functions of the library would determine the design of the learning space. Figure 2 illustrates the design thinking processes the committee planned as first steps: collecting evidence from the school community to determine feedback, examining the latest research on school library functions and innovation, and visiting school and town libraries and other institutions that had created makerspaces.

The committee posed two questions in the next phase of their thinking: What are the functions of the school library? How can the design of the school library support these functions? The discussions that followed led to defining a shared vision. Members of the committee used the “Back to the Future” protocol designed by the National School Reform Faculty. The purpose of this protocol is “to vision into the future and tell what it would look like in the very best-case scenario [and] to initiate discussion into the steps, players, actions, and timelines it will take to be successful” (Murphy 2002). The committee imagined where the school library would be in five years and asked, “What do you see people doing in the school library?” Committee members visualized how the library looked in 2013 and how it might look by 2019: friendly, busy, modular, mobile, inspirational, collaborative, innovative, high-tech, engaging, up-to-date, and student-centered.

The committee surveyed students and faculty to determine their perspectives. Seventy-five percent of students said the school library

was uninspiring, and half said the library hadn't helped them become better students. They viewed the library as a crowded place that houses books. They envisioned it as a comfortable place where they could meet, play, eat, read, study, and be productive, all at the same time! A survey of faculty revealed their need for separate learning spaces for small groups, individuals, and project work. Clearly, innovation was needed.

Applying the evidence-based practice of reading the research, the committee identified high school libraries in Massachusetts where the innovative Learning Commons concept had been embraced. The members visited Learning Commons in Wellesley, Newton North, and Concord-Carlisle to see how these spaces were designed in response to each school library's expected learning outcomes. Wellesley High School's library featured a "touch-table" at the entrance (Gordon 2014). Designed as a senior's project, it was an innovative space that consisted of a large flat-screen touch display placed horizontally on a table and powered by a hidden computer.

Students used the touch-table frequently to play games, create digital artwork, and experiment with new uses of the technology. The touch-table set a tone of inspired engagement as students entered the school library.

Concord-Carlisle's Learning Commons was spread over three floors connected by ramps. The open space of these interconnected floors was creatively adapted for concurrent use by classes, clubs, small groups, individuals, and faculty.

Innovation was apparent in the Newton North school library's motto, "Ask, Learn, Create, Share." A student advisory team helped redefine the library, for example, by building a recording studio in a side room. The old library was dark, and books were hidden in stacks. In an area filled with natural light and comfortable seating, the new Learning Commons has low, wheeled shelves stocked with new fiction books. After the Newton redesign, circulation of fiction doubled in the first year. This kind of evidence indicated to the MVRHS Library Improvement

Committee that the design of library spaces can affect learning and that flexible library spaces facilitate innovation.

Finding the Innovation Answers That Inform Library Redesign

It was time to look at the innovation literature. Table I summarizes David Thornburg's (2014) primordial spaces for learning: watering hole, cave, campfire, and life. Thornburg explored how these spaces functioned to meet human needs. The third column in table I applies Thornburg's space concepts to learners' needs in the school library. (New Zealand-based CORE Education describes "life" as mountaintops for celebration and sharing of learning, and sandpits for prototyping, experimenting, and playing.) Thornburg's spaces, as they apply to school libraries, accommodate the needs of individual and collaborative learning.

The MVRHS committee used these primordial space concepts as a backdrop for brainstorming library spaces that would meet their

Table 1. Primordial spaces for learning.

functions. Spaces they identified included:

- Additional small group spaces;
- New classroom space;
- Main room redesigned for flexible, concurrent uses;
- School archives space that could be used as a learning laboratory;
- Work space for project-creation materials and tools;
- Café;
- Furniture that supports reading and stimulates learning;
- Vibrant color;
- Exhibition space for students' creations;
- Whiteboards for sharing of ideas;
- Digital signage;
- Reading lounge;
- Expanded Innovation Lab;
- Centralized area for access to borrowed devices;
- Community outreach office; and
- Redesigned courtyard as outdoor learning space.

These space elements contributed to a vision of the school library as a hub of project-based learning—a place connected to the community of students and faculty teaching and learning together. We envisioned the library as “a place of shared purpose and universal access where continuous engagement with novel experiences contributed to new knowledge” (Chinosi and McGrath 2014). This vision had implications for new library functions. As committee members gathered feedback, they tested these new functions.

Innovation Lab as a Test Kitchen

In a study similar to the committee's approach to redesigning a school library Joan K. Lippincott found, “Libraries provide spaces to support the active, social aspects of learning” (2013). The school library can function as a place for students to become practitioners, to try things out, and even to teach. These activities allow a wide range of authentic assessment possibilities. For example, a student could ask peers to test an app or game he

designed, or students could gather their own evidence by surveying or interviewing diverse groups within or outside of the school community.

