COTEACHING AND COLLABORATION:

How and Why Two Heads Are Better Than One

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Annotated Contents

Introduction

From both a theoretical and research perspective, coteaching is simply the most powerful foundational program element a teacher librarian can contribute to making a difference in teaching and learning. The establishment of the Learning Commons as a collaborative community of learners opens the door for the reinvention of instruction and learning experiences and, consequently, for effective school improvement. In the Learning Commons we experience many types and layers of collaboration, with everyone working together to analyze and improve teaching and learning for all.

This collection of articles from *Teacher Librarian* brings together the power of coteaching between classroom teachers and teacher librarians since the beginning of the Learning Commons movement for school libraries and computer labs was initiated some six years ago. We hope that this publication will serve as a catalyst for propelling the critical role of teacher-librarian as coteachers and learning leaders as the future unfolds.

The collection begins with articles to establish the theoretical background of why coteaching is the desired path. Principles for effective and sustainable school libraries eloquently developed by Ross Todd; the passionate vision for libraries as knowledge building communities of learners by R. David Lankes; the drive for learning leadership petitioned by Allison Zmuda and Violet Harada; and finally the telling results of a Canadian research study on assignment design led by Sharon Friesen set the stage.

The theory is then backed by a new and simple building level measure of coteaching impact by David V. Loertscher, and the studies of Keith Curry Lance, and Ross Todd to emphasize the proven positive results teacher-librarian collaborations have on student outcomes.

The next section is rich with exemplary practices that move the school library from the fringes of education and place teacher-librarians at the centre of teaching and learning dynamics in a position to collaboratively lead learning in their school learning communities.

The Learning Commons as Collaboration Central

The collaborative dynamic in the Learning Commons is readily apparent. The learning environment has been purposefully designed to welcome and support the needed interactions of students and teachers. The results are purposeful collaborations and the building of enthusiastic learning communities. [1]

[1] Loertscher, Koechlin and Zwaan. 2011.*The New Learning Commons 2nd Edition.* Salt Lake City, UT: Learning Commons Press.

The last section celebrates a number of articles by teacher librarians reporting and showcasing their success in their schools and explaining how they went about building their own track records. This essential collection, all in one handy volume is a treasury of the best thinking and practices as teacher librarians build a learning commons program and demonstrate their indispensability.

Finally we have included 3 posters that profile very important concepts to help foster a coteaching culture in your school.

- 10 Reasons to Partner with a Teacher Librarian
- Learning + Commons = Learning Commons
- The Virtual Learning Commons
- The Successful Learner

Thus, this collection can serve as a conversational piece for professional learning or the basis of working with a school faculty on furthering coteaching as a school improvement strategy. Make use of collaborative virtual tools to build conversations in your school and district.

Some questions you may want to explore:

- How can we track the impact of coteaching in our school?
- How can we build on the successful collaborative experiences in our school library learning commons to create a school wide Professional Learning Community?
- What are the present roadblocks to collaboration and how can we overcome them?
- How will collaboration help teachers redesign and implement more effective teaching and learning strategies?
- What are the attributes of an excellent cotaught learning experience?
- What are the benefits of coteaching for teacher-librarians, classroom teachers, other specialist and students?
- What can I do become a better collaborator/teaching partner?
- How can technologies enhance coteaching efforts?
- How can I contribute to the collaborative culture in my school?

Part 1: The Why of Coteaching

The major ideas presented in the articles by Todd, Lankes, Zmuda,Harada, and Friesen converge to build a strong case for the role of coteaching as central to a teacher librarian's job description. The editors would argue that this role trumps all others in the Learning Commons program by fusing the consumption of knowledge with the powerful creation of knowledge concept.

Teacher librarians not only curate the best of the best from published sources, but encourage a participatory community of adults and youth in creating knowledge and sharing it in many forms of media with their collaborative teaching and learning partners.

"The reality of our lives is shaped by what we believe to be possible or impossible."

The Power of (in) the (Im)possible

Principles of the Possible

DR ROSS J TODD

Peer reviewed. Accepted for publication, December 1, 2013.

At first, I just did not know what to title this paper. I wanted to focus some formative ideas around "*possible*" and "*impossible*," as they pertain to the ongoing development of school libraries, and to use the lens of my ongoing research to explore these ideas further.

And so there were a number of variations: "The Power of the Possible," "The Power in the Possible," "The Power of the Impossible," and "The Power in the Impossible"—all with subtle implications. Embedded in this play on words was the sense of moving forward, overcoming contextual, perceptual, and personal limitations that get in the way of development. Two quotes have stuck with me on the impossible–possible dichotomy. First, that of Audrey Hepburn, who once said, "Nothing is impossible; the word itself says ''I'm possible''!" (Brainy Quote 1). And then there is George Bernard Shaw's statement: "Progress is impossible without change, and those who cannot change their minds cannot change anything" (Brainy Quote 2). I see the impossible–possible dichotomy essentially as a construction of the imagination, a limited one at that, reinforced by complex contextual dynamics. The reality of our lives is shaped by what we believe to be possible or impossible. The challenge is to dream beyond the borders of our own experienced world and its boundaries, letting go of the limits to our own imagination and action. Notions of possible, impossible, and limits all revolve around "i." To think the impossible wraps us in an impermeable boundary or, indeed, locks us out of a world of opportunities.

POSSIBLE PONDERINGS

Russian psychologist Galina Ivanchenko argued that the sphere of the impossible lies "beyond" the limit of the possible and defines an individual negatively. She speaks rather of the sphere of the possible," a system of interconnected target values that can be achieved through changes of the subject's actual situation due to either its own immanent dynamics or the subject's activity" (Ivanchenko, 1993, p. 1). According to Ivanchenko, at the heart of the possible is understanding the context of individual action, compelled by a belief that the current system and context can be transformed, that it is not fixed and unable to be changed, either in the short term or long term. Her work was deeply influenced by psychologist Lev Vygotsky, whose sociocultural approach to cognitive development and educational action has contributed the notion of the zone of proximal development. According to Vygotsky, the zone of proximal development is "the distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance, or in collaboration with more capable peers" (Vygotsky, 1978, p. 86). Vygotsky speaks of the possible, not the impossible.

SCHOOL LIBRARIES AND THE IMPOSSIBLE: ENOUGH IS ENOUGH

An analysis of the history of school libraries and their development over the last century is a testament of realizing the possible. It was often slow and sporadic, lacking local support, and without precedent for procedure. It is a history filled with the story of champions, often including children raising money for their early upkeep,

and numerous setbacks along the way. One of the early researchers on the impact of school libraries on student learning was Mary Gaver, a professor in the Graduate School of Library Services at Rutgers University. She led a major research study, *Effectiveness of Centralized Library Service in Elementary Schools,* (1963), involving 271 schools in 13 states. She compared the test scores of students in three learning environments: schools with classroom libraries, schools with centralized libraries run by nonlibrarians, and schools with centralized libraries run by librarians. Students in schools with centralized libraries managed by qualified librarians tended to score higher than students without centralized libraries or qualified librarians. She held the strong belief that "with the school library literally the heart of the educational program, the students of the school have their best chance to become capable and enthusiastic readers, informed about the world around them, and alive to the limitless possibilities of tomorrow" (Gaver, 1958). Gaver's pioneering study blazed a trail for school library research at a time when school libraries were in their infancy. She saw the possible.

As a researcher gathering data over many years now examining the status, continuous improvement, and impacts of school libraries, I have heard many stories of the impossible, such as:

I formally teach grades K–4 and have not had the opportunity to collaborate on projects with the classroom teachers in those grades. I see the children 40 minutes/week. This is a 100% increase over last year, when my predecessor saw grades 2–4 only 20 times per year. Under these conditions, it is not possible to identify specific learning outcomes resulting from library instruction. (Todd, Gordon, & Lu, 2010, p. 170)

I am the teacher's prep, and I teach 33 classes a week in Library, Multi-Media (I've become the quasi-computer teacher), Remedial Math classes, and last year I taught Family Life classes for 35 classes. I have no time to collaborate with my colleagues on projects, and it is very difficult to get time to plan my classes and have access to the library for students and teachers. I would love to be more active within my county professional organization, but so many meetings are scheduled after school, I can't attend. (Todd, Gordon, & Lu, 2010, p. 190)

A commonly stated impossibility centers on getting "administrators to really understand what we do so that they would see the instructional value of our programs and not just a place to find a book or schedule an event (closing us down)—some get it, but some really don't" (Todd, Gordon, & Lu, 2010, p. 190). Enough is enough.

SCHOOL LIBRARIES AND THE POSSIBLE

Helplessness is a way of defining the impossible. We feel we have no control over or impact on our situation. According to a long history of experimental and qualitative research in psychology and sociology, helplessness is a learned behavior (see, for example, Peterson, Maier, & Seligman, 1993). Peterson, Maier, and Seligman (1993)argue that helplessness is shaped by the problems that arise in the wake of a sense of uncontrollability and is reinforced by constructing a mental model of the impossible. Simply put, the future of school libraries, left in the hands of the impossiblists, means that there is no future.

On the other hand, the two most recent research studies that I have undertaken remind me that school libraries, in the hand of the possibilists, do have a strong and vital future. The two studies that inform this paper were firstly, Phase 2 the New Jersey School Library Study "One Common Goal: Student Learning," which was undertaken by CiSSL. researchers in 2010–2011 (Todd, Gordon, & Lu, 2011), and secondly, my current study through CiSSL titled "Collaborative Inquiry in Digital Environments" (Todd & Dadlani, 2013). For the purposes of this paper, these are labeled Study 1 and Study 2, respectively.

Study 1 (Phase 2 of the New Jersey School Library research) sought to examine the dynamics of twelve school libraries that were considered to contribute richly to the learning agendas of their schools, and ones where their future was well within the realm of possibility, at least as assured by

school principals of these schools. Using stories and narrative forms as methodology, the researchers formed twelve focus groups as the basis for data collection, to gather detailed insights into students using and learning through school libraries, faculty and administrators' attitudes toward and values of school libraries, use of school libraries including enablers and inhibitors, faculty and administrators' perception of the school library's impact on student learning, sources of evidence of impact, principal/administrator support for school libraries and their impact on learning outcomes, and perspectives of the future of school libraries. Data were collected from ninety-seven participants: 49 percent were classroom teachers; 22 percent had school librarian positions (either full time or part time); and 29 percent had school or district administrative positions. Sixty-five percent of the focus group participants were female, and 35 percent were male (Todd, Gordon, & Lu, 2011, pp. 11–16). Full documentation of this study is available at the CiSSL website. Additional publications from this study are Todd, 2012a, 2012b, and this paper also draws on ideas expressed in these.

Study 2 ("Collaborative Inquiry in Digital Environments") is ongoing. It seeks to understand the process and outcomes of an inquiry-based project involving teams of students collaborating for the creation and production of knowledge of a curriculum topic. The research involved two classes of ninth-grade English students in a New Jersey public co-educational high school. The school has a long history of collaborative inquiry involving the school librarian and classroom teachers. In this study, we are tracking the process of how student teams work together to build a shared representation of knowledge, examining the dynamics of this co-construction, and tracking students' engagement with information sources and how they transform their information into knowledge. Forty-two students were randomly assigned to thirteen groups and given a research task centering on the construction of a scholarly argument surrounding the literary merit of a chosen work of fiction. In addition to class-based instruction, students undertook their inquiry task in a class wiki environment set up by the school librarian, where the students, teacher, and school librarian came together to discuss research topics, establish working relationships, plan and manage tasks, collect information sources, and work together through the process of co-constructing their products, which included a class presentation, visual display, and annotated bibliography. The wiki environment enables researchers to capture and track their research and writing processes, their use of information sources, interpersonal dynamics and decision-making processes, and feedback from the instructional team. In addition, data were collected using the CiSSL-developed Student Learning Through Inquiry measure at the start and end of the inquiry task to capture cognitive, affective, and behavioral dimensions of learning (available at http://cissl.rutgers.edu/joomla-license/impact-studies/57-impact-studies-slim). Students also wrote daily reflections and commented on other students' journal entries, generating 336 journal entries (Todd & Dadlani, 2013).

PRINCIPLES OF THE POSSIBLE

In the schools that we have studied, it is clear that libraries are part of the possible. They are valued as part of the culture of the school, a value that has been built up over time, positioning the school library as an integral part of the identity of the school and its operation, inextricably linked to the learning going on in the school and the learning success of the school. What made this possible? Several core ideas, which I have labeled "Principles of the Possible," emerge out of the two studies identified above and are illustrated by a selection of statements made by participants.

Principle 1: The primary function of a school library is pedagogical, with access to quality information as the foundation of meaningful pedagogy.

From the perspective of the participants in Study 1, the school library was not primarily viewed as an information space; rather, it was seen as a pedagogical space driven

by a learning-centered vision, one where access to quality collections both print and digital was seen as essential. They saw that the library functioned primarily as a whole-school pedagogical center for all faculty and students to develop intellectual capacity though engagement with information in all its forms and to realize core curriculum outcomes. The library was viewed as a common instructional zone for the whole school—both students and teachers. It was perceived as different from the regular classroom. For the students, its primary purpose was building capacity for critical engagement with information and producing knowledge; and for faculty, it was seen as a common center of learning innovation, experimenting with information and technology to enhance teaching skills using information and technology, and integrating multiple media:

The library serves as a learning tool to support every avenue of education rather than just as a microscope just supporting biology or a chalkboard just supporting note taking. So the library becomes more all encompassing as a tool that supports learning. (language arts supervisor)

I think calling it a library is not accurate—to me it's become a learning center that has resources. When I see students in here, they're doing research, maybe teacher-directed, but you know, I see a lot of them come in just to find out general information, to learn something—maybe not related to school—so to me it goes far beyond what we think a library was, and the place is always hopping. (principal)

Teachers in Study 1 believed very strongly that the pedagogical work with the school librarians had a significant impact on their own teaching processes in the school and the improvement of their teacher quality, as well as student engagement with learning:

It's turned my world upside down. I've thought as I've never thought before; I've taught as I've never taught before; and I see kids going places—in their minds, in their lives, and in their goals they never dreamed possible. (social studies teacher)

The librarian encourages a collaborative spirit. . . . I'm doing a blogging project in January, and back in October the librarian spoke to me about collaborating with me and helping me teach the children how to use resources that frankly I wouldn't do as good of a job doing by myself. (language arts teacher)

And that teaching the teachers, that has really been beyond books and research, really the tools that they have made available to teachers have made me a better teacher, have helped me to create more meaningful and efficient ways to assess the kids as well as to engage them. So it has made my classroom so much more diverse in terms of what teaching modalities as well as ways that they can demonstrate that they understand the content. They have given me so many tools for my toolbox that have made me a better teacher. (English teacher)

Basically like guided inquiry on students' and teachers' side as well—like they're guiding you along the way, and they're helping you break down preconceived notions of something you need to research. I think of the library here as a think tank. . . . That's true inquiry. (science teacher)

Principle 2: The role of the school librarian is primarily that of teacher, coteaching with classroom teachers to develop curriculum standards.

Part of the cultural dynamics of the schools in both studies was the high expectation that school librarians were primarily coteachers who undertook a very direct, active, and visible role in engaging in shared instruction to meet curriculum standards.

From a curriculum perspective, the library is the place where the curriculum gets implemented. And not just pieces of the curriculum but the whole curriculum. For me, [the school librarian's] ability to work with other teachers is very important for that. She's not seeing one part of the knowledge that we're trying to impart to students; she's seeing the whole picture and that allows her to bring language arts skills, to science skills to history, and so on makes it easier. (director of academic services, district curriculum supervisor)

I really think that because the librarians are coteachers for the most part, the kids get to see us working together with another adult. And I think that's really important. They get to learn how to collaborate, how to be curious, and how to work through problems together. Maybe that's a hidden type of learning, but I think that's one of the most valuable things that they get out of it is that they get to see us work together and model what we want them to be able to do in small groups and together as a class. (English teacher)

We're still in a time where we don't believe our information centers are as powerful as they are, as our educators believe. Our librarian is a powerful educator. Our information center is as good as the teaching that goes on there. (principal)

The librarians are not necessarily librarians—they are media teachers. They're teachers first. And their role is entirely different here than anywhere else I've ever been. Because they are part of the growth concept. And they have challenged themselves to be on the cutting edge of what's going on and what teachers need. So what they do is challenge themselves to go out and figure out how best to service what our needs are. And in order for them to do that, they have to listen very well, they have to be willing to get outside of their comfort zone and be educated, and then they work to integrate this through their teaching. . . . I really think it's the collaborative atmosphere that really brings us together as school, and the library, as we talked about, is the center of that. (principal)

The school librarians' role as teachers defined, defended, and sustained their presence in the school and was the basis for the allocation of funding to ensure that this instruction was underpinned by a strong and quality information and technology infrastructure. Their role as coteachers was clearly expected, understood, valued, and tangibly supported.

Principle 3: An inquiry-centered pedagogy defines the instructional role of the school librarian.

The school library was seen to contribute directly to quality teaching in schools through the provision of inquiry-based instruction and implemented through in-

structional teams. The instructional role was not seen by participants to be underpinned by some professional mandate to teach information skills; rather, it was founded on a pedagogy of resource-based inquiry that focused on developing analytical and critical capacities to build deep knowledge and understanding of curriculum content. School librarians were clearly seen as bringing an articulated, resource-based pedagogy to their instruction, and they were valued as experts in this regard. As quality teachers, they had a strongly visibly pedagogy that they brought to the table. The school librarian in Study 2 had a well-established pedagogy centering on Kuhlthau's (2004) Information Search Process (Harrington, 2011), which very visibly framed the sequence on lessons the students engaged in as they progressed their inquiry (Todd & Dadlani, 2013). Teachers in Study 1 were aware that the core professional knowledge of librarians centered on creative pedagogies for enabling both students and teachers to become expert users of information and producers of knowledge. Teachers freely spoke of learning in the school library as involving inquiry, developing students as expert researchers, and modeling the process of resource-based inquiry for them as teachers to enhance their own teaching in the classroom:

There are the ideas such as media literacy, visual literacy, information literacy—they're all folded under the umbrella of 21st-century inquiry skills . . . and inquiry is the heart of our school. (supervisor of instruction)

So in terms of contributing to the learning process, the library does it, but on two different levels. In terms of content support, but also inquiry skills support. And sometimes those skills are more imperative than the content because they are lifelong skills that the teachers are supporting through their content as well. (language arts supervisor)

They teach the students, but then they are also a resource for the students that are learning an inquiry process that is very sophisticated and really asks a lot of them. (English teacher)

The staged process of inquiry-based learning was valued by classroom teachers. Students were not left to their own devices to undertake substantial research projects; rather, the inquiry-centered instruction provided jointly by collaborating teams was carefully planned and staged to take students though a research journey and was used to carefully diagnose particular learning needs to ensure successful research:

I would like to say the librarians do two things exceptionally well in process: [they] spend a considerable amount of time planning for teachers to understand the research process and helping them align what part of research cycle or stage they might want to start with. So they model for teachers what is good practice of inquiry and do the same for students. They model student-learning behaviors. And they seem to be able to seamlessly do that, whether they're working with adults or students. (teacher)

We really see the connection between what we're doing in our own classrooms to what we could possibly do here. It's a great experience for the students to not only learn how to research, and to learn how to explore and inquire through various media, but to have somebody else who is a support and a guide and a facilitator, besides the classroom teacher. . . . That collaboration is highly effective. I look at that as one of the strengths of our current program. (teacher)

They spent a lot of time with us understanding the components of research. Within that they made sure we knew process but we knew the also tools and how to use that within context of any class that a teacher wanted to do research in. We can model effective research for the students. (supervisor of instruction)

Principle 4. The focus on curriculum content and knowledge development enables the integration of inquiry capabilities in a meaningful way.

For years I have heard the claim that school librarians are not about content but rather about process. I think this is problematic. Students learn curriculum content, and teachers teach curriculum content. Students learn declarative knowledge about geography, history, science, and the like. Effective learning of curriculum-based knowledge, however, engages the mind with ideas—the information base to creating curriculum knowledge—and cognitive and affective processes to do this in a powerful way. In Study 1, instruction through the school library first and foremost sought to enable the development of core content curriculum standards. Teachers recognized that resource-based inquiry was directed first to content knowledge and enhanced in a deep way through inquiry-based interventions that developed engagement, depth of knowledge, and mastery of thinking processes to create knowledge. Teachers saw that the school librarians were not implementing a "library" curriculum in isolation to the core content standards; rather, they were curriculum content experts bringing to the learning experience the intellectual and technical capabilities of engaging with information to construct knowledge and to use a range of creative tools for students to represent that knowledge. This required considerable professional trust, negotiation, openness, sharing of viewpoints and opinions, and stepping outside of the box to engage in collaborative learning directed to the transformation of information into knowledge:

I know from my administrative capacity I think one of the things we're stressing is the idea of providing multiple pathways for learners to demonstrate understanding—opposed to traditional assessment methods of valuing memorization and recall—envisioning new ways learners can demonstrate their understanding. Can they put together a podcast, a multimedia presentation? Again, it's just not putting something together because it looks pretty, but embedded within that are core principles that students are achieving. (supervisor of instruction)

I would start by saying that probably the greatest asset is that the librarians see themselves as coteachers in every situation, instead of maybe what we always thought of as a traditional librarian. So I see that as our greatest strength. They are individuals who truly believe that they are coteachers with teachers. They are impacting a very specific type of knowledge that they want the students to come away with, whether it's research or media literacy leading to content knowledge. They are approaching it from a teaching standpoint, which has

not always been my experience. (principal)

They are learning to think through all of the information around them, develop their ideas. The main business in this library is thinking. (principal)

The library ... represents that thirst for knowledge –where students can go if they want more. I think not only physically is it that space, but also psychologically representing that to them, because our jobs is also to create a thirst of knowledge. ... Having that space for them is important for them, to go there, and to know that's there, and that someone will guide them through. (teacher)

The expectation that coteaching would lead to the development of content knowledge was clearly expected in Study 2 by the students, where they worked in teams to produce an argument about the merit of a literary work. As shown in Todd and Dadlani (2013), students highly valued the opportunity to work in groups because of the affordances it provided for them to build knowledge. Their posttask reflections predominantly centered on curriculum knowledge. Students particularly valued the group process for providing opportunities for sharing and critiquing different perspectives and viewpoints on their chosen fiction to build their argument, and at the same time, expanding their own repertoire of knowledge about the work under study. They saw the outcome in terms of a better quality product:

I like working in a group. When working with others, I get so many other views and ideas that I had not previously thought of. This really adds depth to the final product. (student)

I really like working in groups. It gives different perspectives on the same big topic. (student)

Working in groups allows for different ideas to come in to play, creating a sharper focus for the task. (student)

Principle 5: The collaborative nature of teaching is the core dynamic for integrating the school library into the culture of the school.

In Study 1, the collaborative nature of teaching emerged as the central dynamic of enabling the work of the school librarian to be integrated so widely and so deeply into the learning fabric and culture of the school. Underpinning the notion of "team work" and "team player" was the mutuality of working toward one common goal—enabling core curriculum content standards—and this was clearly the case in these school libraries (Todd, Gordon, & Lu, 2011, p. 67–72).

And [the school librarian] will be in your classroom working with you as well. When we do our research paper with our juniors, the media specialist has come to my class, with my freshmen as well, multiple times, and there is a skit we go through together as we are teaching plagiarism. And you know they have fantastic lesson plans—they are not just attached to the books, attached to the media center—they are all over the school and part of the team. That helps to lure the kids back here as well. (English teacher)

We have a nice teamwork approach. I have my strengths as a historian, [the librarian] has her strengths as a media specialist, and we work really well together. (teacher)

The collaborative teaching role is key. . . . They are helping you build your lesson—you're not just coming up here and saying here's what I want you guys to do. They are helping you build that lesson and working together with teaching it. (history teacher)

Where there's a strong coteaching model, it's hard to know who the regular ed teacher is, who the special ed teacher is, where one person's role ends and another person's role starts, and in a really good coteaching model there is joint ownership of the lessons, presentation, the learning that goes on, not just for some of the students but for all of the students, so I think what you see here is a true coteaching model where there is teaming going on. So what happens is, I think, the librarians challenge the teachers to step outside of their comfort zone because they step outside of their comfort zone. (principal)

Principle 6: School libraries constitute and advance social justice.

While there are multiple interpretations of the concept of social justice, at its heart is the belief that all people deserve equal social, political, and economic rights; treatment; and opportunities and that even at the cost of broader social welfare, such rights should not be foregone (Rawls, 1971; Zajda, Majhanovich, & Rust, 2006). Concepts such as freedom of information and access to resources have long been central to professional and scholarly literature of libraries. Vincent (2012), writing in the context of public libraries, cited a definition of social justice as "every one of us having the chances and opportunities to make the most of our lives and use our talents to the full" (p. 349). Given the substantive discourse surrounding the future of libraries and their perceived value in society, we examine the extent to which social justice concepts and principles were embedded in the narratives surrounding effective high school libraries (Dadlani & Todd, 2013). The Study 1 analysis revealed the predominance of four social justice categories embedded in the broader social justice scholarship: (1) utilitariansim, (2) equity of resources, (3) equity of access to advantage, and (4) equality of capabilities; these attest to the role of the school library in advancing social justice concepts.

The first category, utilitarianism, contains comments and strategies that support the greatest good for the greatest number. For example, teachers decided to use collaboration between the teacher and librarian to provide equitable access to information, instructional expertise, and personal attention through a division of labor:

I've got 25 kids—how do I help 25 kids in one 42-minute class period? But when you have someone else who's on the exact same page that you are, the kids get so much more assistance and personal attention. (teacher)

In the second, the equality of resource category, teachers spoke about how time and the variety and quantity of technological resources (including both individual experts and physical equipment) either helped them in achieving more equal treatment of their students (in the cases where these resources were available) or hindered them (where the resources were wished for):

Because 42 minutes—six minutes to get

them all seated, set, and ready, another five minutes to go over what you need to go over, if not longer—you only have about 20 minutes to grab it up and then they're out. . . . We just need more equipment. . . . It just extends the bounds. (teacher)

The third social justice category, equality of access to advantage, centered on creating opportunities for lifelong learning. Teachers saw the school library, its leadership, and its resources as lifelong and welfare based, and as such, would enable their students, and indeed themselves, to deal with twenty-first-century information and technology complexities beyond the school environment:

Empowering students to be able to control their own learning to be responsible for it. To know how to go about it. How to figure out "how to figure out." Giving them those 21st-century skills that they're going to need to move forward. So it's almost about empowering them with a skill set. (teacher)

The fourth category, equality of capabilities, focused on school libraries providing equal opportunities to those who are disadvantaged through not having access to resources outside of school, as well as providing a comfortable and safe environment in which one could elicit the particular help required on an individual level:

So many of our students, in addition to their households not having Internet access, a lot of their households don't have a lot of things that teachers take for granted. . . . It's just that they know that they can get work done here that they can't at home. . . . We need special resources. . . . We looked at their skills . . . and matched those up with materials, so we came up with this solution, which helps the kids; it helps the teachers who are not particularly well equipped to deal with that issue in their class. (principal)

From the perspective of the forty-two students in Study 2, social justice was expressed in terms of equity of contribution, with the widespread concern that the intellectual input and workload to complete the group task would be shared equally and fairly across the group. Students valued the affordances of group work in terms of having the work "split up evenly" and being "spread out among the group"; when the workload was shared among the group members, they believed that "no one would be overloaded." They were concerned about equal effort and all team members contributing their fair share of work (as opposed to social loafing), as well as all team members receiving the same assessment credit when effort was not evenly distributed: "Usually the entire group does not work together," and when this does not happen, "to grade several students on one project is unfair." Students valued commitment to equitable division of labor: "The best part about working in a group, which is why I prefer it over individual projects, is that the workload can be divided among the group members. For individual projects, one must do all the work by himself, but for group projects, each member needed only to do 1/3 of the actual work, making it a lot less stressful for us." "There is less pressure on one person because the work can be divided" (Todd & Dadlani, 2013, pp. 8, 11). The collaborative inquiry project provided rich opportunities for students to develop, experience, understand, and value social justice at work.

Principle 7: School libraries connect community and the world through digital citizenship and learning for life capabilities.

Participants in Study 1 saw the school library as a community connector—connecting people inside and outside of the school to expertise, resources, and space and to life, living, and working in the world. School libraries were a schoolwide opportunity to open the beyond-school doors. This was further enabled by the instructional role of school librarians in situating meaningful learning experiences with digital information and information technology and developing students as digital citizens with life skills of recognizing, accessing, and using quality information in multiple modes and across multiple platforms; learning to participate in digital communities in collaborative, ethical ways to share ideas, work together and produce knowledge; and understanding the identity, life, and safety issues inherent in learning, living, and playing in digital communities:

I think there's some broad assumption that because we're in the 21st century, people understand they may understand this. . . . The assumption that kids know because they're digital natives is one you can't make. (supervisor of instruction)

Students are also learning how to be responsible online—teaching students they're responsible for what appears on that screen. (language arts supervisor)

Basically, digital literacy is not an add-on here. It's infused [in instruction] through the school library, where students can access each content area of the school curriculum. . . . [Digital literacy] is not a standalone; it's cohesive and fluent, and pretty well received by students and faculty. (principal)

In Study 1, faculty saw that school libraries make lasting contributions rather than temporal ones, such as test score achievement, particularly in terms of developing a range of capabilities and dispositions that can last a lifetime and have salience beyond schooling and not merely school-based achievement. This included career skills, communication skills, building self-esteem and self-efficacy, personal management skills, and project management skills:

By getting [students] involved in the changes to prepare them for this century and the digital world . . . so that they have the skill set that they need. It's about process not product. [School librarians] jumped right on that, so they were willing to give up their [traditional role] and look at, "What does our role need to be as we move forward to prepare our kids?" So because they have been in that discussion for at least the last two years, I think we've benefited greatly. (principal)

In Study 2, students reflected on their group experience and believed that they learned important life skills, such as interpersonal skills, skills related to the mutuality of working to a common goal, and project management and conflict negotiation skills, for example: "The group project was a good experience. It helped me know some students more intimately; more importantly, it taught me how to compromise and work with others" (Todd & Dadlani, 2013, p. 11)

FUTURES POSSIBLE: CONCLUSION

The principles of the possible outlined above are the start of a *futures possible* conversation for effective and sustainable school libraries. These principles center on the school library as a center for pedagogical development, innovation, and experimentation; the pervasive visibility of the school librarian as a teacher and coteacher; an inquiry-centered pedagogy; a content knowledge–outcomes orientation; and the advancement of social justice and learning for life capabilities.

These principles orient the school library of the future from an information function to a pedagogical function. Such an orientation raises fundamental questions for the education of school librarians and what is at the core of their professional information: pedagogy or information. It suggests the formal evaluation of school librarians as teachers and the measurement of learning outcomes through coteaching. It raises the possibility of employment decisions made on the basis of quality teaching measures. The principles also offer insights into how school libraries might be envisioned, marketed and connected to wider community initiatives and social agendas.

"There is no use trying," said Alice. "One can't believe impossible things."

"I daresay you haven't had much practice," said the Queen. "When I was your age, I always did it for half an hour a day. Why, sometimes I've believed as many as six impossible things before breakfast."—Lewis Carroll, *Through the Looking-Glass*.

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"To truly be a 21st-century school librarian, you must marry function with mission."

Joining the Conversation

School Librarians as Facilitators of Learning

R. DAVID LANKES

In October of 2010 Joyce Valenza posted a very powerful manifesto for 21st-century school librarians.[1] It lists a variety of cutting-edge practices and principles to enhance learning and service to young adults.

[1] http://www.teacherlibrarian.com/2011/05/01/manifesto-for-21st-century-teacher-librarians/

It begins with a question asked by another school librarian: "In the 21st century, what does a school librarian do?" It is a question that is being asked across library types. Public librarians are trying to come to terms with their role in tough economic times. Academic librarians are wrestling with the migration to an overwhelmingly digital collection. Medical librarians are trying to understand what it is to be embedded within medical teams. Throughout the field, people are asking, "What does a librarian do?"

While this seems like a pertinent question, and one that Valenza does a fantastic job of answering, she can only do so because she has spent a career answering a much more fundamental question: Why do we do it? As we all struggle to identify best practices, in essence to replicate the work of outstanding school librarians like Valenza, we need to look deeper than functions. For all the attention the manifesto has received, remember that it is only one part of a much larger conceptual journey for Valenza and other outstanding school librarians. To truly be a 21st-century school librarian, you must marry function with mission.

For many this will sound very familiar as we increasingly move from output assessment (How many books did we circulate?) to outcome-based evaluation (Did the books make any difference?). Without a clear understanding of our mission—the why we do things—librarianship has two choices: become increasingly irrelevant, performing tasks no longer needed, or lurch from new trend to new trend in hopes that these new functions will somehow work. Why do we use Facebook or Twitter? Will Google+ save us? Should we be buying eReaders? All of these questions beg one much more fundamental query: Why?

I realize that such an existential question may seem indulgent or too abstract in the world of immediate need, such as a school. Yet without answering such a fundamental question, too much time is spent on experiments and false starts. In essence, by not asking the big question, you end up asking it a million times in smaller venues. "Should I invest in a Kindle? Why? What will I accomplish?" or "Should I fight for my book budget or put the money in online licenses? Why?"

I argue that a functional view of librarianship has led us to focus too much on collections and artifacts (books, web pages, and the stuff we can point to) and not enough time on our most basic collection: our communities. It is time for a new librarianship, one centered on learning and knowledge, not on books and materials, where the community is the collection, and we spend much more time in connection development instead of collection development.

IT IS THE MISSION THAT DRIVES US

No school librarian I know would dispute that they are in the learning business. The collection, the facility, the websites are all there for a purpose: the learning of youth and the improvement of learning across the school. I argue that this purpose is

actually informative to the mission of all librarians. In public libraries, librarians are aiding municipalities to make better decisions through knowledge. In academic libraries, librarians are working with students and faculty to create knowledge in the classroom and the laboratory. Corporate librarians help businesses learn more about markets. I put to you a general mission for all librarians:

The mission of librarians is to improve society through facilitating knowledge creation in their communities.

This may seem very broad, and it is. In fact, many professions could see themselves in this work. Teachers, after all, seek to facilitate knowledge creation.

I argue that in the particulars of this mission—how the components are understood—the true nature (and power) of librarianship becomes evident. School librarians are not simply teachers in a different kind of classroom; they provide a unique and increasingly important kind of knowledge facilitation beyond books and information literacy.

KNOWLEDGE HAS NO COVERS, NO BINDINGS, NOR PAGES OF INK

At the core of the mission is knowledge. We often use the words *information*, *knowledge*, *resources*, and *books* interchangeably. Yet what do we really understand about knowledge? Without a firm understanding of what knowledge is, and how it is created, how do we ever know how best to facilitate its creation?

The first thing we must recognize as librarians is that knowledge is not a thing, not static, and it cannot be recorded. Once again, I know this sounds broad and abstract, but it has profound effects on how a school library is run and organized.

Think of a book for a moment. Is it knowledge? No. Don't believe me? Take a book on learning how to read and hand it to someone who can't read. It is useless. It takes someone to interpret the text. Take a book in Chinese and hand it to someone who can't read Chinese. It is in the reading that the written word (or image) takes on meaning. What's more, that meaning is different to different readers. To some, the Harry Potter books are fabulous gateways to literacy; to others they are gateways to sorcery and paganism. Are the *Twilight* books appropriate for middle schoolers? Does *The Catcher in the Rye* really promote bad behavior?

These seem like obvious examples, but they show that books (or web pages, or articles, or DVDs) are not simple channels that transfer knowledge from one place to another. Instead, knowledge is very independent, distinctively human, and unique to each of us. To be sure, there is a strong social competent to knowledge as well. That is, the culture we live in shapes how we interpret texts and situations. My point is that if as a librarian you see your primary mission as organizing books and a collection, you are not directly involved in the learning of youth.

IT IS IN CONVERSATION THAT TRUTH AND WISDOM ARE FORGED

So if knowledge is not a thing that can be recorded, what is it, and how does one get it, and more importantly, how, as a school librarian, can I make that process as effective as possible? The question of knowledge is hardly new. Philosophers have been wrestling with that for centuries. However, what we need is something a bit more pragmatic. Pragmatic, like Gordon Pask.

In the 1970s, Pask was working on teaching machines to think. He started, pragmatically enough, with something he already knew: humans. What he found was summed up in something called conversation theory[1]. Pask found that we learn through conversations. This can be understood at the simple level of two people talking. They go back and forth on a subject until both parties feel they have mastered some concept. In essence, they have created knowledge through conversation.

However, conversation theory doesn't stop at two people talking. Two groups can

[1] Pask, G. 1976. *Conversation Theory: Applications in Education and Epistemology*. New York: Elsevier.

talk (faculty to students), two organizations can converse (school district to state), and so on. The way in which these entities gain knowledge remains consistent. Just as we can aggregate up to groups and organizations, we can also break these units up. So, in essence, someone can converse with themselves. Now at first this may seem odd, but it is in fact the central concept in much of learning theory. Call it critical thinking, or metacognition, learning is a process of an internal dialog making sense of new information.

So back to our earlier discussion of reading. If knowledge is not found within a book, then why are books (and web pages, and articles) so useful in learning? The answer is that they provide stimulus to an internal conversation. When you read, you are engaged in a dialog, not with the book, or the author, but with yourself. "Do I believe this?" "How will I use this?" "What is this like?" The important thing to note is that this internal dialog plays by the same rules and structure as the external ones mentioned before.

So what is the structure of a conversation, and how does it affect what you do as a librarian? Pask lays out four components to a learning conversation:

Component	Discussion	Implication for Practice
Conversants	The entities (people, organizations, parts of one's self) engaged in dialog. This can be two people, two organizations, or two parts of the same person.	Conversants matter in that there are at least two. This means that to learn is to engage in a dialog, not simply present information in a single direction believing it to be absorbed. Learning is participatory, and each party in the conversation (teacher and student, for example) shapes and is shaped by the conversation.
Language	The semantics and syntax used to convey messages. There are two types of language: negotiation language to establish a conversation, and content language to share concepts.	Different communities have different content languages. Think about the Dewey Decimal System versus texting short hand. While sometimes it makes sense to teach one community (say, students) a specific content language (like scientific terms), often it is more effective to use the language of the group you are talking with. Furthermore, as we build systems to help people find information and communicate, these systems need to support multiple content languages. Think about the differences between Facebook and your library catalog.
Agreements	Common understandings of the topic being discussed. One of the most important agreements is agreeing not to agree.	Agreements are beyond facts and also include opinions and feelings. Many of the most interesting topics in life and school have few hard edges and involve a great deal of interpretation. This implies that we need to teach not only facts but also context and analysis skills.
Memory	The relationship of agreements held over time that is dynamic.	Our memories are not simply sets of ideas stored in a pristine and hierarchical structure. Rather, they are agreements that are related to each other in complex webs. We remember things as associations.

Understanding knowledge, how it works, how it is dynamic and relational, not static or hierarchical, changes how librarians facilitate learning and knowledge creation. For example, inquiry-driven models of learning, where students use their own knowledge structures, are very effective. Working in teams that encourage conversation and participation better match how we build knowledge than simple rote or isolated memorization. Rather than teach students our language, say, Dewey, we need to help them bridge from their own legitimate and specialized language to the systems we use.

For many leading school librarians this is intuitive, or has been uncovered long ago. Take a look at Valenza's manifesto once again. While many of the items are phrased as functions, you can begin to see the why and the what: "Your students blog or tweet or network in some way about what they are reading" because they are engaging in conversation. "You work together with learners to create and share digital booktalks or book trailers" because learning is a participator conversation. "You teach about tags, and hashtags, and feeds, and real-time searches and sources" because language matters.

The library of the 21st century is in fact a locus of conversation, not resources and artifacts. Why? Because as a school librarian you are concerned with learning, not the artifacts of learning. Books, websites, and articles are all the outputs of a learning process. At their weakest, they merely acknowledge learning happened within the author; at best, they are rich and stimulate new learning conversations.

Corinne Hill, the director of the Dallas Public Library, in talking about her redesigned branch libraries said, "We put the collaborative spaces in the middle, and the books along the outside wall as art." Art is not simply decoration. It inspires and it provokes. So too do our collections. They are there to inspire and provoke, but they are also there to support the real work of learning that happens through collaboration.

LIBRARIES AS THE BIRTHPLACE OF IDEAS

So if we all learn through conversation, what is the role of the school library? After all, learning can take place in classrooms, or bedrooms, or rooms of any sorts. What sets the library apart? The short answer is the librarian. You see, the librarian has a unique role in facilitating knowledge, and it can be done in a room full of books, or a classroom, or online.

Librarians facilitate learning in four ways. The first is the most familiar and the reason we have the room in the first place: access. Librarians provide access to materials, sure, but also a host of conversations. The librarian prepares a physical place to inspire and stimulate conversations.

However, a librarian also provides access to other conversations, such as online discussion groups; peers working on similar issues; teachers and community experts; technology to support learning conversations; and artifacts, such as curated collections of links and media. The point is that they provide access to conversations, not just stuff. The community is the true collection, and rather than spending time in collection development, a school librarians needs to spend more time in connection development.

Access is not enough. Think back to our book example at the start of the article. If I give you a book in a language you do not speak, I have not really facilitated learning. I need to do more, like teach you the language. The second means of facilitation a librarian uses is the provision of baseline knowledge. If the conversation is going on online, the librarian needs to show a student or teacher how to get online. Information literacy instruction is a strong start to this kind of knowledge provision.

However, just as access is not enough, neither is access plus sufficient training. If the student or teacher is in an environment that restricts the conversation, learning suffers. This comes quickly around to the filtering conversation. However, there are plenty of more immediate and tractable issues with creating learning environments that we can take on. For example, librarians provide a civil space where different opinions can be expressed with a sense of safety. We must allow students to talk and work together to learn. The bottom line is that our libraries must be places where students feel safe to converse—physically safe and intellectually safe.

The last means of facilitation a school librarian provides is motivation. Just because a student has access to a conversation, knows how to participate, and feels safe doing so does not mean the student will engage. Students must have some sense of benefit or reward for doing so. This can be a self-generated reward (intrinsic motivation), such as feeling good or following up on a strong personal interest. The reward can also be external (extrinsic motivation), such as a grade. A good librarian must understand the motivation of the learner.

Taken together—an understanding of knowledge through conversation and the means of facilitation—we have a better comprehension of the second half of my proposed mission: knowledge creation in our communities. We see that if learning occurs through conversation, then it must be participatory, where all parties (librarian, student, teacher, parent) are shaping and shaped by the conversation. We see the power of inquiry methods that build on the language and intrinsic motivation of the learners. We see that it is social, in that learning is a social activity where every conversation is shaped by the larger conversations of the community.

Why then should a school librarian understand social networking? Because it may be a powerful tool to foster conversations. Why should school librarians spend more time on interactions and less time on collections? Because that is where learning occurs. This is why efforts to lay off or consolidate school library positions are so misguided. The room and the books are all a product of a learning process, not the method—that's the school librarian.

FROM MISSION TO MISSIONARY

I said that conversations and facilitation detail the second part of the mission; what

about to improve society? This is the third and vital part to defining a school librarian. It is the ethical set of principles that guides us. We believe that the best learning occurs in the richest information environment. Students and teachers alike must be exposed to conversations far beyond any textbook. We have learned as a profession, with over 3,000 years of history, that we must be intellectually honest and expose learners to different perspectives and biases for them to be truly informed.

When I look again at Valenza's manifesto and the passion of other outstanding school librarians, such as Buffy Hamilton, Sue Kowalski, and Barbara Stripling, what I see are school librarians deeply engaged in learning. They are strong in building and delivering services. They are "doers." However, I also see thoughtful practitioners who examine the why.

Tomorrow you will have books to shelve and kids to tutor. You will have lesson plans to prepare and crises to resolve. What I would ask is that you also take the time to think about why you are doing these things. Valenza's list is a fabulous document, but one that will age. Facebook and Twitter, Shelfari, and Kindle will continue to evolve or be displaced. However, the why behind the list—the passion that turns bullets from a document to a manifesto—will continue to be relevant and the most important thing.

We are all engaged in a conversation on learning, on librarianship, on what the definition of an improved society is. This conversation is too important to leave to others or to wait until some resolution has been determined. If you do not join this conversation, you have no power to shape it, and you abdicate your power in the future. There is no safe refuge in the stacks, nor the room, nor the job title. The only viable future for school librarians is in actively shaping learning itself. Join that conversation.

EPILOGUE AND AN INVITATION

These ideas are explored in much greater depth in my latest book, *The Atlas of New Librarianship*. The atlas is the result of over 100,000 miles of travel to 29 locations on 3 continents; input from hundreds of librarians and professors from 14 accredited library programs; 25 formal presentations at over 40 conferences; and 14 publications. The foundational data for the book comes from organizations large and small; national, public, academic, school, and special libraries; associations with local, regional, national, and international reach; doctoral and master's students; librarians, lawyers, historians, programmers, venture capitalists, and teachers. The whole point of all of this effort was to discover and develop a new approach to librarianship from the ground up.

The atlas, however, is incomplete—it is missing your voice. In addition to the printed book, there is an iPad app, a website (http://www.newlibrarianship.org/), and a Facebook page, all in place to continue the conversation about the why of librarianship. On the site and in the app you will find more resources, views of others, and most importantly, a big placeholder for your views. My goal with this article and the book is not to get the world to agree with me but to prompt a deeper discussion of the field beyond a collection of functions. Come join the conversation and shape the new librarianship.

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librarians as learning specialists: moving from the margins to the mainstream of school leadership

IT IS OUR BELIEF THAT BUILDING AND DISTRICT LEADERSHIP *MUST* COME TO ENVISION THE LIBRARY AS INTEGRAL TO STUDENTS ACHIEVING THE MISSION OF THEIR RESPECTIVE SCHOOLS. WE DO NOT USE THE WORD *MUST* LIGHTLY: THE STAKES OF PREPARING STUDENTS FOR THE 21ST CENTURY WORLD HAVE NEVER BEEN GREATER.

by allison zmuda and violet h. harada

One of the most common concerns teacher-librarians have shared with us across the country is the lack of understanding their administrators and their colleagues have about what is possible "if only" they were given the opportunity, the resources, and the support. Contrary to what some may believe, the lack of opportunity, resources, and support are not a personal attack nor is it a show of disrespect. The crux of the problem is that most administrators and staff fundamentally do not understand what is possible (despite many valiant efforts by teacher-librarians to explain it). They cannot separate out the librarian from the library because of minimal to no knowledge of the profession.

The reality of this information problem has been the focus of our writing as we address the library media specialist/teacher-librarian and administrator alike. After all, the work of the school is the work of the library. We urge the creation of a more focused job description and a more obvious set of collaborative partners in the architecture of schools. We build on research and literature that are renowned not only in the library profession but also seminal for administrators and teacher leaders.

In this article, we first present some of the critical problems facing schools and focus on the need to practice a mission-focused mindset that empowers school leadership teams to drive school improvement. In creating these teams, we propose that building administrators leverage the expertise of learning specialists, key among them, the teacher-librarian.

WHAT STATISTICS TELL US

The statistics on high school dropout rates presented at the National Education Summit on High Schools have been grim: "Today only 68 out of 100 entering ninth-grade will graduate from high school on schedule. Fewer than 20 will graduate on time from college. Meanwhile, 80% of the fastest-growing jobs will require some postsecondary education" (Education Trust, 2005, p. 3). According to the Bill and Melinda Gates Foundation, "every day nearly 3,000 of America's students drop out of high school. . . . Over the course of their lives, dropouts from a single year's graduating class cost the nation more than $325 billion in lost wages, taxes, and productivity" (n.d.).

Preparing students for the rigors of an information age requires not only getting them to earn a high school diploma but also enabling them to succeed in their further studies. Completion rates for students enrolled in postsecondary programs are equally troubling. David Conley (2007), who advocates for clarifying "standards for success" to prepare students for college-level tasks, reports: "The most recent data available show that only about 35% of students who entered four-year colleges seeking a bachelor's degree in 1998 had earned their degree four years later, and only 56% had graduated six years later" (p. 24). Conley largely attributes the low graduation rates to the complexity of the work required of them, the pace of the work, and the collaborative and communicative nature of the tasks. He quotes the National Research Council on college expectations:

> College instructors expect students to draw inferences, interpret results, analyze conflicting source documents, support arguments with evidence, solve complex problems that have no obvious answer, draw

conclusions, offer explanations, conduct research, and generally think deeply about what they are being taught. (Conley, 2007, p. 24)

The expectations cited here contrast sharply with common practices in K–12 schools, such as teaching to standardized tests; covering curriculum topics at a breathtaking rate in order to meet all of the standards; and assessing students on the knowledge and skills they can recall based on a set of familiar problems, situations, and contexts. Mel Levine (2007) describes the cognitive toll of these practices on the development of the student:

> Many students emerge from high school as passive processors who simply sop up intellectual input without active response. Some passive learners, although able to scrape by academically, endure chronic boredom in school and later suffer career ennui. Their habit of cognitive inactivity can lead to mediocre performance in college and later on the job. (p. 19)

STUDENT-FOCUSED MISSION

To overcome the passivity of learners that Levine describes, 21st-century schools must embrace learning beliefs that produce engaged and sustained learning and develop skills of independence, problem solving, and teamwork. Students must constantly see the value of their work and feel a growing sense of efficacy. They must connect isolated facts and skills with big ideas and receive regular and user-friendly feedback to better understand goals and meet high standards. They must reflect, self-assess, and rethink ideas in a safe and supportive environment that fosters questioning assumptions (Wiggins & McTighe, 2007).

A school that believes in rigorous and relevant student-focused learning also commits to a mission-centered mindset. Mission both motivates and measures improved purpose because all stakeholders believe that the learner-based accomplishments they are in business to produce are challenging, possible, and worthy of the attempt. A mission-focused approach requires a constant analysis of whether daily practices are having the desired effects on student achievement. Such analysis will also uncover areas of misalignment where significant resources are expended to support the development of work that is tangential to established curricular goals.

The adoption and establishment of a set of learning principles is, therefore, critical to reform instructional practices that defy what we know to be true about how people learn. Every staff member must be held accountable (by their supervisors and by one another) to work in a way that will get the desired learning results. Every member practices such basic moves as:

- making the learning goals of the task/activity explicit to the students
- creating meaningful connections between the learning activity and the "real world" of the student and of professionals in the discipline
- providing regular, criterion-based feedback to students on the quality of their work and with regular opportunities to improve their work
- checking for understanding (and misunderstandings) early and often (Marzano, 2007; Schmoker, 2006; Wiggins & McTighe, 2007)

The significance of a powerful, consensus-driven mission statement and accompanying learning principles cannot be overstated. They provide the coherence, the alignment, the discipline, and the flow necessary for success. Staffs that practice mission-centered beliefs focus on a handful of improvement efforts, collaborate with one another to analyze student work as well as each other's instructional practice, and acquire new knowledge and skills, even if it means unlearning old ones.

TEAMING ON STUDENT-FOCUSED LEARNING

School-level leadership is essential in building a mission-centered culture. While current research confirms that effective building administrators are a necessary precondition to effective school reform programs, various studies also indicate that school leadership has shifted from a focus on single individuals to a team of individuals (Marzano, Waters, & McNulty, 2005).