The MVRHS committee decided to locate the Innovation Lab in a room that was formerly the library office. Students who were invited to lead workshops showed TED talks and used the new library spaces to access collections, work collaboratively, and read independently. Students checked out Chromebooks, relaxed in beanbag chairs, and saw their work not only exhibited but celebrated. Now it was time to consider whether these innovations were better as well as new.

The committee members formulated questions to expand the services offered by the Innovation Lab. Would student-led workshops inspire other students? A student named Sarah brought the answer to us. She came to the school library for help in writing a paper on the history and applications of origami. It was clear she was passionate about the topic—but not about the prospect of writing about it. We asked whether she was interested in



sharing her knowledge with other students and teachers. She spent the next week preparing to teach while the school librarian publicized the event, and library space filled up quickly. We found that students-as-teachers yielded two benefits. The student assumed authority and became an expert on her topic through research and original design. Students-as-learners in the audience were engaged in a way that did not happen when they listened to an adult. Sarah, who is presently studying engineering in college, told us:

I got to see what it was like to be a teacher since I had always been seeing high school from a student's perspective. As students we don't understand why we take certain courses and why they are beneficial to our lives. Now that I actually taught a class I realize that keeping the attention of students and keeping them inspired or curious takes great patience. I also learned different ways to approach a problem when a student gets confused because a teacher is supposed to convey the information from the lecture to the students. When the students left with a smile or

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a feeling of accomplishment, I felt like I accomplished my job and felt proud.

We concluded that the school library could support and encourage students to exercise autonomy and mastery of their subject. The act of teaching elicited intrinsic motivation. This situation reminded me that autonomy and mastery, along with purpose, form key elements of motivation (Pink 2009). Research in learning explained why. Recent evidence in neuroscience found a statistical correlation between retention (and creation) of knowledge and social rather than analytic learning (Lieberman 2012). When students share their knowledge with peers they are using their "social brain." Studies show higher academic performance, even on tests, when non-social subjects (e.g., abstract concepts, mathematical formulas)

are presented in a social milieu (Lieberman 2012).

The committee addressed another question: Would the Innovation Lab effect positive change in the school? The Innovation Lab was conceived as a place to test ideas that might work on a larger scale across the school. Students and teachers staffed the Innovation Lab in equal numbers. One of our projects involved helping a teacher design a literary character study using Twitter. A student who developed his own prototype of the Oculus Rift, a virtual reality headset, ran a workshop to teach students and staff how to use it. We shared demonstrations by two teachers on successes and struggles in "flipping" their classrooms. We held a discussion/workshop following a screening of a video of James Paul



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Gee talking about how gaming can transform education.

These ideas were not prescribed. Rather, we made an effort to position the Innovation Lab to easily and quickly adapt to emerging opportunities. The school library has already become a “watering hole” filled with conversations about new ideas.

Will Chromebooks increase student productivity? And how would we analyze the evidence we collect to find our answers? We have many more questions to answer.

Implications for the Role of the School Librarian

The Innovation Lab has significant implications for school librarians. Seth Godin has described the librarian as “producer, concierge, connector, teacher and impresario” (2011). The librarian connects the dots between idea and action while bringing together teachers and students, affinity groups in the community, and even the world at large. In the following scenarios the school librarian was the mentor for college and career readiness. Paul wanted to create a short film

celebrating high school athletics on Martha’s Vineyard. Bryan wanted to go into business repairing iPhones and iPads. They interviewed other students and soon these “passion projects” came to life. Paul and Bryan continue to pursue these projects beyond high school.

At our school there is a growing culture of inquiry and innovation that includes clearly defined roles for the librarian. The school librarian works with classroom colleagues to incorporate problem-based learning and design thinking in their teaching. The school librarian can encourage innovative practices by delivering professional development on design thinking to students and staff. In our case, the innovation itself, i.e., the Innovation Lab, was the design object as librarian and library committee modeled design thinking to create a learning environment that supported constructionist principles. Evidence-based practice enabled the school librarian to engage in reflective practice, to ask hard questions, and to find the evidence that would inform revision and improvement of the Innovation Lab and its services.

A school that prepares students for the twenty-first century graduates young people who are agile problem-solvers, capable of mapping their own learning. Thomas L. Friedman described how companies such as Google value job applicants who are innovative and not just formally educated (2014). The challenge to our profession is to lead our schools in becoming active learning communities that encourage innovation. If students are engaged in challenging activities that interest them, they can learn anything. If educators are creative and informed they can change teaching and learning in their schools.



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