The significance of a powerful, consensus-driven mission statement and accompanying learning principles cannot be overstated. They provide the coherence, the alignment, the discipline, and the flow necessary for success. Staffs that practice mission-centered beliefs focus on a handful of improvement efforts, collaborate with one another to analyze student work as well as each other's instructional practice, and acquire new knowledge and skills, even if it means unlearning old ones.

For formal leaders to nurture collaboration between learning specialists and staff, there must be strong internal accountability for student learning and a culture of trust. Doug Reeves (2006) outlines "essential truths" about this form of leadership:

- Employees in any organization are volunteers. We can compel their attendance and compliance, but only they can volunteer their hearts and minds.
- Leaders can make decisions with their authority, but they can implement those decisions only through collaboration.
- Leaders must leverage for improved organizational performance that happens through networks, not individuals. (p. 52).

Shared leadership is predicated on establishing and sustaining "purposeful communities with the collective efficacy and capability to develop and use assets to accomplish goals that matter to all community members through agreed-upon processes" (Marzano, Waters, & McNulty, 2005, p. 99). In such teams, members hold a shared belief that they can facilitate change. They leverage all available assets. They have well-articulated goals. They use processes that enable effective communication among members. We maintain that *learning specialists* are critical members of such school teams.

ROLE OF LEARNING SPECIALISTS

Who are learning specialists? They are partners with classroom teachers who play a central role in the continuous effort to improve the achievement of all students through the design, instruction, and evaluation of student learning. While learning specialists have worked in schools for years, these positions have multiplied with the advent of rigorous content standards and related state assessments as well as research on effective staff development.

Learning specialists are often entrusted with coordinating a program; designing enhanced services in a curricular area; or providing specialized services to students, teachers, and even parents. Most learning specialists have a teaching license as well as additional certification or credentials in a specialized area. Frequently, they are referred to as *informal leaders* or *instructional leaders* in a *distributed model* because they typically are not required to have the administration certification needed to supervise teaching personnel. A characteristic that distinguishes the learning specialist from the classroom teacher is that the person frequently has no official full assignment of students. Learning specialists in schools can include (but are not limited to) the following: reading, writing, mathematics, fine arts, and science coaches; instructional technology coordinators; and teacher-librarians. Teacher-librarians have been staff members in K–12 schools since the early 1900s (Morris, 2004), while other positions, including reading specialist positions, have been added in many schools since the 1960s (Bean, Swan, & Knaub, 2003).

While learning specialists may have highly specialized roles, the common characteristics that shape their jobs make them natural partners in the work of formal leadership to raise student achievement. Working in separate silos merely diminishes each learning specialist's efforts and weakens every individual's ability to effect improvements in teaching and learning. In short, isolationism further devalues the specific service rendered. It is good business, therefore, to work strategically as a cooperative unit of professionals targeting goals that might be met by leveraging the resources and talents of the team.

Collegiality denotes the ability of staff members to work with one another in the analysis of curriculum documents, assessment results, and instructional strategies without getting mired in personal politics. This key school-level factor requires a *constructive process* where staff members cooperatively determine how to replicate those teaching practices that result in the desired student learning. Doug Reeves (2004) states that the "difference between malaise and effectiveness is the collective will of the faculty to focus on their strengths, to ask one another questions, and to take responsibility for their professional growth and the achievement of their students" (p. 38). Only through this type of constructive process does craft knowledge truly begin to flourish.

Deanna Burney (2004) further defines craft knowledge as "research knowledge that is informed by practice, that is codified, tested, and shared" (p. 527). She elaborates:

> People learn by watching one another, seeing various ways of solving a single problem, sharing their different "takes" on a concept or struggle, and developing a common language with which to talk about their goals, their work, and their ways of monitoring their progress or diagnosing their difficulties. When teachers publicly display what they are thinking, they learn from one another, but they also learn through articulating their ideas, justifying their views, and making valid arguments. (p. 528)

The goal is *not* to increase collaboration; the goal is to improve student performance. The goal is *not* to force staff to attend professional development; the goal is for them to improve their practice in order to improve student performance. The goal is *not* to garner more respect for the learning specialists; the goal is for the interactions between learning specialists and staff to help the system improve its overall performance.

Consensual change occurs when staff distinguishes between what they *like* or *prefer to do* from *what actually works*. When school teams collaborate to clarify the relationship between the design and the effect on achievement, they witness positive and constructive change at staff meetings, in classrooms, and in individual staff development sessions. Deborah Meier maintains:

> The kinds of changes required by today's (education reform) agenda can only be the work of thoughtful teachers. Either we acknowledge and create conditions based on this fact, conditions for teachers to work collectively and collaboratively and openly, or we create conditions that encourage resistance, secrecy, and sabotage. (quoted in Wagner, 2003, p. 101)

Learning specialists have the unique position to affect classroom-level practice in significant ways because of their student-centered mindset and content and pedagogical expertise. As members of the leadership team, they can create the conditions for internal accountability so that staff members hold one another accountable for student achievement, staff development, and coherence of leadership efforts.

TEACHER-LIBRARIANS AS LEARNING SPECIALISTS

Teacher-librarians are strategically positioned to be influential members of school leadership teams. Turner and Riedling (2003) contend the "greatest cause for optimism is the fact that library media specialists are in the right place at the right time to play a significant role in the transformation of teaching that must occur as K–12 education is impacted by the revolution in telecommunications and information technologies" (p. 232). As learning specialists, they can grow the expertise of the teaching staff through the collaborative tasks they complete together, from the staff development workshops they design, and from the modeling they do in the library-classroom.

In our extensive conversations and observations of the work being done by teacher-librarians across the nation, we were inspired by evidences of best leadership practices. Clearly, there are impressive examples of teacher-librarians who believe that student learning is the winning priority of their programs. We noted common threads in the actions of these teacher-librarians that confirm Charlotte Danielson's (2007, pp. 124–131) observations:

- They volunteer for leadership roles within the school and district to articulate the needs of students in information fluency within the school's academic program.
- They articulate and communicate student-focused goals for the library program that are highly appropriate to the situation in the school and to the age of the students.
- They are knowledgeable of resources available for students and teachers and actively seek out new resources to enrich the school's program.
- They initiate collaboration with teachers in the design of instructional lessons and units that result in coteaching.
- They are always searching for innovative ways to use current and emerging technologies to enhance the learning experience for students and teachers.
- They create learning environments in which students engage in inquiries that challenge them to think critically and act creatively and responsibly.
- They interact with students and teachers in ways that are highly respectful, reflecting genuine caring and sensitivity to students' cultures and levels of development.

Together with the other professionals in the school, teacher-librarians practice research-based pedagogy by

- monitoring student learning and making adjustments in "real time" without compromising students' opportunity to learn
- designing instruction in "small chunks" without compromising students' ability to see the "big picture" or to become overly dependent on the teacher to make meaning for them
- personalizing instruction to fit the needs of each learner without compromising belief that all students can achieve high expectations
- incorporating student interests into curriculum, assessment, and instructional design without diluting the rigor or focus on learning goals
- developing a "team mindset" among learners without compromising the ability to truly get to know each person individually
- inspiring students to find schoolwork meaningful and challenging without sending mixed messages through the assignment of low-level worksheets and recall activities
- challenging learners to pursue inquiries with no clear answer and problems that they have never encountered before without rushing through the experience.

In schools where collaborative professional communities flourish, teacher-librarians are respected teaching partners who positively affect student learning based on observable indicators such as:

- rebuilding assessment tasks or instructional experiences that enhance rigorous learning;
- evaluating student work to determine the extent to which their collaboration improved achievement and how that informs future collaborations;
- exchanging feedback and guidance with teachers on ways to strengthen practices that raise student achievement in information literacy and technology;
- receiving the principal's full endorsement to participate in key committees, budget decisions, and staff development opportunities.

The bottom line is this: teacher-librarians view their work as "the school's work," not just because the physical space and resources are shared by all, but because the significance of the learning that is conducted in the library is at the heart of the school's purpose. This mission-centered mindset—preparing all students to be successful in a 21st-century world—gives teacher-librarians the authority to work as partners in the design and evaluation of student learning. The future viability of the library depends upon the willingness of teacher-librarians to hold themselves, their students, and their colleagues accountable for creating a learning environment and learning experiences that accomplish the curricular goals delineated in AASL's *Standards for the 21st Century Learner* (2007).

Change of this magnitude requires not only rethinking the library media center's mission but also reassessing current practice and reinventing what teacher-librarians accomplish as learning specialists. In his foreword to *Librarians as Learning Specialists* (Zmuda & Harada, 2008), Grant Wiggins says that for him, the library "has always been such a revealing barometer" of a purposeful and healthy school. He states that the library is a "window into how well the entire staff understands learning and honors best practice." For libraries to be these windows, they must be more than physical warehouses for resources. They must be "inquiry laboratories" where students and instructional teams explore problems, seek answers to questions, and pursue personal needs for information (Kuhlthau, Maniotes, & Caspari, 2007, p. 63).

LEARNING SPECIALISTS IN ACTION

Here are brief snapshots of teacher-librarians striving to achieve a student-focused mission.

CREATING INQUIRY ENVIRONMENTS

Anna, a teacher-librarian in an urban elementary school, has transformed her library into what she calls an "exploratorium." When you enter the facility, the first thing you see is a "wonder tower," a cardboard pyramid that is covered with questions generated by students. Youngsters are encouraged to contribute questions they are curious about. In turn, other students are invited to post responses and cite their information sources. The exploratorium has low bookshelves that are usually covered with intriguing realia and artifacts—students are challenged to figure out what they are and how they might be used. Last month, for example, Anna displayed a variety of kitchen utensils from colonial times that she borrowed from a lending collection of a nearby museum. She held a contest for students to guess their various uses. Anna has also worked with the school's curriculum coordinator to plan simple mini-inquiry centers in her exploratorium. Each center (on a small table) focuses on a key curriculum-related question and includes a range of resources that help students to explore the question.

USING TECHNOLOGY TO TRANSFORM LEARNING

Ryan, a teacher-librarian in a rural middle school, has created a learning hub that uses a range of tech tools to motivate adolescents. He and the school's reading coach have established a cyber-book club where members conduct electronic discussions. With input from faculty and students, Ryan is building a library web site that includes a range of subject-specific search tools, e-books, and online databases. He has created a blog to highlight library news and upcoming events. With the support of his faculty and the school's technology resource teacher, he has taught students to do Podcasting as well as how to work with wikis. What is important: He has also held informal information and training sessions on these various resources and tools for teachers, administrators, and parents.

ASSUMING LEADERSHIP IN SCHOOL TEAMS

Mary and Sam are teacher-librarians at a suburban high school where students and teachers are organized in a range of learning academies. The curriculum is interdisciplinary, and students work in teams to conduct research and to design and develop projects based on their findings. Along with supporting the students and faculty with resources, both teacher-librarians have volunteered to assist with professional development activities. In this capacity, they have taken the lead training teachers to develop essential questions and design assessment tools for benchmark tasks in the research process. Teaming with the school's technology resource coordinator, Mary and Sam have started to explore the use of Second Life as a virtual gallery for student-produced artifacts. They are also working with the teachers on curriculum maps that reflect the integration of the *Standards for the 21st Century Learner* (AASL, 2007) with content standards.

CONCLUSION

For teacher-librarians and other potential change agents to move from the margins to the mainstream of their schools, Marzano and colleagues (2005) contend they must wrestle with and act on hard questions: Do I systematically consider new and better ways of teaching? Am I willing to lead change initiatives with uncertain outcomes? Do I consistently try to operate on the cutting edge versus the center of the school's competence? Importantly, if administrators wish to empower teacher-librarians and other learning specialists in their schools to assume a mantle of shared leadership, they must legitimize their role in designing and implementing curriculum, instruction, and assessment activities.

Shared leadership holds the bright promise of building and sustaining a professional culture of best practice. In schools where this concept of purposeful community is alive, we find students rigorously engaged in the construction of knowledge and the communication of thinking.

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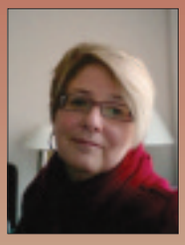

"Today, the challenge facing schools has changed, and schools must change to meet the new demands."

Uncomfortable Bedfellows

Discipline-based Inquiry and Standardized Examinations

SHARON FRIESEN

We are in a time of rapid change within education as teachers and administrators attempt to reengineer schools to meet needs that are very different than those for which schools were originally designed.

Those of us in education have recognized for some time that the industrial structures and efficiency practices harnessed to behaviorist assumptions about learning are no longer adequate to meet the demands of today's society, nor are they aligned to our current understanding of how people learn.

In an industrial era, the dominant project of schools was to impart information and to inculcate habits of work and mind that made widespread and meaningful participation in an industrial age possible. Today, the challenge facing schools has changed, and schools must change to meet the new demands. Young people are being asked to meaningfully participate in and contribute to a post industrial society in which knowledge has a new depth, a new vibrancy, and in which intellectually vigorous and sound inquiry across the disciplines has become requisite for being considered educated in this new knowledge era.

At the same time, these same students are being assessed using measures that belong to a previous era—standardized tests that measure knowledge of facts and procedures.

STUDENT ACHIEVEMENT ON TESTS

What follows is an account of a project focused on the question *How Does Disciplinary-based Inquiry Transform Learning Environments?* that had as one of its measures, student achievement on standardized provincial examinations. The project was designed and implemented by 26 elementary and secondary schools, 12,800 students in a school district in Alberta, Canada. The project was part of a much larger provincial government initiative called the Alberta Initiative for School Improvement (AISI) in which school districts across Alberta receive substantial provincial professional development funding on a per pupil basis to implement innovation at the local level over three year cycles. This government-sponsored program was commended by Hargreaves and Fink in Sustainable Leadership as exemplifying the "spirit of belief in, trust of and support for, schools and teachers to improve themselves" (Hargreaves 2007, p. 446). This spirit, they argue, is crucial for the sustainability of serious attempts at school improvement.

The three year AISI project undertaken by this group had three fundamental goals:

- *To better understand how discipline-based inquiry learning could help schools make the transition to educating for a knowledge era.* The group of schools engaged the services of Galileo Educational Network (Galileo), an Alberta based organization to assist them with their project. Galileo Educational Network has merged with the Faculty of Education, University of Calgary, known as Galileo Network for Leadership in Learning. Prior to engaging Galileo's help, the group had struggled with terms like "deep inquiry" and "critical inquiry" to capture their emerging sense that old models of curriculum delivery and standardized testing were inadequate.

There was no consensus at the outset about what people meant by such terms; rather, there was a loosely defined sense that students needed to be more engaged, that the work they were offered to do in school needed to be more robust; and that learning needed to be more "minds on" as well as "hands on". This group had just completed a previous three-year AISI grant in which many had experienced the power of on site residencies of artists and scientists to enliven learning for students and teachers, and they wanted to leverage what had happened there as they strove to drive reforms deeper.

• *To transform, not to tinker at the edges with feckless change or superficial adjustments*. Many of the school administrators were very experienced, and they had little taste simply jumping on one more bandwagon. All had the experience of seeing innovations come and go—the flavor of the month, as they called it—and they were weary. Thus, while they were aware of the current cachet of "inquiry" in educational circles, they were also nervous about creating another educational "thing" that everyone would try, but that would make no difference in the end. They knew that the heavy weight of the status quo turns most innovations into easily digestible versions of itself, and they were worried that in three years the main legacy of the project might be one more "been there, done that" cynicism, this time about inquiry—unless they aimed high, risked big, and declared their aim outright: this was to be about transformation.

• *Learning environments meant learning environments for everyone*. Their intuition was that transformation would need to involve all of those who were part of the learning environment—students, teachers, parents, and themselves as leaders. While the most obvious element of transformation through inquiry would be to create discipline-based inquiry driven learning environments in classrooms, the group knew that the entire project had to be approached as *itself* an inquiry. This group wanted to explore for themselves, and with one another, what changes of the magnitude they had identified would mean for teachers, for children, for the public—and for themselves as leaders. Perhaps the most unusual feature of the project became its insistence on professional development for administrators, who either readily or reluctantly admitted that when it came to inquiry, they themselves needed help. Given that the conventional structures of industrial organizations assume that those closer to the top know more than those closer to the bottom of the ladder, it was a brave and radical assertion: everyone would be in this together.

Industrial Schooling	Post Industrial Schooling
Follows rules of efficient assembly.	Follows rules aligned with the ways in which a disciplinary field is practiced.
Industrial assembly does not require interest or initiative. It requires workers simply do what they are told by "higher –ups" (students obeying teacher, teachers obeying administrators, and so on.	Learning your way around a discipline requires interest and initiative. The obedience required by all is to the ways of the discipline being studied.
Governed by the principles of scientific management, which requires uniformity of assembly.	Governed by the principles of the discipline or field. Any sense of classroom coherence is had from remaining within the field (whose locations and tasks can be variegated), not from everyone being on the same page at the same time.
Scientific management treats multiplicity and diversity as things to be eradicated from the system in order to increase efficiency.	Living fields require diverse ways of knowing in order to be treated properly, for example, mathematics is visual, conceptual, symbolic, etc.
Assessment is premised on uniformity since it is precisely the uniform assembly of an object that is being tested. Like the object being assembled, assessment is driven by how efficiently it can be done.	Assessment is substantive, specific, and contextual. It relies on knowledge of the forms of assessment that are linked to how knowledge thrives within the discipline in question.

Comparison of Industrial Education and Post-Industrial Schooling

The outcomes of these goals were:

• Improved engagement in learning;

• Enhancement in the competency to construct knowledge;

• Increased collaboration amongst students;

• Increased use of reflection as an evaluative tool;

• Increased use of authentic assessment practices;

• Increased understanding of high level thinking skills; and

• Increased integration of technology as a learning tool.

Before Galileo was contracted to work with the project, the group had already divided the project into two parts. Secondary (that is, junior and senior high schools) had decided each to hire half-time teachers to work as lead teachers with colleagues and with identified groups of students who were, for one reason or another, seen to be falling through the cracks. In some cases, these were students who were having trouble completing courses in a timely manner; in others, they were students who were managing their school work, but who were felt to be performing far below their actual potential. The secondary schools, while part of the larger district project, were not part of the initiative led by Galileo.

The elementary schools structured their approach to the question, "How does discipline-based inquiry transform learning environments?" quite differently. Each school retained funds on a per pupil basis that allowed staffs to approach the question in their own manner.

Each school in the project was involved in the systematic design, implementation, and on-going evaluation of a range of

Current Situations Moving From:	Desired Change Moving To:	Success Indicators The AISI Review Panel will see evidence of:
It is commonplace for the content-process focus in classrooms to be skewed to the content side.	Teachers will increase their use of inquiry-based learning practices (Constructivism) Students will increase their competency in constructing their own knowledge and will make connections to the real world.	• Inquiry principles being used in classrooms. • Students participating as co-constructors of knowledge.
Present classroom practice is learners in isolation.	Student collaboration in learning is increased.	• Students working collaboratively to solve problems, create, discuss issues, etc.
Teachers are not given adequate opportunities to reflect on their own practice. Students are not given the opportunity nor sufficient skills to reflect on their learning.	Teacher engagement in reflective practice is enhanced. Student reflections of their learning are enhanced.	• Teachers reflecting as a component of their professional practice. • Students reflecting as part of their learning.
Assessment often lacks authenticity and relevance to real-life situations	Teachers and students will increase the use of authentic assessment.	• Increased use of authentic assessment eg. Portfolios, process-folios, journals, etc.
Lack of engagement in learning can be the result of disconnection from purposeful, meaningful real world applications.	Students will demonstrate increased engagement in learning	• Students making meaningful, purposeful links between learning and experience.

Table 2. Project Evaluation Criteria

approaches to transforming learning for students and for teachers through inquiry. The overriding purpose of the project was to increase student achievement and performance through discipline-based inquiry learning and teaching.

The shift the teachers and administrators were undertaking are outlined in Table 1.

ASSESSMENT FOR LEARNING

In the initial design of the project, participants agreed that a project evaluation process was required. They wanted the evaluation to guide the process all the way through, and to stimulate discussion and debate about educational transformation. A design-based research approach was developed. This research method allowed all participants to study the innovation while it was being put into place and to make adjustments based on evidence brought forward at monthly learning days led by Galileo consultants and researchers, and attended by school principals, lead teachers, and district administrators. A blend of quantitative and qualitative data sources and measures were used to evaluate the ongoing progress.

Uncomfortable with the provinces' primary measure of success of the project, student scores on provincial achieve-

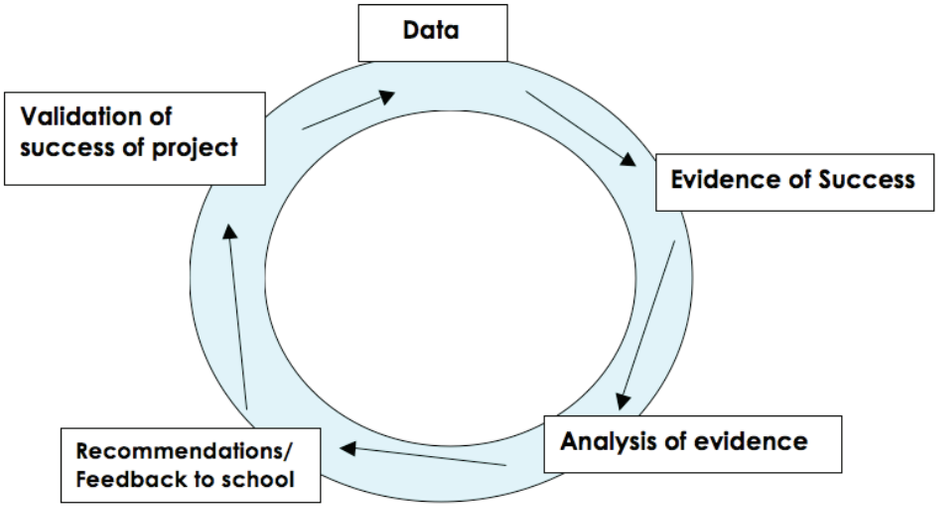

Figure 1. Review Panel Process

ment tests, project participants welcomed an alternative approach to project evaluation. Galileo researchers designed a process that involved a review panel of internal and external participants. Galileo took on the responsibility of convening and organizing the work of the review panel over the three-year period. This panel consisted of two external representatives, two from the school district but external to the project, and a representative from Galileo.

Review panel members conducted site visits to each school within the project. Panel members interviewed teachers and students and conducted classroom observations. Panel members used criteria from Galileo's rubric for inquiry (**http://www.galileo.org/research/publications/rubric.pdf**). These criteria were agreed to by project participants and served a dual purpose, as a guide for teacher planning and criteria for evaluating teachers' work with students. Using additional criteria established with project participants, panel members were also asked to determine each school's

Editor's Note: Arne Duncan on Standards and Assessment

As of September, 2010, United States Secretary, Arne Duncan announced that during the 2014-15 school year, new assessments based on the Common Core Standards would be ready for use across the United States. A variety of tests both formative and summative will measure both factual knowledge and, according to Duncan, "students need to show that they can analyze and solve complex problems, communicate clearly, synthesize information, apply knowledge, and generalize learning to other settings." For teacher-librarians, knowing that 21st century skills will be a part of national assessments, we can claim a more central role in teaching and learning. Immediately, as collaborative learning experiences happen between classroom teachers and teacher-librarians, insist that each joint learning experience contain assessments of both content knowledge and learning how to learn skills. Start now to measure "What I know; What we know; How I learn; How we learn; and, How can we become better?

Listen to the Duncan speech at **http://www.visualwebcaster.com/event.asp?id=72107**; text of the speech is available at **http://www.visualwebcaster.com/event.asp?id=72107**. The Common Core Standards can be found at **http://www.corestandards.org/**.

progress toward meeting the goals and outcomes of the project, while respecting the uniqueness of each school and their desire to tell their stories in the ways that best make sense to them.

The Review Panel provided formative feedback to schools throughout the project as well as annual reports of a summative nature. The Panel advised regarding the development of a range of data that involved students in meaningful ways to give credible evidence of the impact of changed practices and alternative and innovative forms to represent key findings.

In addition to the data collected by the Review Panel, each school created and maintained a process folio that documented their journey toward the three goals of this AISI project. The schools' process folios along with an aggregated report from the review panel were supplied to the province each year as evidence of progress, but as an appendix. While provincial AISI administrators were interested in these measures, they were looking for gains on standardized provincial examinations.

So, let us find out how the students measured up on the provincial standardized examinations.

MEASURING STUDENT ACHIEVEMENT: STANDARDIZED EXAMINATIONS

It is important to remember that AISI innovation initiatives operate side-by-side with industrial standardized provincial achievement examinations. These standardized examinations were a continual irritant to teachers and administrators within this AISI project because discipline-based inquiry work requires continual, ongoing guidance from the data brought forward by assessment for learning at the student, classroom, school, and district level. A fundamental feature of strong discipline-based inquiry is knowing the questions that are fully alive and open for inquiry, understanding where the learners are, how they are learning, and making adjustments based on this continual feedback.

This is in line with how, in a living discipline of knowledge, being able to make

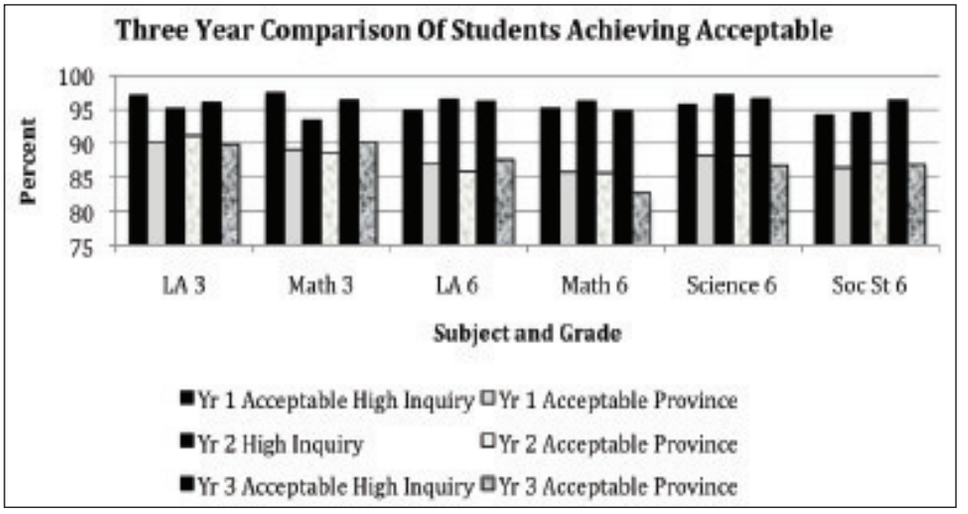

Figure 2. Three Year Comparison Between High Inquiry Schools and Province Achieving Acceptable on Standardized Achievement Examination

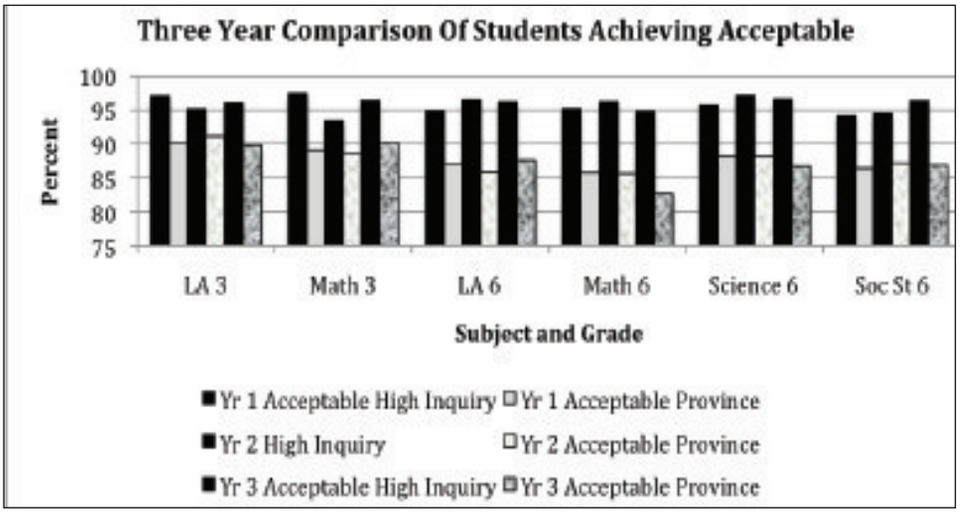

Figure 3. Three Year Comparison Between High Inquiry Schools and Province Achieving Excellence on Standardized Achievement Examinations

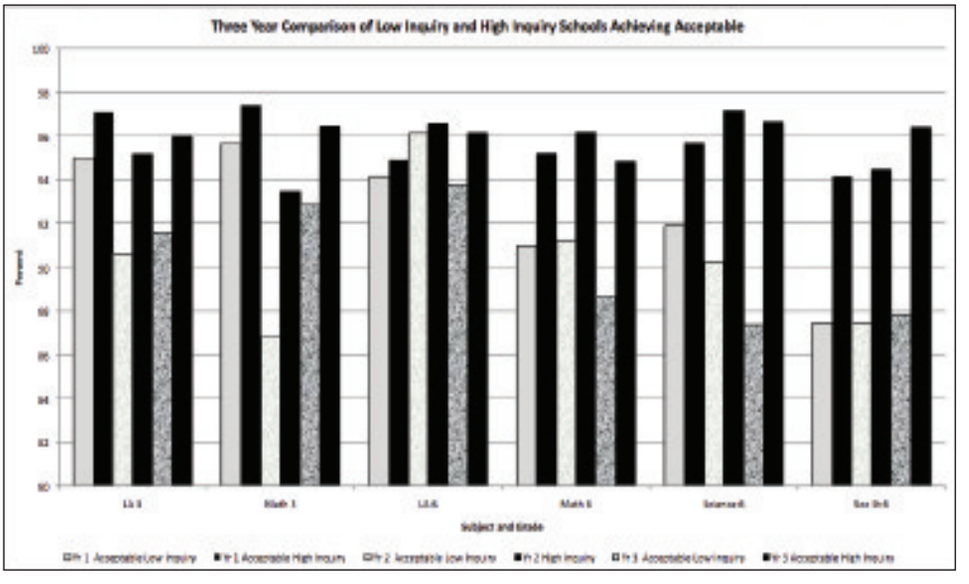

Figure 4. Three Year Comparison Between High Inquiry and Low Inquiry Schools Achieving Acceptable on Standardized Achievement Examinations

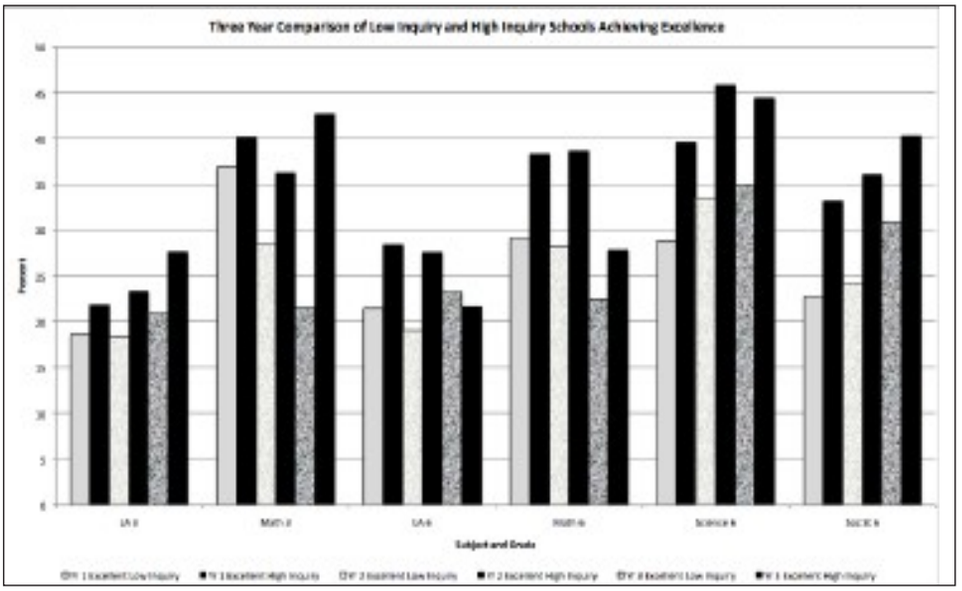

Figure 5. Three Year Comparison Between High Inquiry and Low Inquiry Schools Achieving Excellence on Standardized Achievement Examinations

decisions about the nature and quality of the work being done is an ongoing feature of that knowledge itself, not some external, post hoc activity. Likewise, learning to assess what is going in one's work, for students, teachers, and administrators, is part of learning itself.

We could have merely reported the achievement data as an aggregate across the schools within this project; however, project participants agreed to have Galileo disaggregate the achievement data. Using the data from the review panel site visits, interviews, and classroom observations, each school was rated as either a low inquiry school or a high inquiry school. Low inquiry schools were those that were assessed at the beginning and developing levels on the classroom observation rubric (**http://www.galileo.org/research/publications/rubric.pdf**) and weak to no evidence on meeting the project goals criteria (see Table 1) and high inquiry schools that were assessed at the developing and accomplished levels on the classroom criteria and strong evidence on the project goals.

The aggregate achievement scores of all project schools were higher than the provincial average at both the Acceptable and Excellence levels. The words Acceptable and Excellence refer to the classifications on the Provincial Achievement examinations (e.g. Provincial Acceptable are the provincial numbers that scored in the acceptable range on the standardized examination and Provincial Excellence are all the students who scored at the excellence level in the province of Alberta). However, once data was disaggregated by high inquiry and low inquiry schools, the high inquiry schools significantly exceeded provincial norms in all areas both on Provincial Acceptable and Provincial Excellence. (While participating secondary schools also scored higher than provincial averages at both the acceptable and excellence category they are not included in this brief analysis as none were judged to have reached high inquiry within the three years of this project.)

There was also a marked difference between the low inquiry and high inquiry schools.

CONCLUSION

The schools participating in this three-year project, whether rated high inquiry or low inquiry achieved higher than the provincial average and higher than their school district's average. There was a statistically significant difference between schools that were judged to be high inquiry schools and the provincial and district achievement scores.

Too frequently, teachers and administrators alike, allow their fear of standardized examinations to get in the way of the innovations needed to re-engineer school-

Too frequently, teachers and administrators alike, allow their fear of standardized examinations to get in the way of the innovations needed to re-engineer schooling for today's world. While, I do not condone outdated industrial-type standardized examinations, this project demonstrated that significant changes to structures and practices are still possible.

ing for today's world. While, I do not condone outdated industrial-type standardized examinations, this project demonstrated that significant changes to structures and practices are still possible. What is needed is the courage to move forward while advocating for assessments that go beyond memorized facts and procedures.

Perhaps the biggest accomplishment of this AISI project was that classrooms and schools became places where knowledge creation and deep understanding were sought and celebrated, students routinely created work that was personally significant and made a contribution to the larger community. The work done required interest and initiative and, because of the vigorousness of the work being done, it didn't simply demand it but cultivated it. Students and teachers alike became more engaged because living disciplines foster and reward engagement, where industrial assembly does not.

This three-year AISI project infused new meaning to schooling. It provided the venue for professionals to seriously rethink: (i) what teaching and learning meant for students living in a knowledge society and (ii) what their own professional learning and support needed to be to adequate make the necessary changes. Improved student learning and engagement were achieved through methods of inquiry that inspire good teaching.

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Part 2: The Impact

In this section, Loertscher, Lance and Todd provide research evidence of the impact of coteaching as one of the most important program elements in the Learning Commons.

Both Todd and Lance review evidence from their large qualitative research studies. Both of these articles concentrate on the impact of collaboration. They have, of course, published many other research reports looking at a variety of programmatic aspects that affect achievement that the reader will want to consult.

Loertscher proposes a simple measure of the impact of coteaching that can be done in any school at the local level rather than just rely on large data set research done by Lance and Todd. Such a measure is recommended as a part of annual reviews done by administrators. If the impact of coteaching is measured learning experience by learning experience, a track record can be established by the teacher librarian or any other specialist in the school to demonstrate indispensability.

"Be a powerful voice in adopting robust technologies that allow great learning experiences to flourish."

Collaboration and Coteaching

A New Measure of Impact

DAVID V. LOERTSCHER

BACKGROUND

The idea of a library in the high school has been a part of American education for over a century, and in elementary schools for half that time. In 1963, Dr. Mary Gaver testified before Congress about her research in elementary schools that linked achievement to the existence of an elementary school library and a full-time certified librarian. Congress voted in favor of funding to encourage the development of such libraries across the nation, and the idea became ubiquitous.

School libraries face a challenge

However, during the past decade of financial exigency across the United States, many school districts have eliminated the professional teacher librarian, and this has spread more recently to both middle and high school positions. The move was not just a financial decision but also stemmed from a growing sentiment that somehow the Internet and Google Search had replaced a tired concept. This stance was taken in spite of a great deal of research done by two excellent scholars.

Research links libraries to achievement

Dr. Keith Curry Lance and Dr. Ross Todd have conducted more than twenty correlational and qualitative studies over the past decade in various states that link the existence of quality libraries staffed by full-time professionals to achievement using various large data assessments. These state-by-state studies have been circulated widely by librarians in the hope that the burden of proof would not only stop the decline of the idea of libraries but would expand it. Although these studies provided librarians with authoritative evidence of their contributions and developed considerable awareness of the potential of school libraries—internationally as well as nationally—it seems that in this time of test-driven assessment, the contributions of the librarian are getting lost.[1]

With this powerful push to achieve the almighty test score as a do or die, the attraction of direct teaching, coverage of material, and the concentration on standards has pushed all other concerns aside. So what could a library or learning commons contribute to that paradigm?

What impact do specialists have on achievement?

If a school loses a professional librarian or has one spread among several schools, or if this happens to other professionals, such as tech integration specialists; counselors; gifted and talented, art, or music teachers, is their contribution like turning off a water valve? Do scores immediately plummet? Likewise, does the ramping up of direct instructional techniques across the faculty automatically open that spigot? The answer to the first question is probably no since the impact likely dies slowly. The answer to the second is happening under the watchful eyes of the nation. Are test scores improving exponentially in your school, district, and state? The problem may lie in the one-dimensional measurement tools rather than the contribution of any specialist.

Over the past seven years, my Canadian colleague Carol Koechlin and I have been writing and presenting widely about strategies to push the library learning commons into the center of teaching and learning in the school. When we could conduct workshops encouraging classroom teachers and teacher librarians to coteach rather than attempting separate experiences, we began to hear feedback that such an approach was beginning to work. While gratifying, we were not tracking the impact in a systematic way. In late 2013, a notice crossed my desk calling for research proposals for the Baber Research Project of the American Library Association. I applied and was successful; the following research report is the result.

THE CONCEPTUAL FRAMEWORK OF THE RESEARCH

The Research Framework

Millions of dollars have been spent to improve the skills of the isolated classroom teacher in an attempt to raise achievement scores. Has that effort succeeded? To me, that is a teacher-by-teacher question being hammered out every school day by administrators and professional developers. Unimpressed by national data, I began to wonder if a different approach might produce more informative results.

Four Questions

Questions about the impact of coteaching

1. What happens to learning when the classroom teacher and the teacher librarian coteach?
2. If coteaching has a positive effect on learning, what are the implications for the ubiquitous model of isolated teaching?
3. Could an unobtrusive tool measure the impact of coteaching that would have direct meaning for administrators, parents, and policy makers?
4. Could a measure be developed and easily replicated in any school to provide more avenues to measure success rather than relying solely on standardized testing?

Definition of coteaching

In order to participate in the research, I needed teacher librarians who understood and practiced coteaching. This was defined as classroom teachers and teacher librarians who planned, taught, and assessed learning experiences together using standard assessments. Thus both adults would have a mark on the learning experience, ranging from content to inquiry skills, wide reading, and the use of technology. Theoretically, the combination of both classroom teacher objectives and those of the teacher librarians would be embedded in a learning experience. Such a practice would be different than either adult teaching alone or a parallel experience where the teacher would teach the content alone in the classroom and rely on the teacher librarian to teach his or her part alone in the library.

Coteaching is often a challenge

Historically, teacher librarians have been taught the principles of collaboration and coteaching during their professional education or in professional development or at conferences. However, many have reported the difficult task of creating an actual partnership of equals. Numerous reasons for this have been covered widely in the literature; they range from difficulties with school schedules, the preferences of teachers to have their own kingdom of the classroom, the pressure of "covering" material from the classroom perspective, and the pressure of testing that pushed inquiry and collaboration aside. In spite of these barriers, enough librarians seemed to be rising to the challenge that Lance and Todd's correlational and qualitative studies showed positive results.

Cotaught units of instruction we studied

For this research, it seemed wise to change the unit of analysis from individual students on large-scale tests to actual learning experiences, one by one, to check the impact of the full power of two adults and their expertise.

THE METHODOLOGY

Methodology

16 schools participated

Originally, the plan called for just six schools—two elementary, two middle, and two high—but after reaching out across social networks, sixteen schools volunteered from various locations across the United States. Several additional volunteers dropped out of the study for one reason or another.

Each volunteer librarian was asked to conduct two phases of the research described below, for which they would receive a small stipend. Most importantly, they needed to practice the concept of coteaching and ask their teaching partners for assistance with the research.

Teacher librarians had experience with coteaching

Short questionnaires via a Google form were used to gather data, and the results came automatically into a spreadsheet for analysis and synthesis. Each learning experience with one or more teachers became the unit of analysis, so a random sample was not considered meaningful. Plain and simple percentages were used, and the results included all the learners in a particular learning experience.

This unit of analysis has a number of advantages. An actual learning experience is real. It is what really happened. It is like one brick in a wall—an example of what two adults did when they planned, taught, and assessed learning together. As a researcher, a certain amount of trust was placed in the expertise of the two adults. In order to look beyond a single experience, one would start looking for patterns and trends but would also respect unique results. The only stipulation made by the researcher was that both the teacher and the teacher librarian express verbally that they possessed the skills necessary to coteach and had some experience doing so.

A simple design to replicate anywhere

The methodology was purposely kept simple and unobtrusive so that very little time was required for teacher

and teacher librarian partners to respond. Secondly, the hope was that the research could be duplicated very easily in any school at any level.

Phase 1: Isolated teaching

PHASE 1: THE ISOLATED TEACHER IN THE ISOLATED CLASSROOM

With such emphasis across all of education targeting the classroom teacher as *the* person where the buck stops, it begs the question of how successful individual teachers felt they were in their classrooms. In order to establish some sort of baseline success rate, teacher librarians were asked to select five to ten teachers who taught alone in their classrooms to answer five questions in a Google form. (See Appendix 1 for the actual questions.)

Asked to think of a recent unit taught

Thinking of a recent topical unit, the teachers were asked the number of students who participated and the number who met or exceeded their highest expectations.

Here are the results.

Teachers Who Teach Alone: How Many Students Meet or Exceed Your Highest Expectations for a Learning Experience?

About half of the students meet or exceed expectations

Elementary Teachers	32%
Middle School Teachers	47%
High School Teachers	59%
Average (across 2,310 Students)	**48%**

It is fascinating that as the grade level increases, the teachers report a higher rate of success. That in and of itself is an interesting question for further research, but in summary, we set the baseline of teachers teaching a unit alone in the classroom at about 50%. We accepted the teacher report based on their own assessment measures, not one that we imposed, assuming that they measure and award grades according to normal and acceptable school expectations set by principals, school boards, and standard practice.

Local assessment measures used

For any school wishing to replicate this study locally, we would suggest creating your own baseline using our questions or those more appropriate for your classroom teachers. You might have better language about the assessment used, and you will want to consider whether you want the questionnaire to be anonymous.

Phase 2: cotaught units

PHASE 2: THE IMPACT OF COTEACHING ON ACHIEVEMENT

With the baseline of about 50% success rate in the isolated classroom, we asked the teacher librarians to query one or two teachers with whom they had cotaught. From the sixteen schools, we received responses for nineteen different learning experiences. The eighteen questions asked of each partner are listed in Appendix 2. Again, the main measurement concerned how many students were in the learning experience and how many met or exceeded the pair's highest expectations. The results were as follows.

Percent of students meeting both adult's expectations

Teachers Who Coteach with the Teacher Librarian: How Many Students Meet or Exceed Your Highest Expectations for a Learning Experience?

70-100 %

Elementary Schools	**71–100%**
Middle Schools	**74–100%**
High Schools	**70–100%**

The increase by 20–50% success rate was huge!

Carol Koechlin looked at the comments about these results from both teachers and teacher librarians and compiled the following comments (more can be read in Appendix 3):

Reasons for major success rate

- "Students have the benefit of the right resource at the right time because there is a teacher librarian there to differentiate and a teacher there to help understand the special learning needs of each child in her/his class."
- "I felt we were able to get to more students."
- "I see my strengths and my coteacher's strengths come together and benefitting the students because they learn content and technology together and how the two can be incorporated into the real world."
- "It is nice to model collaboration."
- "We each have expertise and can help students with different types of questions."
- "The great advantage of two adults is the varying perspectives they bring to the task of working with individual students."
- "Each adult brings his/her skills and talents to the project, and the learning is exponentially increased."
- "Students see how the library is at the center of their learning."

Experienced coteachers don't fare as well when teaching alone

When these same classroom teachers were asked about a learning experience they had previously taught without the teacher librarian, their answers ranged from a 17% success rate to 100%, with an average of 54%. While the average was similar to the baseline teachers, the wide range would indicate that these teachers are different in some way, something not determined by this researcher. The few who did comment about teaching alone provided a few clues:

- "I am almost never alone in my teaching. Tech integrators and librarians are involved in almost every project/experience in Global History I, and I team teach on American Studies with an English teacher." (comment from a teacher who marked "n/a" on a unit taught alone)
- "Not as many as the collaborative project with the teaching librarian."
- "Most. However, it was a different set of expectations. There is no way I would have had the success I did on our book trailers (or even known about Animoto.com) if we didn't collaborate. He also had pulled a lot of great books I don't have in my classroom library to help kids find something they could connect with."

When teacher librarians teach alone in the library, they report a range of success between 10 and 83%, with an average of 52% of the students meeting their expectations. Like teachers, they feel that they are less effective alone than when they coteach.

Outliers

THERE ARE OUTLIERS

When coteaching occurs, it is not all roses or automatic. For three learning experiences in two schools, the success rate was very low. In these cases, the researcher telephoned the teacher librarians to find out why. In one elementary school case, general school disruption of schedules, pull-out classes, and other matters "ruined" the collaborative unit. For the two learning experiences in the same high school, the expectations of both the teachers and the teacher librarians were so high that few students could even begin to satisfy the adults. In this case, the adults were asking sophomores to produce college-level term papers as their first research experience of high school.

Challenges for coteachers

Complaints coteachers have

THERE ARE ALSO COMPLAINTS

Teachers who experience the benefits of collaboration often complain that they do not have enough opportunity to coteach either because there is not enough time or the teacher librarian is in so much demand. These comments can be read in full in Appendix 4.

The theory of coteaching

THINKING ABOUT COTEACHING, COLLABORATION, AND EMBEDDED ACADEMICS

Parallel teaching about the same impact as isolated teaching

Within the teacher librarian profession, the conversation about coteaching and its older term of *collaboration* is longstanding.[2] The idea of collaboration historically meant the planning, teaching, and assessment by the teacher and the teacher librarian in concert, but over the years, it has become more connected with cooperation than true collaboration. A teacher librarian interested in teaching information literacy and inquiry might "go it alone" in the library but try to tie into topics being studied in the curriculum. The researcher would term that *parallel teaching*,

with both adults teaching in isolation. In this research, one would not predict that either the classroom teacher or the librarian would succeed above the expected 50% success rate.

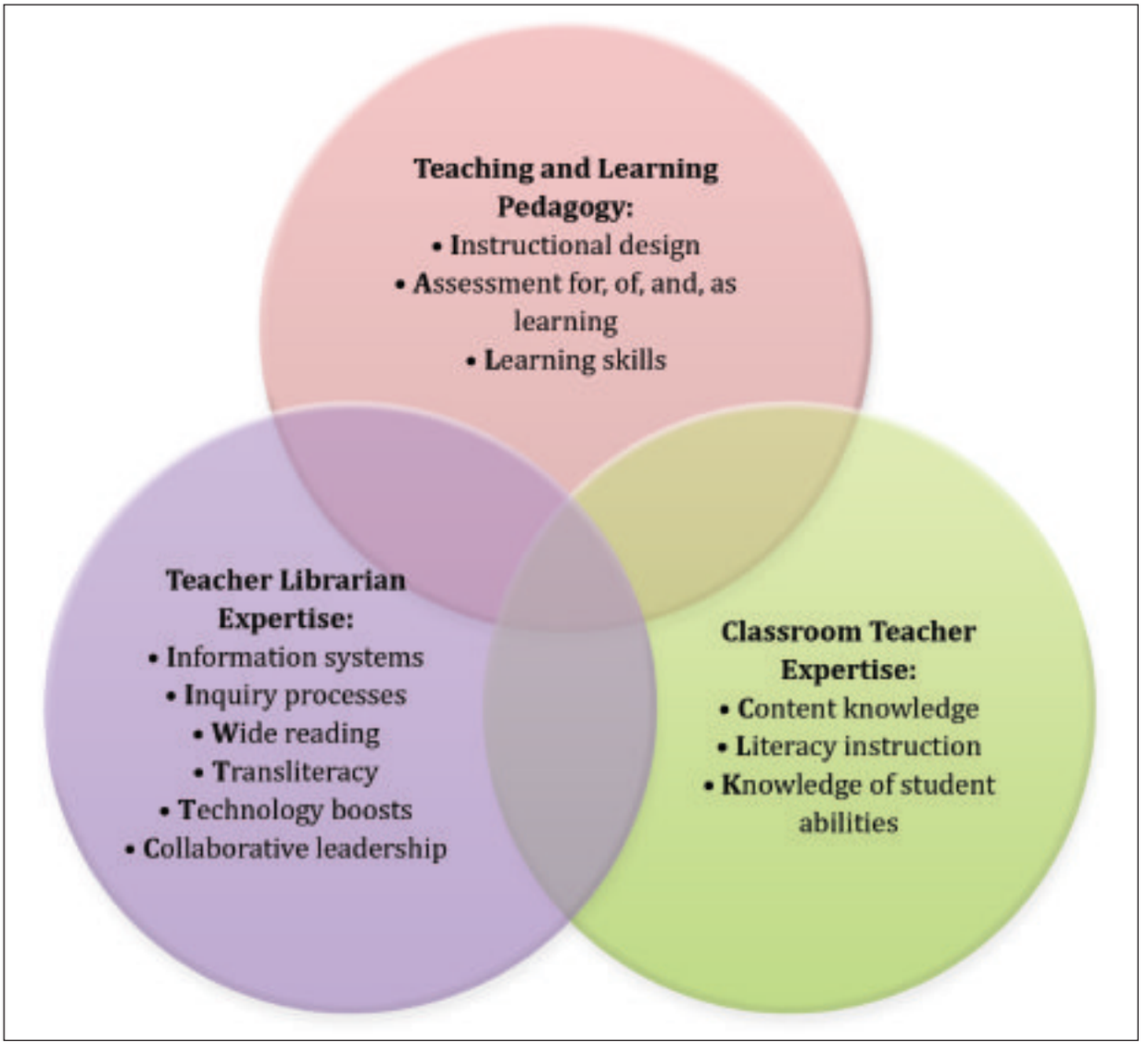
Scheduling and other complications often limit coteaching even when the expected result would be significantly better than any other alternative. Some years ago, the author and Carol Koechlin conducted an international campaign to eliminate "bird units" from the school library. These were low-level reports, mostly cut and paste on worksheets, that encouraged kids to simply copy answers out of books. Perhaps it is time to argue for the elimination of parallel or isolated teaching of information literacy or inquiry curriculums that are the mission of the library program.

Embedded coteaching in tech education popular

More recently, we have been introduced to the idea of embedded academics.[3] Popular in technical education schools,[4] the idea is to mesh a language arts teacher with a welding class, a tech integration specialist with a drafting class, a math class with building trades. In courses like these, two teachers are coteaching and often see the same kind of success rates emerge as this research has discovered. The idea of "just in time" meshing of skill and content knowledge is much superior to separate curricular approaches.[5]

A repertoire of coteaching is evidence of impact

In the embedded academics model, two teachers of complementary expertise teach together all day long and across the school year or semester.[6] Teacher librarians do not have such luxury because they have a warehouse to keep going and serve 50–100 teachers in a building. However, any time they could devote to coteaching would be like sticking a finger into a half-full glass of water. The water level (result) would rise. In a classroom teacher's experience, they could not have the teacher librarian for every unit, but they might engage with other specialists of the school in like fashion to maximize the number of



units benefitting from coteaching. For the teacher librarian or other specialist, a repertoire of such cotaught units would become the paramount evidence of impact on teaching and learning.[7]

From the classroom teacher's perspective, when faced with a year's curriculum, one might try to involve a specialist in places where the complementary expertise might make the most difference.[8] Thus the teacher might "hire" expertise to maximize results. The Venn diagram on page 12, created by Carol Koechlin and the author, suggests the usual combined expertise, what one would expect the teacher to exhibit, and the types of expertise a teacher librarian might contribute.

Complimentary expertise of adults is key

Expertise teacher librarians bring

Whatever specialists the school was fortunate to have, and depending on their ability to coteach, a teacher would have a choice in order to maximize the impact of learning experiences over time. And as the repertoire of such experiences develops, coteachers learn more about the expertise of their partners, so that when isolated teaching must happen, some of the shared expertise rubs off. Further, because the world of information, technology, and content knowledge continues to grow, what one partner contributes today keeps getting better and better.

Classroom teachers select partners based on expertise needed

Thus one can expect in any successful cotaught or embedded academic experience that the sum is greater than the separate parts or

1 + 1 = 3

The whole is greater than the sum of its parts

ASSESSMENT IN COTAUGHT LEARNING EXPERIENCES

While specific assessment practices were not monitored or recommended in this study, the possibilities for both formative and summative assessment with complementary expertise looms large. When both partners select goals and objectives that mesh together well, there is a good possibility that attention to one will enhance the other.

When the expertise of the teacher librarian comes into play, assessment strategies might include

- the use of knowledge-building strategies to enhance deep understanding
- attention to the building of personal expertise, cooperative group working relationships, and the growth of collaborative intelligence as students put ideas together in the creation of products, positions, and new thinking
- emphasis on the usefulness of technology to boost actual learning alongside efficiency, creativity, and other benefits of particular tech tools
- the systematic use of inquiry as investigation and project-based learning unfolds
- the recognition that a number of learners may exceed adult expectations and need to be recognized for their work

Combined assessment strategies point to success

One such example rubric based loosely on the Robert Marzano assessment strategy is presented in Appendix 5, where students have been asked to take a position on a controversial topic.

GENERAL CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The purpose of this research was to develop a simple measure of the impact of coteaching when classroom teachers and teacher librarians partnered and to create a proof-of-concept test of the measure. This method worked very well in the sixteen participating schools and could be replicated in most schools.

In this study, when teachers taught alone in the classroom, about 50% of the students were likely to meet or exceed that teacher's highest expectations. When coteaching occurred, 70–100% of the students were likely to meet or exceed the pair's expectations using normal assessment measures.

Coteaching makes a major impact on learning

For schools seeking to cut both the expense and the frequency of standardized testing, it would seem a repertoire of successful learning experiences could be used as another indicator of success rather than a one-dimensional view of education from the big-data sources.

Rather than require all teachers to cover the same content in the same way, this measure allows for a lot of experimentation—trial, success, failure, and certainly more local control of the expertise of a given faculty and administration. Major attention can be given to such factors as culture, languages, socioeconomics, background, entry-level skills and interests, and any other unique characteristics of a particular group of learners.

Coteaching allows for experimentation

The researcher suspects that classroom teachers who prefer to teach alone are different in some ways than those who welcome coteaching. Even teacher librarians who experience both coteaching and isolated teaching admit that they are less effective when teaching alone.

Advice for administrators

IMPLICATIONS OF THE RESEARCH FOR ADMINISTRATORS

Administrators are encouraged to replicate this study in their schools. The data can easily be gathered using acceptable assessment measures already in place.

Judge the impact of coteaching for yourself

If walk-throughs are a normal part of the administrator's agenda, then any time a true coteaching experience is happening, include these units in your visits. At the end of such experiences, dismiss the teaching adults and talk with the students about what and how they learned and ask about their comparison of this experience with others they have in the school.

If teachers and/or teacher librarians are reluctant to coteach, provide professional development that helps them learn how to be effective partners. Also, when hiring new teachers, teacher librarians, or other school specialists, inquire about their experience in coteaching and their success rate in doing so.

Make coteaching happen

Pave the way for coteaching to happen as a regular part of the school day. Often schedules, planning periods, or other factors are antithetical to the coteaching concept. Use creative solutions to facilitate this participatory strategy.

Document the impact

Ask teacher librarians and other specialists in the school to shoot for at least 50% of their time in the school to be devoted to coteaching, and ask them to document these experiences and their success, failure, or improvements needed. A full repertoire of these experiences will provide not only a unique set of data but also stories of exemplary learning. The number of such experiences will vary, of course, with the size of the library learning commons staff. What is possible with a half-time teacher librarian? A full-time person? Two full-time professionals? Provide sufficient paraprofessional support staff to handle clerical staff so that the professional can devote more time to making a major difference alongside the faculty.

Consider housing all the specialists in the library learning commons, where they can organize themselves as coteachers to maximize their impact.

Advice for teachers

IMPLICATIONS OF THE RESEARCH FOR CLASSROOM TEACHERS

In this study, teachers appreciated having a professional partner with complementary and unique expertise to join them in a teaching experience. Seek out teacher librarians and other specialists in the school or district who know how to partner with you in these collaborative strategies. The results are most often markedly successful when compared to learning experiences taught in isolation.

True partnering means that both participants will want to contribute goals and objectives and think through joint assessment measures. A successful experience is not just that there are two adults in the room but the expertise that both bring.

Take a chance coteaching

Often teacher librarians are looking for teachers to partner with because they feel that coteaching is part of their role. Take a risk. Partner in good faith. If the results don't meet expectations, keep trying.

If you have repeated opportunities to coteach with the teacher librarian or other specialists, then you can increase your expectations of the students from one learning experience to the next. The sophistication over time will be something worth noting and reporting.

Get your share

With teacher librarians or other specialists spreading their influence across the school, it might be difficult to get them to coteach because they will be in great demand. In this case, it is worth the competition to maximize the number of learning experiences they can do with you. Don't be timid in your requests.

Advice for teacher librarians

IMPLICATIONS OF THE RESEARCH FOR TEACHER LIBRARIANS

The teacher librarians in this study all knew how to coteach and had a track record of doing so. Gaining that expertise is worth the effort because it pushes your role in the school closer and closer to the center of teaching and learning.

Become an expert coteacher and track the impact

Over the years, various effectiveness measures have been used by teacher librarians in their monthly and annual reports. A repertoire of coteaching experiences and their impact on teaching and learning should be at the top of the list in these reports. One by one, each experience adds up to a major impact throughout the school.

Build a virtual learning commons as a digital space where participatory experiences are planned, made available to the students 24/7, and after completion, become a part of a museum of such examples across the school.

By participating in every aspect of a learning experience, you not only bring to that experience your expertise in reading, information, and technology, but you experience the impact on student learning. It is a very different

experience to discover the effect on learning rather than just report time spent teaching.

Turn the traditional library physical space into a vibrant and active library learning commons where individuals, small groups, and large groups are at work throughout the school day and virtually at all times. There are more and more examples of these spaces popping up across the United States and Canada. Many are documented in articles in *Teacher Librarian*, where you can discover ideas and contact the article writers for more information.

Create a learning commons

In schools where the library is scheduled throughout the school day, look for simultaneous scheduled and flexible cotaught experiences. While the cotaught learning experience always receives preference on the calendar, creative use of scheduled time can also be helpful for students, particularly if making and choice are encouraged. When you are coteaching and a scheduled class is also present, the latter can be engaged in independent and self-directed activities as individuals, small groups, or as an entire class with a minimum of supervision.

Fixed/flex: create a both/and approach

No matter how much time you have in a school, spend at least half your time coteaching rather than keeping the warehouse operating. Even if you have just one day a week in a school, spend half of it coteaching. You will be able to participate virtually throughout a learning experience if you have it posted and available online. Such experiences can cross schools and grade levels and extend beyond the school using the best of the best technologies. Be a leader in this outreach.

Spend half your time coteaching

Be a powerful voice in adopting robust technologies that allow great learning experiences to flourish. Anywhere, anytime, on any device, learning is growing exponentially around the world, and your school, its teachers, and your students deserve the best. Luckily, in today's tech environment, some of the best tools are still free or inexpensive.[9]

As you work alongside a particular teacher, reflect with the students after each experience about what went right and what went wrong and what the group can do better the next time. Then track the sophistication level with subsequent coteaching experiences.[10]

Conduct metacognitive Big Thinks

FINAL THOUGHTS

The researcher would like to thank the American Library Association for the Baber Research Award. It allowed him to think through a nagging problem that most teacher librarians face every day: how to measure the impact of the library learning commons services on teaching and learning throughout the school. While a constant stream of coteaching experiences is a challenge for teacher librarians everywhere, the effort seems to produce spectacular results. The school library learning commons consumes major resources of a typical school budget. Transforming those resources and technology into results—learning experience by learning experience—is a demonstration of wise use of the investment. Making the impact and results explicit rather than assumed argues for continued sustainability amid conflicting priorities. It is a bottom line worth shouting about.

Move to the center of teaching and learning

Appendix 1

TEACHERS TEACHING ALONE QUESTIONNAIRE

1. Topic of the teaching unit. This could be a unit that took several days or several weeks to complete with your class.
2. Grade level.
3. Total number of students in this learning experience.
4. How many students met or exceeded your highest expectations for the unit? This might have been the highest level on a rubric or the more traditional A-level work.
5. Was this result typical? Why or why not?

Appendix 2

COTAUGHT LEARNING EXPERIENCE QUESTIONNAIRE

(This one for teachers, a mirror image for teacher librarians)

1. Your Name: This will not be used in any research report, but you can use the results any way you wish at your school.
2. School name
3. Your e-mail
4. Title of cotaught learning experience you did with your teacher librarian
5. Grade levels in the school

   Elementary, Middle School, High School, Other
6. List one or two of the highest expectations you had as coteachers for this unit. These might include both content understanding and the skills needed to learn it (such as inquiry skills).
7. How many students participated in this unit of instruction?
8. Considering the assessments used for the entire unit, how many students met or exceeded your highest expectations? This might have been the highest level on a rubric, or the more traditional A-level work.
9. How many learners made more progress because there were two adults helping instead of one?
10. Optional question to ask of students: Compared to other learning experiences we have done in this class, how much did you learn? Less, about the same, more? Take two minutes to ask the students their honest opinions. You might follow up with asking them how that learning experience could have been better. Record the response here as such: 3 said less; 10 said about the same; 5 said more.
11. What would you change in this unit if given a chance to teach together again?
12. What advantages do you see for the students when collaborating with two adults on a learning experience of this type?
13. What challenges do you see in partnering with the teacher librarian in the school?
14. Finally, think back to a recent and typical learning experience you taught alone in the classroom. What was the topic you were teaching?
15. How many learners did you have in that learning experience?
16. Thinking again of your highest expectations, how many of those learners met or exceeded your expectations?
17. Any final comments?

Appendix 3
Comments by Teachers about the Experience of Coteaching

WHAT ADVANTAGES DO YOU SEE FOR THE STUDENTS WHEN COLLABORATING WITH TWO ADULTS ON A LEARNING EXPERIENCE OF THIS TYPE?
Two teachers combined with group work means students had regular, seemingly constant access to help/assistance.
They have more feedback from adults. They also benefit from different feedback.
They benefit from having two teachers to mentor and support students during the research process, answer questions, and clarify expectations. They also benefit from having two teachers collaborating during the planning to make the lesson the strongest it can be.
There are multiple communication styles, hours of availability, and areas of expertise.
Each adult brings his or her skills and talents to the project, and the learning is exponentially increased. Our teaching librarian is also a history buff, so his subject matter knowledge filled in where I had gaps.
Better education results because of the different skill sets that teachers have. We can't all be good in everything.
We were able to move around more easily from station to station in the library, supervising, guiding, and answering questions, than if one of us had tried to navigate all of the stations at once with several requiring assistance at the same time.
The students get two different perspectives and personalities. There is a shorter wait time for individual help. The lesson is more dynamic.
More assistance is available.
All teachers have different styles of presenting content. Utilizing two teachers within a unit allows the key concepts to be presented in multiple styles to reach more students. Also, utilizing two teachers makes online research and digital projects easier to facilitate by quickly addressing students' questions/problems.
Particularly when the other adult is an expert in media/research skills, it is invaluable. However, I always gravitate toward collaborating planning.
Much more thorough understanding of all facets of the material is involved. More one-on-one time and options for individualized instruction using their own work are also available.
It allowed for small groups and two teaching styles to ensure all students were engaged and learning.
More adults are available to help.
With more individualized attention for all students, students are less frustrated. Time is better utilized, and more objectives are met through small-group instruction.
There is more individual attention, and questions are answered more easily. Students are less frustrated. Learning is increased. Time is better utilized, and more objectives are met through small-group instruction.[Q: very similar to quote above]
There were so many advantages. When planning, it was very nice to have another thinking partner. Additionally, I felt we were able to get to more students. I was able to work with some groups closely, as was the teacher librarian.
I see my strengths and my coteacher's strengths come together and benefitting the students because they learn content and technology together and how the two can be incorporated into the real world.
There are different areas of expertise and more access to ask questions.
We bring different expertise, and there are two teachers to answer questions, help find resources, and monitor that students are on task.
We each have expertise and can help students with different types of questions. There were fourteen different landforms, which makes it nearly impossible for one teacher to meet and help each group find the necessary resources.
Each adult brings his or her own expertise to the class. When I was unsure about potential resources, I could direct the students to the librarian. For students with very specific learning needs, I was able to help them because I know them better.
Our PMS teacher librarians are highly skilled in assisting students in pursuing multiple paths in the research process, helping students refine their questions and develop new ways of considering an issue.
Each adult has his or her own expertise in areas of the project, so students definitely benefit from that. Students can get help finding resources and evaluating their credibility and usefulness when there are more adults to help.
There is more one on one and different vantage points.
There is now a familiar face for them that they can ask for help when they are in the media center. The collaboration makes them more connected and comfortable with another staff member.
Students can have their questions answered right away. The teacher librarian has a greater depth of knowledge about the different African cultures and the resources available.

Appendix 4
Challenges That Teachers Face When Wanting to Coteach

WHAT CHALLENGES DO YOU SEE IN PARTNERING WITH THE TEACHER LIBRARIAN IN THE SCHOOL?
Availability is the only one in our school. They are in demand, especially on a project like this involving ten or more sections of students at the same time of the year.
There is no time for collaboration.
None!
He ends up doing a lot of work, and since he's good, our sister school has started asking for his help, so we ran into some scheduling problems when he was there, but they were manageable.
Everyone wants to work with him! He needs a clone or two.
Time, scheduling, negotiating for library time are challenging.
The only challenge was in making the time to intentionally collaborate and reflect because we're normally very busy and don't regularly encounter each other unless we are that intentional and mutually goal oriented.
There is a little more advanced planning.
None.
The most challenging aspect with partnering with the media specialist is scheduling available times that coordinate with four sections of third grade and the media specialist. This requires advanced planning and frequent communication between everyone involved.
Time to plan together is always a challenge, but I would also say that I would love to know what other units I can incorporate her expertise into.
Timing. They are incredibly busy supporting the entire faculty. This is a work-intensive project for everyone involved, so scheduling can get tricky.
One challenge beyond the teacher librarian's control is not enough time to engage in more collaborative projects.
Scheduling is a challenge.
Finding common planning time with the librarian is always a challenge.
Overall the experience was amazing. The only challenge I found was the amount of time we had to collaborate. I wish we had more time to sit and plan with one another.
Availability of the teacher librarian to collaborate with is challenging because he is highly needed by staff in our building and busy helping with many people on any given day (as well as students).
We need more time to collaborate.
Scheduling the necessary library time to coincide with a particular unit is difficult.
The library is popular, and many teachers want to bring their classes. In science, we have a specific progression of our units, and sometimes have difficulty fitting the library unit in at the correct time.
I really do not see challenges other than finding time on the library calendar. Our library is used so frequently that it is not always easy to schedule time in the library.
Mostly time constraints are involved because we have large classes and every student needs help.
It's not always possible to schedule as much time in the library as I would like, and it's challenging to find the time to plan and debrief.
Time and availability are challenges.
Our biggest challenge was scheduling a time to meet because other teachers wanted to collaborate with him as well.
Scheduling can be tricky, as there are so many departments who want to complete library research projects.

SCORING CRITERIA

1 = On Your Way
2 = Getting There
3 = You Did It

NOTES

(Endnotes)

1 Some of these studies can be accessed on Keith Curry Lance's website (http://goo.gl/X3bM17) or at the Colorado Library Research Service (http://goo.gl/8vVSu7). For Ross Todd's research, consult the Rutgers University CISL site (http://cissl.rutgers.edu/).

2 A recent article about collaboration between science teachers and school librarians is particularly helpful: Rawson, Casey H. (2014, January 1). "Every Flower in the Garden: Collaboration between School Librarians and Science Teachers," *School Libraries Worldwide*, vol. 20, no., 20–29. A second article discusses the extent to which school library preparation programs teach prospective teacher librarians the instructional partnership role: Moreillon, Judi, Sue Kimmel, and Karen Gavigan. (2014). "Educating Pre-Service School Librarians for the Instructional Partner Role: An Exploration into University Curricula," *School Library Research,* vol. 17. Available at http://goo.gl/5INlP8.

3 Schakat, Amy, and Sheila Grimm. (2014, February). "Literacy: Learners to Leaders: Our Journey," *Techniques*, 10–11.

4 Stone, James R., III. (2014). "More Than Just One Way: The Case for High-Quality CTE," *American Educator* (Fall), 4–11, 39.

5 A helpful paper on embedded academics in high schools published in 2008 is available at http://goo.gl/Mbcq9o.

6 Such was the pattern when the author recently visited Dundalk High School in Baltimore, Maryland. With over thirty languages spoken in the high school and with few students passing any state test, the administration paired a language arts teacher or a special ed teacher with a social studies or science teacher for the entire school year. The rate of passing state tests jumped, and students whom the author interviewed verified the effectiveness of such an arrangement.

7 Henry, Robin. (2013, January/February). "The Embedded Librarian for K–12 Schools," *Library Media Connection*, 22–23.

8 Several hundred ideas for the contribution of school librarians to Common Core or other national or state standards are available in *Implementing Common Core Standards: The Role of the School Librarian.* AASL and Achieve, 2014. Available at: http://goo.gl/asnfFa.

9 I still recommend that every school and district have the Google Apps for Education suite of tools as long as access to all the tools is open to the adults and students of any age.

10 Interweaving of learning is a technique that works across time and various learning experiences that helps retention. See http://goo.gl/fTG6l6.

"The overwhelming majority of administrators—almost nine out of ten—identified collaboration on instructional design and delivery as essential or desirable."

Collaboration Works—When It Happens!

The Idaho School Library Impact Study

KEITH CURRY LANCE, MARCIA J. RODNEY, AND BILL SCHWARZ

Collaboration between teacher-librarians and classroom teachers is valued by principals and other administrators.

Where it is valued and when it happens, makes a demonstrable difference in the teaching of Information/Communication/Technology standards and state Reading and Language Arts scores. Alas, according to both classroom teachers and teacher-librarians, despite its known value, collaboration happens all too infrequently.

Last year, the latest in a series of state studies was undertaken for the Idaho Commission for Libraries and endorsed by the Idaho State Department of Education. Survey responses were received from 176 principals and other administrators, 668 classroom teachers, and 146 library media specialists (aka teacher-librarians).

These are the major findings about collaboration from the Idaho School Library Impact Study—2009: How Idaho Librarians, Teachers, and Administrators Collaborate for Student Success.

Administrators on Collaboration

(Our) High School has a new librarian...who is inspiring to the staff there. She has used the library as a study, technology and research resource to students. She has brought teachers in and encouraged them to partner with her in working with writing, technology and subject exploration. –a district administrator

Our librarian ... sits on our school advisory committee... She is a great asset to our school. –an elementary school principal

COLLABORATION: HOW MUCH IT IS VALUED & HOW FREQUENTLY IT OCCURS

Principals and other administrators were asked how much they value librarian-teacher collaboration, while classroom teachers and teacher-librarians were asked how frequently such collaboration takes place, whether initiated by them or the other party.

The overwhelming majority of administrators—almost nine out of ten—identified collaboration on instructional design and delivery as essential or desirable. More than a quarter (27.6%) deemed it essential, while more than three out of five (61.5%) deemed it desirable. Only 2.3% of responding administrators deemed collaboration unnecessary (See Table 1). With such substantial support for librarian-teacher collaboration among administrators, one would expect it to happen with great frequency; but, according to both classroom teachers and teacher-librarians, that is not the case.

Classroom teachers were asked if they collaborate with teacher-librarians in the design and delivery of instruction—whether initiated by them or by their *TL*. Many report highly successful team efforts, but, far too many report a lack of such teamwork.

Almost half of classroom teachers report that neither they (45.1%) nor their teacher-librarians (48.1%) initiate instructional collaboration with each other. Fewer than 18% of teachers report their teacher-librarians initiating collaboration at least weekly (5.8%) or at least monthly (12.1%). Even fewer teachers—fewer than 16%—report initiating such collaboration themselves at least weekly (3.9%) or at least monthly (10.8%)—see Table 2. One explanation for these low figures is that teachers responding to the survey may or may not have had the services of a credentialed teacher-librarian.

Like their classroom colleagues, teacher-librarians were asked how frequently they collaborated on the design and delivery of instruction, and whether it was initiated by them or the teacher. When those self-identified as library media specialists were asked similar questions, the responses were somewhat better (see textbox 3).

About three out of ten of these teacher-librarians reported that collaboration happened rarely or never, regardless of whether they or their teacher colleagues initiated it. On the other hand, more than a third of teacher-librarians reported that they initiated collaboration at least monthly (24.7%) or at least weekly (9.6%). Similarly, about a quarter of teacher-librarians reported that their teacher colleagues initiated collaboration at least monthly (16.4%) or at least weekly (7.5%)—see Table 3.

Clearly, there is a "disconnect." Administrators value librarian-teacher collaboration but both classroom teachers and teacher-librarians indicate that it is far from commonplace.

LINKS BETWEEN COLLABORATION AND ICT STANDARDS TEACHING ASSESSMENTS

What are the costs of missed opportunities for collaboration between teacher-librarians and classroom teachers? The most immediate effect is on the teaching of ICT standards.

The definitions of the three ICT standards, ICT literacy, independent learning, and social responsibility, are as follow:

Teachers on Collaboration

When I first started teaching three years ago I found the librarian to be a vital resource for my teaching. She has given direction to students and developed reading lists that my students use to find appropriate books. She has also made me aware of new books that might encourage at-risk students to read. Together with the librarian we now have students who read regularly who would have not picked up a book two years ago. –a high school teacher

After being assigned to instruct a new elective class ... I floundered in designing a new curriculum that would be innovative [and] interesting... I happened to mention my dilemma to our school librarian one afternoon. She quickly responded with several great ideas that I was able to adapt almost immediately, helping me with my own creative juices! Without her input, I would not have put together a new curriculum so quickly (or possibly at all) ... She's a genius! Whenever I have a curriculum/technology problem, I know she's the "go-to" person. – a junior high school teacher

[The middle school librarian came] to our school to do a 10-week library lesson. She taught the students the Big 6. The six steps in writing a research report. I have been able to ... incorporate it into my classroom. The other day we were reading an autobiography ... As we were reading the story, A Kind of Grace, we came up with questions that were not answered in the story, so we went to the computer lab to use the Internet and World Book online to do more research about Jackie Joyner Kersee. The students were so excited and engaged about the story and being able to find more information. They talked about the research for the rest of the day. I walked away ... ready to incorporate new ideas into my classroom and put the student's new knowledge to work. –an elementary school teacher

Practice		Importance to Administrator of Activity Happening in School/ District (Regardless of Actual Practice)			
		Essential	Desirable	Acceptable	Unnecessary
Librarian and teacher design and teach instructional units together	Number	48	107	15	4
	Percent	27.6	61.5	8.6	2.3

Table 1. Value Placed on Collaboration by Principals & Other Administrators

Activity		Frequency of Activity Reported by Teacher				
		At least Weekly	At least Monthly	At least once per semester	At least annually	Rarely or never
Librarian initiates collaboration with me to design and deliver instruction together	Number	39	81	112	115	321
	Percent	5.8	12.1	16.8	17.2	48.1
I initiate collaboration with the librarian to design and deliver instruction together	Number	26	72	138	131	301
	Percent	3.9	10.8	20.7	19.6	45.1

Table 2. Frequency of Collaboration with Librarians Reported by Classroom Teachers

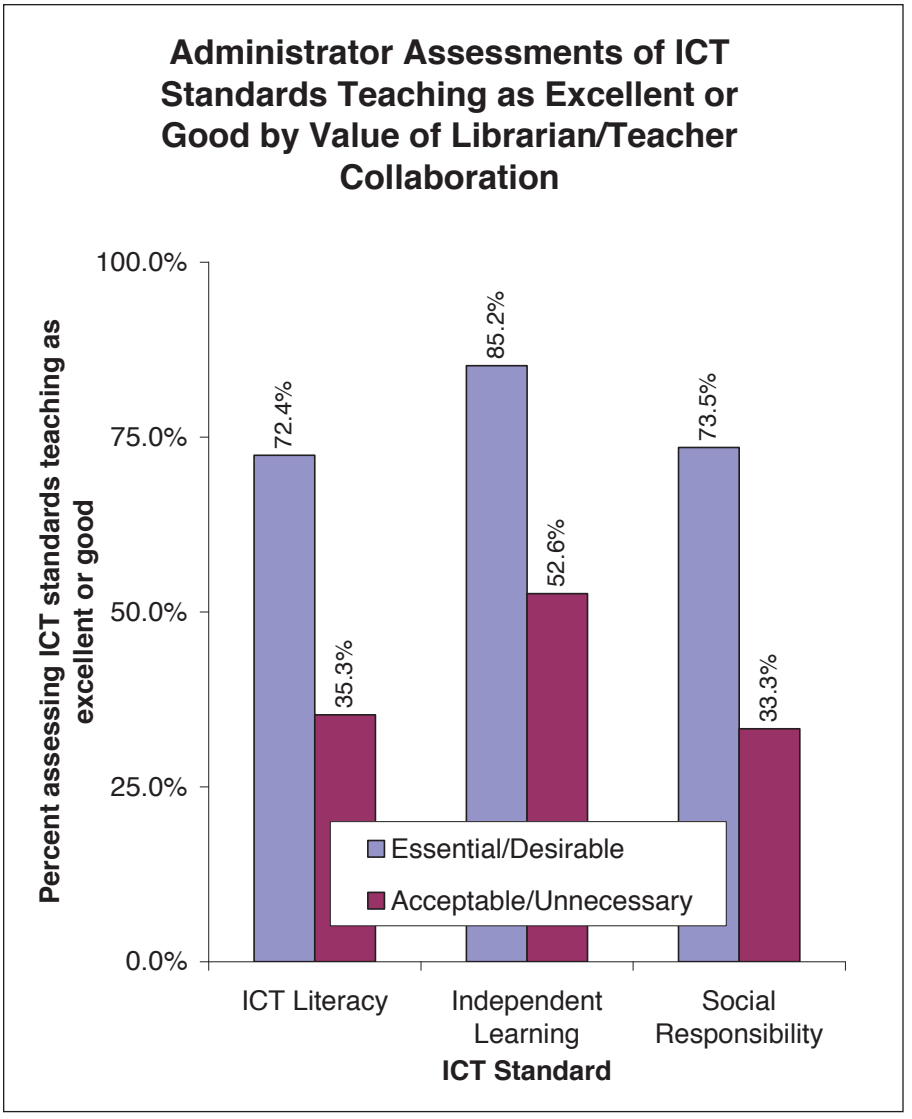


Chart 1. Administrator Assessments of ICT Standards Teaching as Excellent or Good by Value of Librarian/Teacher Collaboration

• ICT literacy: Students are taught to identify information needs and to access, evaluate, manage, integrate, create, and communicate information.

• Independent learning: Students are taught to pursue information related to their personal interests, to appreciate literature and other creative expression, and to generate knowledge.

• Social responsibility: Students are taught to recognize the importance of information in a democratic society, practice ethical behavior in regard to information and technology, and to share information and collaborate in its use in groups.

Where administrators regard librarian-teacher collaboration as essential or desirable, they are about twice as likely to assess their school's teaching of ICT standards as excellent or good. Of the administrators that value collaboration more highly, at least seven out of ten assess the teaching of ICT standards more highly. Of those who value collaboration less highly, only about a third assess teaching of ICT literacy and social responsibility more highly, and only about half assess teaching of independent learning more highly (see Chart 1).

Where classroom teachers report collaboration happening at least monthly (regardless of who the initiator is), they are twice as likely to self-assess their ICT standards teaching as excellent. For example, 64% of teachers reporting more frequent collaboration and fewer than 36% of those reporting less frequent collaboration rate

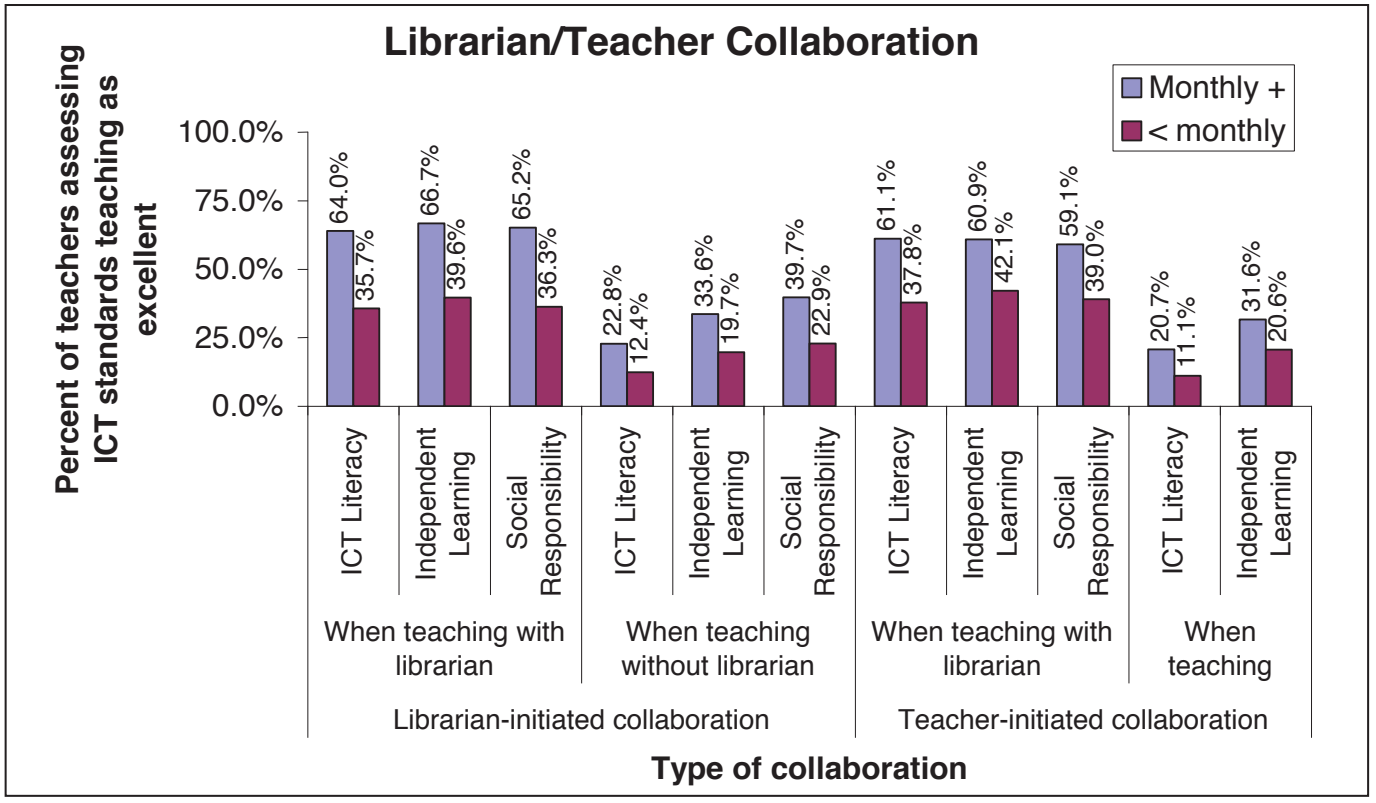


Chart 2. Percent of Teachers Assessing ICT Standards Teaching as Excellent by Frequency of Librarian/Teacher Collaboration

their collaborative teaching of ICT literacy as excellent. This finding is remarkably consistent with the preceding one for administrators. Teachers are also two to three times more likely to assess their ICT standards teaching as excellent when collaborating with a teacher-librarian than when not doing so. For example, 64% of teachers reporting more frequent collaboration rate their collaborative teaching of ICT literacy as excellent, while fewer than 23% of frequently-collaborating teachers rate their solo teaching of ICT literacy as highly (see Chart 2).

For teacher-librarians (aka library media specialists), the difference in self-assessments of ICT literacy teaching based on collaboration status are even more dramatic. When TLs initiate collaboration at least once per semester, they report an almost six-fold increase in excellent self-assessments of their solo teaching (29.1% vs. 5.1% for less than once per semester) and more than double the excellent self-assessments for collaborative ICT literacy teaching (32.5% vs. 13.9%). When teachers initiate collaboration at least once per se-

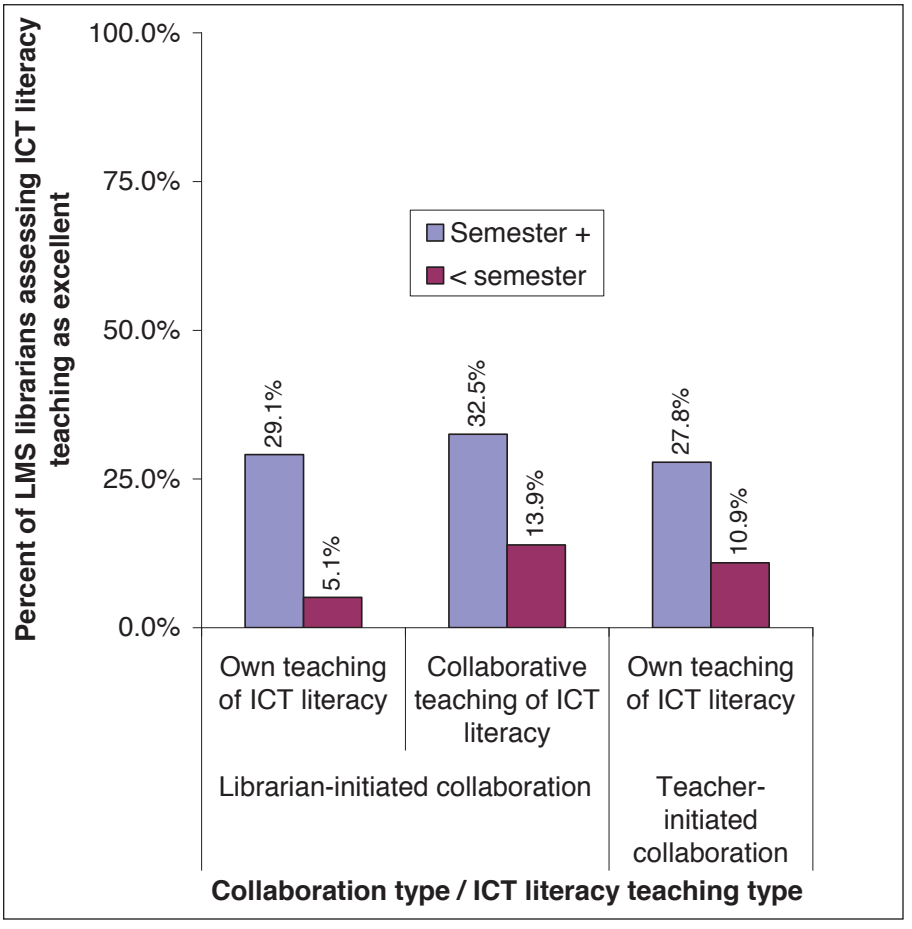


Chart 3. Percent of LMS Librarians Assessing ICT Literacy Teaching s Excellent by Frequency of Collaboration by Type

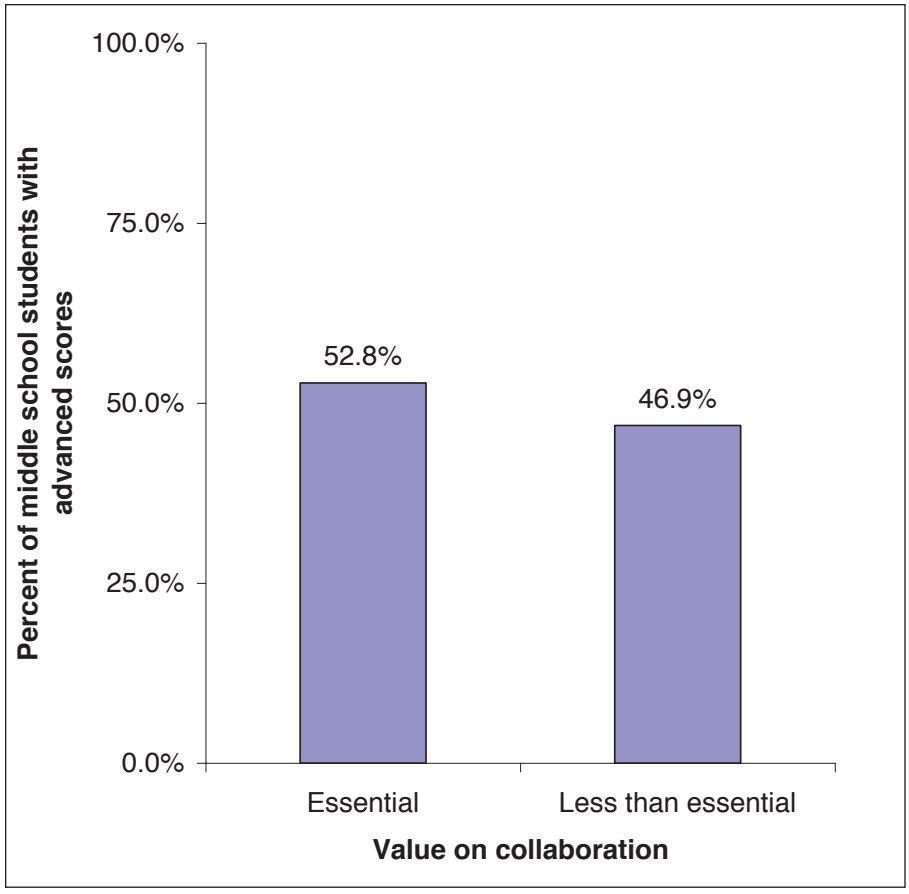


Chart 4. Percent of Middle School Students with Advanced ISAT Reading Scores by Value Placed on Librarian/Teacher Collaboration by Administrator

mester, TLs are almost three times as likely to report excellent self-assessments of their solo teaching (27.8% vs. 10.9%)—see Chart 3. Curiously, these findings do not play through for their self-assessments of collaborative teaching.

LINKS BETWEEN COLLABORATION AND READING AND LANGUAGE ARTS SCORES

There is also evidence that advanced scores on the state Reading and Language Arts tests are more likely when administrators value collaboration more highly and librarians report more frequent collaborative interactions with classroom colleagues (especially at the latter's initiation).

Where administrators consider librarian-teacher collaboration to be essential, the percent of middle school students with advanced reading scores is almost six percentage points higher (5.9%). That is a proportional difference of almost 13% (12.6%) over schools where administrators consider collaboration anything less than essential (i.e., desirable, acceptable, or unnecessary)—see Chart 4.

Where TLs at elementary and middle school levels report that their classroom colleagues initiate collaboration with them at least monthly, Reading and Language Arts scores are three to seven percent higher—proportional differences of 14% to 21% over schools where librarians report less frequent teacher-initiated collaboration (see Chart 5).

Where high school teacher-librarians report two types of teacher-initiated collaboration activity at least monthly—asking for help finding instructional resources and inviting the TL to the classroom—advanced scores on the state Reading and Language Arts tests are consistently more likely. The absolute difference ranges from 3.7% on Language Arts for teachers asking for help finding resources to 6.9% on Reading for teachers inviting their library colleagues to

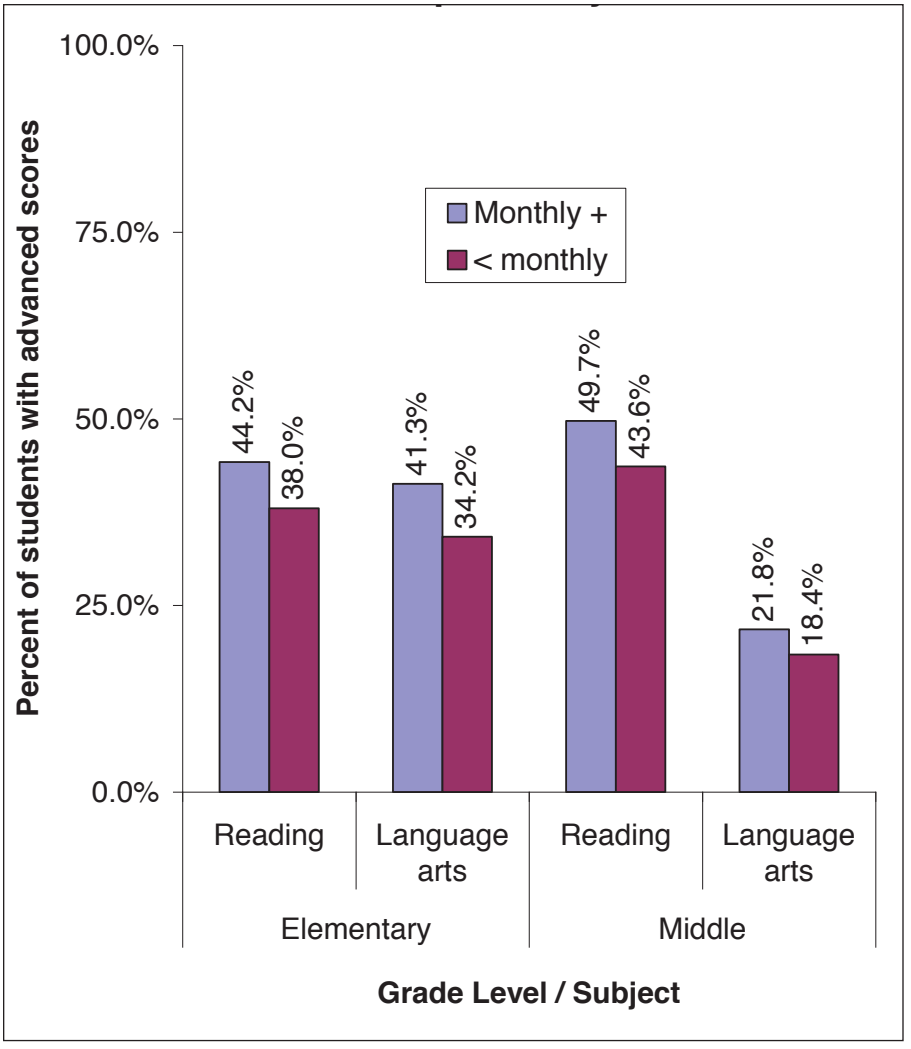


Chart 5. Percent of Students with Advanced ISAT Scores by Grade Level and Subject by Frequency of Teacher/Librarian Collaboration Reported by Librarian

the classroom. The proportional differences over schools with less frequent collaborative activities range from 20.0% for Reading and teachers asking for help finding resources to 49.2% for Language Arts and teachers inviting the TL to the classroom (see Chart 6).

SUMMARY AND RECOMMENDATION

The evidence from the Idaho study is clear: when administrators value collaboration between teacher-librarians and classroom teachers and when teacher-librarians and their classroom colleagues report that it happens more frequently, students are more likely to master ICT standards and more likely to earn advanced scores on state reading and language arts tests. The problem is that, despite a high level of support for collaboration as an essential practice among administrators, teacher-librarians and classroom teachers indicate that it does not happen regularly in many cases, and, in far too many cases, it happens rarely or never. A major recommendation of this study, therefore, is that administrators should take action to make collaboration a practical reality, and teacher-librarians and classroom teachers should take initiative to establish and strengthen their collaborative efforts. The latest evidence from Idaho indicates that more widespread and more effective instructional collaboration between teacher-librarians and their classroom colleagues will benefit students.

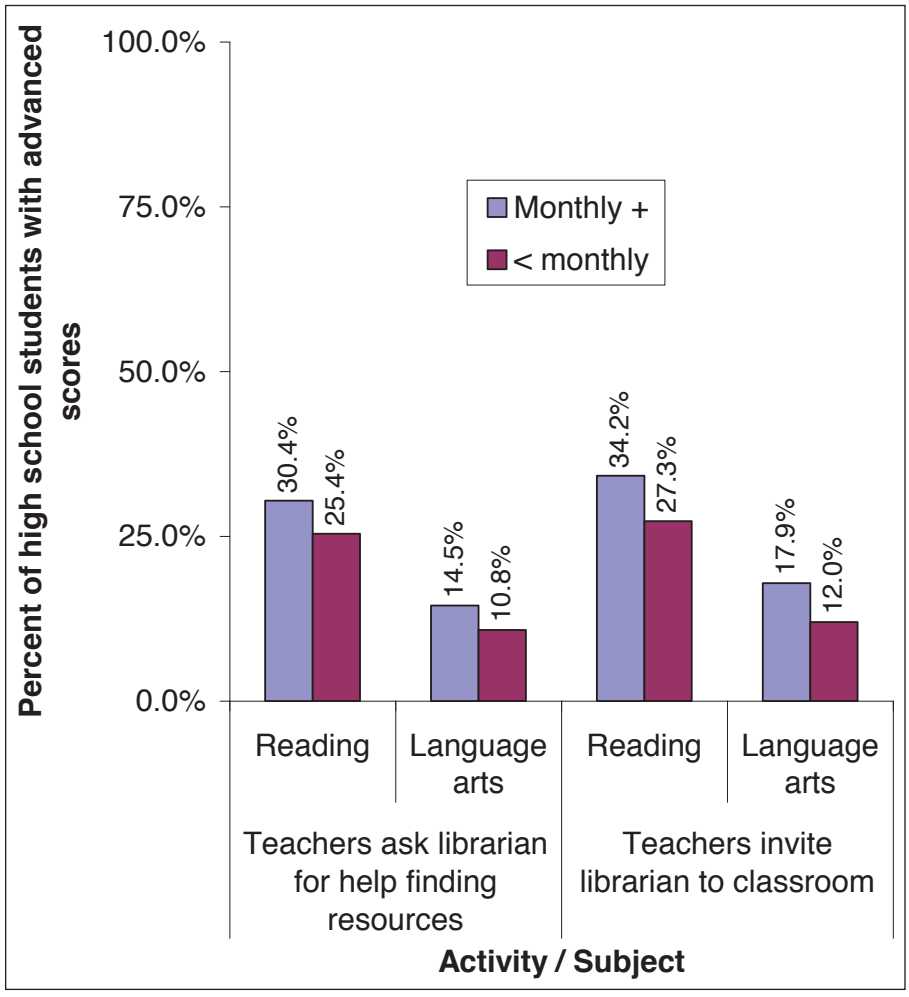


Chart 6. Percent of High School Students with Advanced ISAT Scores by Frequency of Selected Library-Related Activities Reported by Librarian

Keith Curry Lance is known widely for his contributions to library research and statistics. He is founding and longtime director of the Library Research Service (RSL) at the Colorado State Library, he has also served as an Affiliated Faculty member of the Library and Information Science Program, College of Education, University of Denver.

Marcia J. Rodney is the principal analyst with RSL Group with more than fifteen years of extensive research experience, in both education and business. She has worked with numerous states on survey design and analysis, examining the rigor and impact of school library programs, and traveled and spoken extensively about the import of these studies.

Bill Schwarz is an experienced project manager at RSL Group with over six years of survey design, data collection, and database management experience, and has been a key participant in every project RSL has completed. They may be contacted at *rslinfo@rslresearch.com*.

"As a researcher focusing on school libraries and how young people engage with them to learn, I am captivated by the stories that people tell about them."

Visibility, Core Standards, and the Power of the Story:

Creating a Visible Future for School Libraries

DR. ROSS J. TODD

Peer reviewed. Accepted for publication, October 1, 2012

INTRODUCTION: THE POWER OF THE STORY

I have always been inspired by many of the statements of novelist and essayist Salman Rushdie. In his essay titled "One Thousand Days in a Balloon," he says, "Those who do not have power over the story that dominates their lives—the power to retell it, rethink it, deconstruct it, joke about it, and change it as times change—truly are powerless, because they cannot think new thoughts" (Rushdie, 1993, 17). In a similar vein, the American poet William Carlos Williams (1883–1963) speaks of the power of the story: "Their story, yours and mine—it's what we all carry with us on this trip we take, and we owe it to each other to respect our stories and learn from them" (Williams, in Cole, 1989, 30). Ah, the power of the story, and the challenge to learn from them.

I believe in the power of the good story! Falling under the scholarly discourse of narrative intelligence, Mateaas and Sengers (1999) claim that a growing number of fields, ranging from history to psychology, law and medicine, education to social work, have embraced the use of stories and narrative forms as an effective methodology to hone in on findings not possible through traditional scientific methods in order to develop rich patterns of meaning and insights. Sandelowski (1991) posits that the narrative nature of human beings has often been lost in the data-driven research environment, yet it is these narratives that convey the richness, depth, and variation of experience and, through telling and selection, are given cohesion, meaning, and direction. According to Atlee (2003) of the Co-Intelligence Institute, the strengths of the use of "story" as a data collection and presentation approach include the tendency to understand things better when they are presented in the form of a story (and sometimes to have trouble understanding things when they aren't presented as stories); the capacity to sense the importance of context, character, and history in any explanation; the ability to see another's viewpoint when presented with the stories that underlie or embody that viewpoint; the ability and tendency to see people, places, and things in fresh, insightful, and functional ways in a story; and the ability to recognize certain elements as significant, as embodying certain meanings that "make sense of things.

As a researcher focusing on school libraries and how young people engage with them to learn, I am captivated by the stories that people tell about them. Story, as a data-collection approach, has been pervasive in much of my research. I remember when we collected ten thousand stories as part of the Student Learning through Ohio School Libraries research study (Todd & Kuhlthau, 2005). Students told in many different ways how their school library had helped them with their learning, as well as the development of life skills. Collectively these stories provide compelling, cumulative and deeply personal insights into the power of school libraries. And such stories, over the years, have provided me with claims, challenges, and questions about the role of school libraries in learning and their future in an evolving educational landscape.

Part of my motivation for documenting stories about the dynamics and future of school libraries centers on questions being asked about the sustainability of school libraries in many countries, with evidence of cuts in library budgets and professional staffing. With this decreasing visibility, there are also fundamental questions being asked about the sustainability of school in the increasingly digital information environment of school education (Hay & Todd, 2010), particularly the increasing trend of mobile technology as the dominant platform for accessing information content, the changing arena of content publishing, and development of new delivery platforms such as apps, ebooks and etexts.

FROM INVISIBILITY TO OPPORTUNITY

The question of visibility has plagued the school library profession for decades. Hartzell (2002), Turner (1980), and Oberg (2006) speak of occupational invisibility

and have identified a number of reasons for this by administrators and teachers. These include the pervasive nature of the stereotypical image; administrators' and teachers' lack of exposure to the value of libraries; school librarians in teacher and administrative training; a lack of understanding of the role of school librarians in the workplace; the difficulty in measuring the extent and value of librarians' contributions to classrooms; lack of seeing the strong connection to the learning agenda of the school; and the lack of visibility in professional organizations outside of librarianship. At the same time, a body of research exists that helps us understand the dynamics of visibility, centering on advancing school goals and including an explicit focus on instruction and curriculum, team-based leadership in learning, and leadership in schoolwide professional development (Henri, Hay, & Oberg, 2002; Oberg 2006).

These dynamics of visibility are parallel with the emergence of the Common Core Standards, and the affordances offered by these standards for building visibility are enormous. From my perspective, at the heart of the Common Core Standards is the information-to-knowledge journey of students, a focus on developing deep knowledge and understanding of curriculum content through engagement with informational texts. The Common Core Standards provide an intensified focus on the deep critical reading of complex informational texts to build meaning and understanding of curriculum content. Deep critical reading involves school librarians not just engaging in the evaluation of text but also matching learners, texts, readability levels, and tasks. It also involves the explicit and systematic development of capacity to interact with text to construct deep knowledge. This includes such capabilities as analyzing texts for pertinent ideas and the interconnection of main ideas and supporting ideas, connecting ideas across diverse texts, developing arguments, crafting informed and evidence-based conclusions through interaction with diverse and conflicting viewpoints, establishing and justifying positions through the critical interrogation of ideas, and writing, speaking, and listening as central to developing informed creative responses to information. And in my view, students' developing deep knowledge of their curriculum standards is core work of the school librarian.

Eleven years ago, in a keynote address at the IASL conference in New Zealand (Todd 2001), I made the statement: "In order for school libraries to play a key role in the information age school, I believe there needs to be a fundamental shift from thinking about the movement and management of information resources through structures and networks, and from information skills and information literacy, to a key focus on knowledge construction and human understanding, implemented through a constructivist, inquiry-based framework. . . . Information is the heartbeat of meaningful learning in schools. But it is not the hallmark of the twenty-first-century school. The hallmark of a school library in the twenty-first century . . . is the development of human understanding, meaning making, and constructing knowledge." While our quest for the development of an information-literate school is indeed a noble one, I believe that deep knowledge is the core outcome of a school, enabled through powerful pedagogies that develop the critical and analytical-thinking and knowledge-building processes. It is no longer about the teacher teaching "content" and the school librarian teaching "information skills." It is about the mutuality of intent—working together to develop deep knowledge and understanding. The Common Core Standards clearly signal the knowledge-based competencies that I believe should be the instructional focus of the school librarian, an essential part of the challenge of being visible in the learning agenda of schools as they grapple with Common Core Standards.

ONE COMMON GOAL

This is clearly illustrated in the findings of the recent New Jersey research study "One Common Goal: Student Learning," undertaken in two phases by the Center for International Scholarship in School Libraries (CISSL) at Rutgers University from 2009 to 2011. The purpose of this study was to construct a picture of the status of New Jersey's school libraries and to understand the contextual and professional dynamics and contribution of quality school libraries to education in New Jersey. Executive summaries and full reports of these findings are available at the CISSL website: cissl.rutgers.edu (Todd, Gordon, & Lu, 2010; Todd, Gordon, & Lu, 2011). Phase 2 of the NJ research focused on documenting the perspectives, perceptions, attitudes, and values of school principals, curriculum leaders, and classroom teachers through the narrative stories of their use of and engagement with the school library. We believed that these stories would provide insight into how they see students using and learning through school libraries; their attitudes, values and beliefs about school libraries; and their insights on the impact of school libraries on student learning. This involved focus groups of ninety seven participants in twelve schools that were chosen because of their high levels of instructional collaborations undertaken by school librarian-teacher teams, as identified in the first phase of the study. Classroom teachers constituted 49%, 29% were school or district administrative leaders such as principals and curriculum coordinators, and 22% were school librarians. The focus groups addressed four themes: (1) In what ways does the school support learning through the school library? (2) In what ways, if any, does the school library contribute to learning? (3) What do students learn through their interaction and engagement with the school library? (4) How do you envision the future of school libraries? The stories of effective school libraries, as told in this study, provide support for the central concepts of visibility, content standards, and knowledge.

LISTEN TO THE STORIES

In the twelve schools, the work of the school librarians was highly visible, highly valued, and focused firmly on enabling the school to meet curriculum goals that centered around core content standards. From the focus group data, we identified a number of key factors that contributed to this

visibility, and indeed, to the sustainability of these school libraries. These include the school library as a pedagogical center; the school librarian primarily working as a coteacher; the focus on curriculum knowledge and meeting syllabus standards; and the implementation of an inquiry-based pedagogy. It was clear in these schools that the school libraries existed within a culture of schoolwide support—there was deeply embedded belief in the vision of the school library as a pedagogical center, trusting school librarians with the freedom to enact their learning-centered vision, and ongoing support from principals and teachers. Take some time to listen to and reflect on the following stories.

VISIBILITY THROUGH LEARNING-CENTERED VISION

The stories as told in these schools share the strong belief of the central importance of, and contribution of, school libraries to the learning, life, and culture of their schools, a belief that stems from a learning-centered vision made visible throughout the school. A school principal says, "The media specialist articulated that she had a vision and having that vision of what the media center should be, a place where people want to come and learn. However that may be, whether it's formal or informal, they share that vision and therefore it happens."

At the heart of this vision is the central role of learning, as expressed by a language arts supervisor: "The library serves as a learning tool to support every avenue of education rather than just as a microscope just supporting biology or a chalkboard just supporting note taking. So the library becomes more all encompassing as a tool that supports learning."

A district curriculum supervisor emphasizes that this learning role focuses on implementing the school curriculum:

> One of the things that I've tried to emphasize in my role is that he library and the librarians are not separate from the rest of the school. It's not a separate piece. It's actually the center of the school. . . . Being involved in the curriculum decisions and helping to implement the curriculum to teachers are teaching . . . from a curriculum perspective, the library is the place where the curriculum gets implemented. And not just pieces of the curriculum but the whole curriculum. For me, [the school librarian's] ability to work with other teachers is very important for that. She's not seeing one part of the knowledge that we're trying to impart to students, she's seeing the whole picture and that allows her to bring language arts skills, to science skills to history, and so on makes it easier.

VISIBILITY THROUGH COTEACHING

Visibility in learning was enabled primarily through the school librarians working as coteachers. A school principal claimed,

> Probably the greatest asset is that [the] librarians see themselves as coteachers in every situation, instead of maybe what we always thought of as a traditional librarian. So I see that as our greatest strength. They are three individuals who truly believe that they are co-teachers with that teacher. They are impacting a very specific type of knowledge that they want the students to come away with whether it's research or media literacy leading to content knowledge. They are approaching it from a teaching standpoint which has not always been my experience.

This is echoed by an English teacher:

> I really think that [it is] because the librarians are coteachers for the most part. The kids get to see us working together with another adult. And I think that's really important. They get to learn how to collaborate. How to be curious and how to work through problems together. Maybe that's a hidden type of learning, but I think that's one of the most valuable things that they get out of it is that they get to see us work together and model what we want them to be able to do in small groups and together as a class.

Another English teacher claims:

They're not just librarians, and I don't mean that in a negative sense, but they're educators. They're teachers. [School librarian] teaches, [school librarian] teaches, and that is the key. Because they are in the classroom with kids, or young adult learners, and they know what it's like, they haven't forgotten—they know the apprehension that we might feel, they understand when we're nervous about teaching something that's new to us, and they just ease those tensions completely. And they make it a comfortable situation. . . . And they go above and beyond for one teacher—and they're not just doing it for one of us—there are a lot of us.

One school principal cuts to the essence of why school libraries are visible and valuable, and that centers on quality teaching:

We're still in a time where we don't believe our information centers are as powerful as they are, as our educators believe. Our librarian is a powerful educator. Our information center is as good as the teaching that goes on there. Principals also acknowledge that this teaching function is at the nucleus of all the functions that a school librarian performs on a daily basis: Well obviously it's well organized and, from an administrative perspective, it's financially well supported. The library is stocked with resources and that continues year after year. And the librarian does a great job of selecting pertinent resources for kids and with the financial support and him navigating through materials; what kids like and what the kids want to read that all plays into it too. But most importantly, our librarian is a teacher and works so much in an invaluable teaching capacity.

And from the perspective of another principal:

The librarians are not necessarily librarians—they are media teachers. They're teachers first. And their role is entirely different here than anywhere else I've ever been. Because they are part of the growth concept. And they have challenged themselves to be on the cutting edge of what's going on and what teachers need. So what they do is challenge themselves to go out and figure out how best to service what our needs are. And in order for them to do that, they have to listen very well, they have to be willing to get outside of their comfort zone and be educated, and then they work to integrate this through their teaching.

THE INVESTMENT OF VISIBILITY

As portrayed by the above principals, it is the primacy of the teaching role that is valued. This contributes a significant part in the wider school culture of investing in school libraries, giving the school librarians the freedom to implement their professional expertise and supporting them with budgeting for resources and opportunities for professional development, particularly in difficult economic times. This is further explained by another school principal:

The key to having a successful library is the librarians, and as a district we've recognized that. They are teachers. They teach. And we not only provide financial assistance in terms of materials but also for professional development. . . . They have to find out what's the most up-to-date things happening in informational technology, and once they know then they can scaffold that as teachers, and that's what everyone is saying about how they help the teachers. But they can do that because they themselves are professionally developed and they can pass that on in that procedure.

A seventh-grade social studies teacher further commented:

A school that values its library is a school that values education. Just looking around here and seeing the resources available, you know that the leaders of this school system believe in a strong library.

A principal explains what is behind his support of the school library, and his

47d

explanation centers on their visibility in terms of learning outcomes:

> I understood that the media center in a library would be the center of any great high school. And any good high school would feed off of the energy of the media center. In early 2000 we brought these two in, and we recognized that the media center was not only the center of the building but the center of the world. We had to open up our school to that way of thinking. Thanks to the progressive leadership we've gotten from our media specialists, we've gotten that. People have challenged me, asking why we have two media specialists—these are tough budgetary times as you know. Our governor is challenging us daily to do more with less, and we can point to the evidence of continuing increases in test scores, continuing increases in SAT scores, continuing increases in advance proficient ratings in our state-mandated graduation test. These things are a direct reflection of the work our media specialists and our content specialists have done with our students on a daily basis. . . . Another important thing to point out is that we have made it a priority, our media center budget—it is not a secondary thing. We set up a regular budget line for purging our books. We don't have books out here that are outdated; we don't have books out here that don't belong. We do regular purging and regular buying of books that are that work for kids. I tell you that is a big, big challenge when you are cutting here, you're cutting a security guard, you're cutting this. The average Joe doesn't understand, but we are trying to keep our eye on the ball. And the nice thing about it for me is that I have so many people around here that give me daily reminders, including the media specialists.

VISIBILITY THROUGH DEVELOPING CONTENT KNOWLEDGE

Central to the teaching role is school librarians working in teams to develop core content knowledge. From the perspective of the focus group participants, this is a key dimension of visibility. They valued the instructional role of the school librarians emphasizing to students the development of deep knowledge and understanding of curriculum content standards, enabled through a suite of information-to-knowledge capabilities. School libraries were viewed as places where the content of the disciplines come together and was integrated to create deep knowledge, and this was the core work of the library. A district curriculum supervisor claimed:

> The library is the place where the disciplines meet. It's where the academic disciplines are integrated. Whereas in the classroom, we sometimes become compartmentalized. Here, students can access info across disciplines, and I think that's a really important application of the knowledge that's happening in the classroom and being developed more deeply. They can come here and apply it in a real-world setting.

A curriculum supervisor explains that this happens in two ways:

> In terms of contributing to the learning process, the library does it, but on two different levels. In terms of content support but also skill support. And sometimes those skills are sometimes more imperative than the content because they are lifelong skills that the teachers are supporting through their content as well.

Content and skills meet, and deep learning of curriculum content is enabled through the mutuality of working together to develop content standards. It is not a case of the teacher teaching content, and the school librarian teaching skills, but working together to ensure that the skills learned are powerful competencies for students to develop content knowledge. Teachers saw this happening through inquiry-based instruction and implemented through instructional teams. This inquiry-based instruction gave emphasis to developing deep knowledge and understanding, rather than that of information collection and skills of finding information. Teachers across the discipline

areas in these schools wanted their students to develop deep knowledge and understanding of curriculum content, and their collaborative inquiry-centered instruction with school librarians served that goal. The development of a range of information processes and research capabilities was a vehicle to curriculum content standards, and not an end in its own right, even though such capabilities are viewed as vitally important lifetime capabilities.

A supervisor of Instruction explains it this way: "There are the ideas such as media literacy, visual literacy, information literacy—they've all sort of been folded under the umbrella of twenty-first-century inquiry skills." A language arts supervisor elaborates:

> You have to inquire within a library, but you also have to be capable in your content area. . . . So the librarian's role is two-fold: There's supporting what goes on in every content area so that they have to know what's going on globally, but then they have to be able to support the inquiry skills that the students need to be able to conduct research or to use software, to locate a book. So in terms of contributing to the learning process, the library does it, but on two different levels: in terms of content support but also inquiry skills support. And sometimes those skills are more imperative than the content because they are lifelong skills that the teachers are supporting through their content as well.

These educators recognize the interconnectedness of content and skills and the mutuality of working together in a seamless way to enable this connection. The perspective of a history teacher reiterates the importance of this interconnectedness:

> I don't want it to be something that's detached from what the students need to know about history. So it was creating history knowledge. It was not just transporting information, but you know transforming information with new knowledge for them. It cuts down on a lot of issues like plagiarism. There's no possible way to plagiarize those assignments because you have to think. And the kids like them because you have to think. It's not just a project they're given in written form. It has a visual component, it's something they can identify with that's in their interest, and it has a product; and they get to demonstrate their understanding in class on the white board, so you know, it's library orientation but in a different format leading to students knowing history I guess its the best way to explain it.

And a school principal sums it up in a powerful way:

> I think for me it comes down to if you've ever seen in class support where there's a strong coteaching model, and it's hard to know who the regular ed teacher is, who the special ed teacher is, where one person's role ends and another person's role starts, and in a really good coteaching model there is joint ownership of the lessons, presentation, of the learning that goes on, not just for some of the students but for all of the students, so I think what you see here is a true coteaching model where there is teaming going on. So, what happens is, I think the librarians challenge the teachers to step outside of their comfort zone because they step outside of their comfort zone.

With emphasis on inquiry, thinking, and knowledge building, the school libraries were positioned as knowledge spaces rather than information places—particularly at a time when the educational landscape in many countries is calling for students to be creators and producers of knowledge rather than receivers of information. A middle school teachers explains,

> So it represents that space; it represents that thirst for knowledge—where students can go if they want more. And I think not only physically is it that space, but also psychologically representing that to them, because our job is also to create a thirst of knowledge. . . . Having that space for them is important for them, to go there, and to know that's there, and that someone will guide them through. And to point them in the direction they need to go.

47f

CONCLUSION

From this study, some key factors contributing to building visibility emerge. These include a vision of the school library as a pedagogical center; the school librarian primarily working as a coteacher; the focus on curriculum knowledge and meeting syllabus standards; and the implementation of an inquiry-based pedagogy. These are the building blocks of sustainable school libraries for the future. These factors are central to emerging conceptions of future school libraries, such as Hay's iCentre conception (Hay, 2010) and the Learning Commons conception of Loertscher, Koechlin, Zwaan, and Rosenfeld**[Q: add to refs]** (2012). These conceptions bring together a set of core elements that in my view characterize a sustainable and visible school library for the future. These include connected leadership through a team approach to instruction; engaging information for learning experts, curriculum instructional experts, and technology instruction experts who support deep learning of students; pedagogical fusion, where the expertise of teams mutually fuse declarative knowledge (knowledge of disciplinary content); and procedural knowledge (the process capabilities that enable the information-to-knowledge experience and engagement with information in all its forms) in a holistic and integrated way through a constructivist, inquiry-centered pedagogical framework; and making visible the focus on learning, policy development, and approaches to documenting evidence of learning outcomes. These core dimensions underpin pedagogical policy and practice, strategic and operational functionality, decision making, and continuous investment and improvement—it's all about carefully chosen actions underpinned by a learning-centered mindset. And that is at the heart of professional visibility.

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47g

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Part 3: Exemplary Practice

When teacher librarians work collaboratively with teaching partners to co-design, co-teach and co-assess excellent learning experiences the results are stories worth sharing.

A number of articles published over the last few years in *Teacher Librarian* have focused on concepts that teacher librarians can use when they coteach learning experiences. Usually, these ideas stretch or extend traditional practices into new territories that have developed over the past decade in the worlds of information and technology. Some are taught in pre-service credentialing classes for teacher librarians; others, extend into new ideas not familiar to many in the field. Here the emphasis is upon a continuous journey of personal professional development in a fast paced world of change.

The Possible Is Now

The CCSS Moves Librarians to the Center of Teaching and Learning

Kathryn Roots Lewis and David V. Loertscher

Webinar Available from AASL: http://www.ala.org/aasl/ecollab/achieve-ccss or at: http://tinyurl.com/m5qulbp

Editor's Note: Portions of this article were reprinted with the permission of the American Association of School Librarians (AASL) from the action brief developed by AASL and Achieve titled, *Implementing the Common Core State Standards: The Role of the School Librarian.*

When we read "*The Power of (in) the (Im)possible: Principles of the Possible"* by Ross J. Todd in the December, 2013 issue of *Teacher Librarian*,[1] we enthusiastically agreed that NOW is the possible for school librarians. If there ever was a future for school librarians, it is most certainly now. Our excitement about the role of school librarians is reflected everywhere in the literature right now -- the tide seems to be turning. As we have discussed the future of our profession, we are both energized and motivated by the Common Core State Standards (CCSS) as a driving force in skyrocketing the role of the school librarian and making the school library, the center of teaching and learning.

Just by taking a casual glance at the standards, you can see the possibilities: research, reading, information, writing, text, technology; prominent words in the standards are all part of a librarian's repertoire. But one needs more than a casual glance to integrate the standards, one needs strategies and a deep study of the standards themselves.

We propose a series of ten initiatives that will push your library to the very center of learning and elevate your role as your school's CCSS possibility. These ten initiatives are outlined in a new action brief released as "*a joint effort of the American Association of School Librarians (AASL) and Achieve in support of the Common Core State Standards (CCSS) designed not only for school librarians who are supporting higher standards for student learning, but also for school leaders as they rethink and re-envision the role that the library can and should play in a major school improvement initiative."* The ten specific initiatives are recommended because of their potential to make an impact on teaching and learning in a CCSS environment. The action brief provides action steps and specific examples similar to the ones in this article to help librarians and school leaders work together to articulate and define the role of the school librarian. The action brief titled *Implementing the Common Core State Standards: The Role of The School Librarian* is available free at the Achieve site and the AASL site.[2]

Let's take a look at how the ten initiatives are being implemented in libraries across the country and how they support the CCSS. In addition we will suggest how you and your colleagues can add to a depository of new initiative strategies. How do these initiatives look at each school level?

First, let's consider the commonalities in the physical space itself. As we walk through each level of the library, we immediately see a library / learning commons --a safe, vibrant, energized, information-rich environment. These are simply magical spaces where students and teachers explore, imagine, daydream, calculate, inspire, be inspired, reflect, contemplate, discuss, debate, collaborate, research, create, innovate, think, seek, and learn. Libraries are simply magical places for children and adults alike. In a library, the list is limitless. As we walk through these libraries we also see maker spaces, where students (and faculty) can create and innovate with the tools they need and information readily available to help them with their invention, creation, or innovation. Flexibility is everywhere. Furniture and technology are meant to be moved, to be redesigned depending on the task at hand. The space is truly fluid just like the activities that happen there. In other words, the activity dictates the design each and every minute.

The thing that is different in each space we visit is what's happening there. Let's look at each initiative at different levels. We will start with initiatives 1 and 2 which go hand in hand:

INITIATIVE 1: BUILDING READING, WRITING, SPEAKING AND LISTENING SKILLS TOGETHER ACROSS THE CURRICULUM

INITIATIVE 2: BUILDING APPRECIATION OF THE BEST LITERATURE AND INFORMATIONAL MATERIALS TOGETHER ACROSS THE CURRICULUM AS A PART OF A LITERATE CULTURE

• In an elementary faculty meeting, teachers expressed interest in creating more speaking and listening activities for students based on the range of speaking and listening tasks defined in the

1 Todd, Ross. "The Power of (in) the (Im)possible," *Teacher Librarian, December, 2013, p. 8-15.*

2 *Implementing the Common Core State Standards: The Role of The School Librarian Action Brief* is available at the Achieve site at http://www.achieve.org/publications or at the American Association for School Librarians site at http://www.ala.org/aasl/advocacy/resources.

CCSS. The librarian collaborated with classroom teachers to include a listening and speaking component in all units. So, for example, the librarian and the 2nd grade teachers decided to use a speaking and listening activity where one group of students created questions about the topic being discussed in class, while the other group of students answered the questions using ground rules for class discussion that the 2nd graders had agreed upon. The ground rules included taking turns, listening with respect, and responding appropriately. After some practice, the teacher and librarian decided to try this activity with another second grade. Using Skype to partner with the other class, all students were able to practice creating questions, listening, and speaking. Not only did this activity help students practice speaking and listening, but it also permitted the educators to check the students' understanding of the content and their ability to create questions.

• In support of a study on genres in the third grade, the librarian invited faculty members to read award-winning books in a variety of genres. Then the librarian invited all the third-grade classes to participate in a "read-around". The students were divided into small groups of four to five students. They rotated from one teacher to another to hear a short book review about the book the teacher read. After all students rotated through all the stations, they went back to their classroom and worked in pairs to complete a Google form that asked them to identify the genre of each of the books reviewed. After students completed the form, the teacher shared results and students discussed the results. Then students voted on which of the books they wanted the teacher to read to the class as a group. This activity helped build appreciation of all genres across the curriculum.

• When high school teachers expressed interest in meeting the 9th10th grade CCSS ELA standard centered on students being able to read and comprehend informational texts, the high school librarian suggested the creation of an online book club where 9th and 10th graders could gain more familiarity with narrative nonfiction. The librarian worked with a small group of student volunteers to create book trailers for a number of narrative nonfiction books. These trailers were posted on the library's virtual commons site. Students then selected their books using the book trailers as their guides. The librarian created an Edmodo site organized by the specific books where students, teachers, and the librarian could post comments and discussions about their respective books. This project generated broad interest in nonfiction and lively discussion around a variety of topics the books covered. Some students joined several groups. Note: The discussion forum in MOODLE could be used for this activity for younger students.

Let's move to Initiatives 3 and 4 which focus on school culture, research, and collaborative learning.

INITIATIVE 3: CREATING A SCHOOL-WIDE PARTICIPATORY CULTURE

INITIATIVE 4: BUILDING CO-TAUGHT RESEARCH PROJECTS IN BLENDED LEARNING EXPERIENCES

• A goal of the high school United States history teachers and the school librarian was to make the research process more authentic for students. They wanted students to become researchers. The collaborative team decided that the high school students would transform their more traditional yearly projects by creating authentic research opportunities. The students were studying the Civil War and were interested in learning more about the conditions and activities at the present-day site of Civil War battlefields. The students created questions they wanted to ask students who lived near these sites. The librarian found teachers and librarians in these communities and the students there had to learn about the battlefield in their own community in order to be prepared to respond to the students' questions. The students who were asking the questions prepared by first researching the battle, then they prepared interview questions for the group of students in the battlefield community. The students collecting the research had to identify which battlefield site they were inquiring about. In addition to questions about the battlefields, students from all groups began to ask other questions about each other's local history. The librarian arranged for students to collaborate using a service such as Skype or Google Hangouts. Their authentic research became part of their yearly Civil War unit.

• As teachers began to talk about the Common Core State Standards and the use of complex text, both literary and informational, they expressed a desire to have more opportunities to look at, read, and review a variety of texts of all types. The librarian suggested an after-hours text discussion, similar to a book discussion group or book club. Teachers were responsible for bringing a different type of document appropriate to their curricular area and standards each month and discussing why and how they might use it. For example, the first month they discussed primary documents; the second, informational texts; and the third, databases. The group discussed text complexity and curriculum possibilities. This meeting fostered several co-teaching opportunities for teachers and the librarian. It also allowed teachers to share many resources over the course of the year.

Let's move to the next initiative and how it looks in action:

INITIATIVE 5: PROMOTING INTERDISCIPLINARY REAL PROBLEMS, PROJECTS AND LEARNING EXPERIENCES THAT TAKE ADVANTAGE OF RICH INFORMATION RESOURCES AND USEFUL TECHNOLOGY TOOLS

• Elementary students are encouraged in the CCSS to pay attention to all kinds of writing materials, including explanations and information that examine a topic and convey ideas and information. During the school's collaborative planning time, the fourth grade teachers discussed their desire to have students solve a problem by creating an invention that would solve the

problem. Out of that planning came a coordinated effort to have students work in pairs to research their problem. Then each pair of students used the library's makerspace to invent their solution. The student pairs shared how their invention worked and their creative process with other students in a Google Doc. Students then analyzed each invention and made comments about the accuracy of the descriptions in Google Docs. After this peer editing, students adjusted their explanations to make them clear and concise. The teachers and librarian decided to culminate the invention unit with a maker fair at the local public library on a Saturday morning that let students demonstrate how their invention worked and how it was created and to display their writings that clearly explained their invention and their work process. Parents loved seeing and hearing about the students' work.

• The CCSS notes that through extensive reading from diverse cultures, students gain cultural as well as literary knowledge. In a French language immersion school, second graders were reading aloud picture books in both French and English. The children began asking the librarian many questions about what 2nd grade was like in France. Talking with the classroom teacher, the two adults thought that maybe they could find a classroom in France with which to collaborate. Using a resource at the local university, the librarian found a second grade class in France that wanted to meet virtually every week to read a story back and forth using Skype. The students loved this activity and learned a lot about the French culture as the students began to ask questions about one another's schools. This extended into more than just sharing stories and information about school but also about each other's customs. Not only was this a good way to practice language skills but it also fit into the social studies and reading curriculum.

• Ninth grade language arts and social studies teachers expressed an interest in having students conduct sustained research projects identified in the CCSS to answer a question or solve a problem while demonstrating understanding of the subject under investigation. The high school librarian suggested that students investigate a problem in their local community. The librarian helped pairs of students identify problems in the community by providing resources: city council transcripts, local newspapers, and demographic information. The librarian then asked the students to research their topic as it related to their community. As they researched, students were asked to identify and prepare questions for a person from the community about their topic. Students then interviewed a community member. The responses from the interviews were used in their research. The pairs of students used Google Docs to collaboratively prepare their research papers and peer edit them as they proceeded. Students were asked to formulate a possible solution to the problem they had identified. After all research was complete, each pair of students shared their findings and their solutions. Community members including city council members and the mayor were invited to and attended the final presentations.

The next initiative focuses on using technology for teaching and learning.

INITIATIVE 6: USING TECHNOLOGY TO BOOST TEACHING AND LEARNING TOGETHER

• As seventh-grade students began a complex research project, the middle school librarian noticed that she was being asked many questions about the process and resources that were similar in nature. Many of the questions were about process or procedures. The librarian decided to create short videos and post them on her virtual learning commons site so students could easily and quickly get the help they wanted. Some of her videos were simply demonstrations of how to login to a specific database and how to use its specialized and advanced search tools, while others were more complex. This flipped learning model helped students have access to information 24/7.This strategy also freed up the librarian to help students with more complex research issues.

• When school administrators began to consider how students could collaborate on learning projects more easily, the librarian suggested implementing Google Docs. The librarian trained teachers and then all of the students. Students learned how to share their work with other students and teachers. They began using Google Docs to work collaboratively and to peer edit. Teachers found that through collaborative work the quality of student work improved and levels of understanding around a topic increased.

Let's consider how initiatives 7 and 8 impact the creation of a school climate where opportunities for cultural experiences, innovation and experimentation abound.

INITIATIVE 7: CREATING CULTURAL EXPERIENCE ACROSS THE SCHOOL, COMMUNITY, AND ACROSS THE WORLD

INITIATIVE 8: FOSTERING CREATIVITY, INNOVATION, PLAY, BUILDING, AND EXPERIMENTATION

• Fourth-grade teachers were discussing with their librarian how to helps students learn about explorers and their travels. They also wanted to incorporate CCSS research and inquiry skills, including having students find textual evidence as they researched. The teacher and librarian explained to the students that after their research of the explorers was complete, the class would Skype with another class also studying explorers. Students would be asked to guess each other's explorers. The class would only be allowed to ask each other yes and no questions that pertained only to the explorers and could not use any part of the explorer's name. The teacher and librarian explained that the goal was to identify the explorers by asking the fewest questions, so students would have to use their research to help them formulate the best questions. A group of students in each classroom would use a list of explorers to mark off names as they were eliminated. So after students researched the explorers, the students shared their research in a Google spreadsheet, then developed questions that they felt would let them identify the explorer quickly. The teacher set up a Skype with a fifth-grade class in another

state. Each class was given a different explorer. The first question the class decided on was: *Did your explorer come from Spain?* This was a fun activity and forced the class to think carefully about their questions based on their research.

• A junior world history classroom teacher and school librarian were discussing the CCSS ELA standards that state students should be able to write claims, use valid reasoning, incorporate multiple print and digital sources, and use advanced searches effectively. Together the teacher and librarian observed that there was a singular point of view in the textbook and began wondering how a variety of perspectives could be integrated into the course. Together, they set up a collaborative Google document and each Monday a discussion of the week was announced. One week the discussion was about the space race. While the textbook focused on the role of the United States in the space race, the librarian posted an article about another country's role. The school librarian listed the source of the document she posted, and then the classroom teacher and students added articles or primary sources around the topic as the week progressed. Each student was expected to read, view, or listen to at least one item and choose a different perspective each week to bring to class for discussion. Every nine weeks, the teacher and librarian would review the class discussions and determine how to encourage better resources that would stimulate the conversations and result in better research and writing.

Let's take a look at initiative 9. Assessment is a powerful tool that helps a librarian know how students and teachers are learning and provides guidance on where to go next.

INITIATIVE 9: ASSESSING THE RESULTS OF COLLABORATIVE LEARNING EXPERIENCES

• Research is a primary emphasis in the CCSS throughout the grades and academic areas. The high school librarian and the language arts teachers wanted to help senior high school students engage in more authentic research and evaluate their own research skills in order for them to assess their readiness for college. Students were asked to select a research topic that related to a topic of national interest. Some of the topics selected included: national debt, poverty, healthcare, and education reform. After using online and print resources to gain background knowledge for their work, students then created questions for five people from various backgrounds that they would interview about their topic. Students then interviewed their five people. Next students determined if their findings at the local level matched the views of people across the country. Students analyzed and synthesized their findings to create a research paper. After completing their research, each student led a conference with the teachers and librarian where they shared their research techniques and reflected on their own learning.

• When the seventh-grade science teacher and school librarian were collaborating on helping students navigate a complex text in science, they decided to have groups of students find images about the topic of the text, in one case, the causes of violent weather. The librarian helped students learn to use images that were free to access on the Internet. Then students collaboratively curated around images that they found using a collaborative photo tagging tool called Thinglink. The groups of students then commented on each other's Thinglink. Each group then edited their work based on the comments. After edits were made, each group shared their Thinglink. The students and (teacher) discovered that peer assessment was a very powerful incentive for groups to do their best work. When students were expected to share their work with their peers, the quality of their work improved.

The final initiative centers on managing integration, the library learning commons and technology.

INITIATIVE 10: MANAGING THE INTEGRATION OF CLASSROOM, LIBRARY LEARNING COMMONS, AND TECHNOLOGY TOOLS

• When the elementary school principal began discussing moving to a flipped classroom environment, the school librarian, who worked at two schools, decided to apply a flipped approach to help his students have access to information about books when he was not available. He created videos of his booktalks and posted them online for students to use as they were selecting books. This idea evolved quickly; the students wanted to create and record booktalks for other students. Now students at both schools share booktalks and have begun to collaboratively develop these videos. The principals at both schools have used this example of flipping in their discussions of the idea with other educators. The librarian has now added library orientation information to his credits.

• When students were doing their annual poetry unit in language arts, the middle school librarian suggested to the special staff of the school, including the gifted resource teacher, the reading teacher, and the technology specialist that they create a makerspace for students in the library learning commons where students could create their own book of poetry. Students had several options. They could publish their book online, with graphics they designed using special graphic creation tools. The technology specialist helped with this project. Other students could work with a community member who taught bookbinding. Students learned to create a cover and binding for their books using a variety of types of paper, including some they created themselves. The school staff assisted the community member in helping students in the makerspace.

USING THE ACHIEVE/AASL DOCUMENT TO STIMULATE IDEAS ON WAYS TO IMPLEMENT THE COMMON CORE EXPECTATIONS

There is a wide variety of ways to use the action brief in your school or district. Before doing so, get a handle on the possible resources that have already been created:

• Download the Action Brief at: http://www.ala.org/aasl/sites/ala.org.aasl/files/

content/externalrelations/CCSSLibrarians-Brief_FINAL.pdf or at: http://tinyurl.com/mp63aek

- Check out the webinar recording (which can be used with your own group) that is available from AASL: **http://www.ala.org/aasl/ecollab/achieve-ccss or at:** http://tinyurl.com/m5qulbp
- Experiment with the submit an idea form at: https://docs.google.com/forms/d/1eaw2SAiz2A94kcBUdNOxSce5gdDTAdQ-BR7bTa0HJrpY/viewform or at: http://tinyurl.com/lznbe4h
- See the submitted ideas at: https://docs.google.com/spreadsheet/ccc?key=0AmAXFFVz2qq_dENKY2xYUGNwbFFhV2tvR054Q1lwYlE&usp=sharing#gid=1 or at: http://tinyurl.com/lbeo4oa

Since the purpose of the action brief is to provide a plethora of ideas of library / learning commons involvement in Common Core or any other school improvement initiative, who would benefit from an idea brainstorm?

- You as an individual teacher librarian?
- You with administrators?
- A group of classroom teachers?
- District or area groups?
- Conference workshops?

We recommend that after such a brainstorm, a small group decide on priorities, an action plan, and a timeline to achieve those ideas plus a method of reporting the results back to the original group.

The best ideas are those that will make the largest and most direct impact on the students in your school and those that can be easily documented. An example might be helpful in making such decisions.

As a part time teacher librarian who serves three schools, you decided to spend half your limited time co-teaching units of instruction across the three schools and the other half doing administrative work. Knowing that you cannot be in three places at once, you realize you can actually do that digitally. You set up a knowledge building center for a unit of instruction that is taught across all three schools with you, the teachers, and all the students being members of that collaborative digital space.[3] Such a showcase demonstrates to administrators, parents, and classroom teachers the value of having a professional teacher librarian involved in the elevation of learning experiences in an information-rich and technology-rich environment.

USING THE ACHIEVE/AASL DOCUMENT TO DISCUSS YOUR ROLE WITH YOUR ADMINISTRATOR

In an old time-management film we remember, the speaker suggested that you write down a list of the tasks that are confronting you this week and then divide that list into three categories: A, B, and C, with A's being the tasks that will make the most difference and are the highest priority. The C's will be the nitty gritty things like overdues or shelving, and the B's will be somewhere in the middle. Then, he suggested that you reprioritize into just A's and C's. Then start with your A's. Yes, you will have to work on the C's, but set aside a minimum time for those and as much time as you possibly can for the A's. Doing C's all day may give you a sense of getting a lot of things done, and you will be tired, but lack of progress on the A's will haunt you. Thus, we all ask ourselves the same question several times a day: "What is the best use of my time right now?" In the five or ten minutes I have right now, perhaps I can knock a hole in an A by doing a bit of planning, shooting an email to an important person, or re-arranging my afternoon so I can get some solid time spent on my A project.

Such time-management actions demonstrate to administrators what you can contribute to teaching and learning in whatever time you have and help you make the case for spending more time doing those things. In the professional education literature, there is still an absence of recognition that teacher librarians can and should be indispensable in powerful teaching and learning. Hopefully, the Achieve / AASL action brief will be a tool to overcome stereotypical ideas as you incorporate the best of the best ideas into your repertoire.

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David V. Loertscher is a professor of Library and Information Science at San Jose State University. His is a past president of AASL and is author along with Carol Koechlin and Sandi Zwan of: *The New Learning Commons Where Learners Win.*

The authors were also co-writers of the AASL/Achieve document *Implementing the Common Core State Standards: The Role of The School Librarian.*

3 Search for the "knowledge building center" on Google and download and rename the free template there. It is now yours and you can change or modify the template to suit the particular unit you are teaching. You can also let into this space only those you want to be involved. The various classes can be studying together all at the same time or at different times. They can interact across classrooms or not as desired. They can do projects together or not. They can communicate across schools or just within the school. Each participating teacher partner can use the digital space to accomplish the same or different projects. And, best of all, you can monitor and mentor all the teachers and the students without leaving your desk, or, you can visit the teachers as physically as possible during the experience. Make sure to include an assessment of your contribution alongside those of the teachers so that you will be able to measure your impact on learning.

At the Center of Teaching and Learning, or Isolated Again, It's Time to Decide

David V. Loertscher

Ross Todd has issued the second installment of his New Jersey study that is a must read for every teacher librarian, school administrator, and library educator.

The study is at: http://cissl.rutgers.edu/images/stories/docs/njasl_phase%20_2_final.pdf

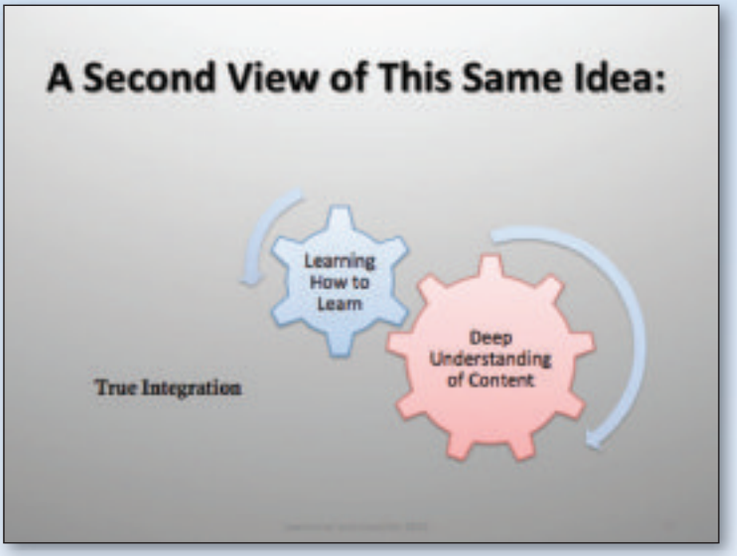
Dr. Todd has promised *Teacher Librarian* an expanded article about the study. In the meantime, there is a thread running through this study—a critical role divide in the profession and among library educators—to address here.

One role definition cites information literacy, and perhaps the love of reading, as the center piece and role of the teacher librarian. Content instruction is seen as the province of the classroom teacher. In this view, we are the specialists to which classroom teachers come to have their students interact with our curriculum and specialty. Thus, as the Common Core standards are approached in many states of the U.S. or other standards in the U.S. and Canada, we look for opportunities to pull in students to experience what we have to offer.

Thus, many teacher librarians would ask teachers to send their students to the library or Learning Commons, so we could conduct research projects and teach the students information literacy in the process. The students would be allowed to choose any topic they were interested in, so that we can focus on the process of building questions, finding information, creating a product, and presenting the results. In this role definition, what goes on in the classroom and the Learning Commons would largely be separate initiatives and often considered another pull out program or released time for teacher planning. As they play out, the two distinct functions isolate both the classroom teacher agenda from the teacher librarian's agenda and vice versa.

The second role definition as seen clearly in the Todd New Jersey study is focused on the integration of the classroom and Learning Commons and the integration of both content and learning-how-to-learn agendas. When this happens, Todd notes that the entire culture of the school changes from the administration down to classroom teachers and teacher librarians and on to the students. It is a very different and exciting learning culture.

Two diagrams of this merged concept are given below.

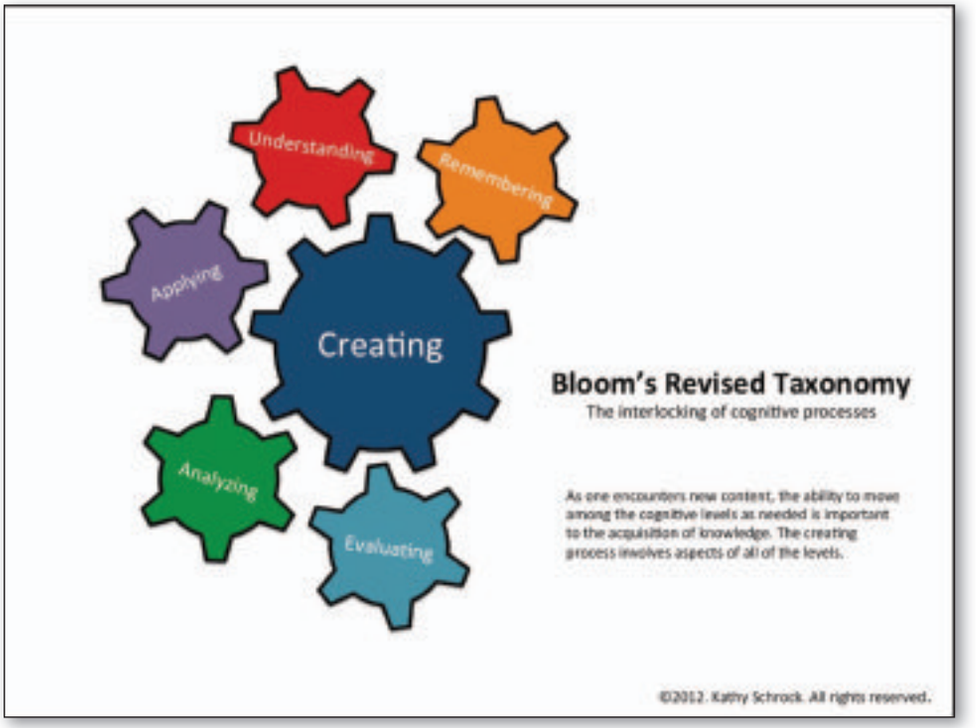


As illustrated, information literacy or 21st Century Skills are taught just in time in order to boost content learning. It is the act of achieving two major agendas at once and doing it more effectively than if these two were separated. In fact, the research bears out the idea that skills taught at the moment of need raise achievement significantly. We probably need major paper that reviews this body of research.

We posit that the separation and isolation of content and learning how to learn not only has isolated teacher librarians but made them invisible in school culture. We posit that this has resulted in the notion that because of Google and the Internet, classroom teachers can easily take over the role of teaching information literacy—thus, saving the school a professional salary. That attitude

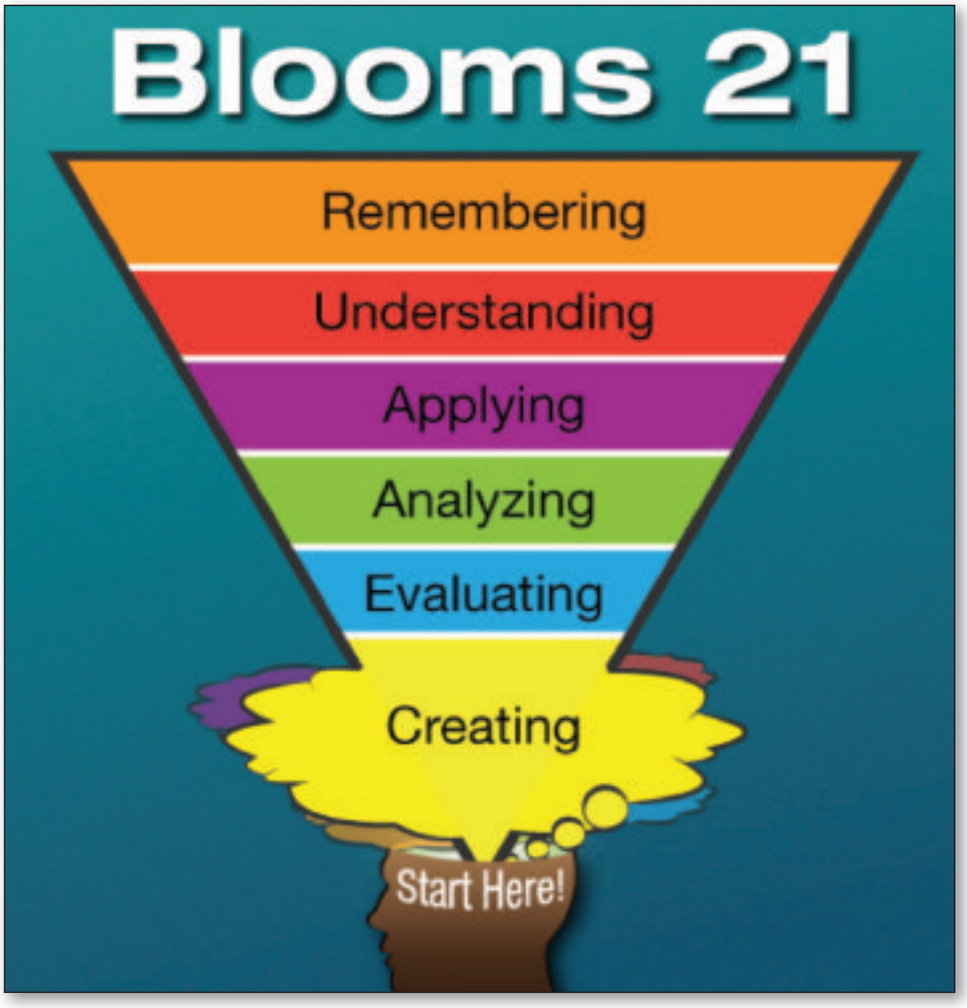
seems to be rampant in any school district facing financial exigency.

Two recent models that reconsider Bloom's Taxonomy provide an additional foundational reason for joint co-teaching of content and process learning. The first is from Shelley Wright's blog, Powerful Learning Practice, at: http://plpnetwork.com/2012/05/15/flipping-blooms-taxonomy/. In her post she flips Bloom's Taxonomy, so that creating is the foundational element, as shown in the following visual:



The second is a model created by Kathy Schrock who interconnects creating and creativity with all the levels of Bloom (see her full page on this topic at: http://www.schrockguide.net/bloomin-apps.html)

Teacher Librarians who create Knowledge Building Centers[1] and, in particular, Book2Cloud[2] learning experiences, understand the Todd study, because they begin to experience the school culture described by teacher librarians and others in the twelve schools of the study. They understand why two heads are better than one. They understand how they have moved from the periphery of learning in the school to its center. They are no longer invisible. Their job prospects are much more secure. The complaint that administrators don't understand their role disappears. They are perceived as curriculum and technology leaders in the school.



Many professionals embrace the hope that legislated mandates will save their jobs. We suggest that demonstrated contributions at the heart of teaching and learning must precede legal mandates. If that is true, then each teacher librarian must assess and reassess their role position in the school and use every means possible to move to the center.

1 To create Knowledge Building Centers, use the following Google template: https://sites.google.com/site/knowledgebuildingcenter/

2 See the Book2Cloud web site with 30+ examples at: https://sites.google.com/site/book-2cloud/ Also find there the template to pull down from Google to create your own.


"Now, educators face the second decade of the 21st Century with seemingly unlimited ways technology can influence what we do."

Achieving Teaching and Learning Excellence With Technology

ELIZABETH "BETTY" MARCOUX AND DAVID V. LOERTSCHER

Since the very first introduction of a Commodore Pet, TRS 80, and the Apple II microcomputers beginning in 1977, billions of dollars have been spent chasing a dream about the effect of technology on teaching and learning.

Some thirty years later, the exponential development of powerful devices, networks, the Internet, software, and now Web 2.0 keeps the effect dream alive, but the results somewhat elusive.

By 1977, teacher-librarians and audiovisual specialists were busily integrating various multimedia into school libraries and audiovisual collections. Few people could imagine at the time or embrace the seemingly outlandish claims for devices doing work within a whopping 48K or the gigantic 64K machines.

Now, educators face the second decade of the 21st Century with seemingly unlimited ways technology can influence what we do. Simultaneously, children and teens of this generation have enthusiastically embraced technology for social networking and content creation purposes but have failed or not been allowed to extend their technology expertise over into their academic pursuits.

DOES TECHNOLOGY MAKE A DIFFERENCE?

There are a litany of reasons from research and the professional literature detailing reasons why technology does not fulfill the often bloated expectations, but we would like to focus on some observations of our own.

For decades, a popular approach to technology is what we would refer to as device driven applications. When a new technological device hits the market, we begin by trying to discover its characteristics and then imagine how those characteristics could be used in teaching and learning. The same goes for software and in particular Web 2.0 apps. Here is an application, here is what it does, and here are some ideas of how it could be used. All of us respond to lists of apps or smackdowns whereas we are entertained and dazzled by endless gizmos, a new tool or toy, and neat new discoveries.

Such sessions, while fun and exciting, often leave one with an overwhelming feeling of confusion and inadequacy. What should I buy? What 25 apps should I investigate next? How do I keep track of what does what?

THE LEARNING TO TECHNOLOGY APPROACH

The authors and contributors of this article set out in the opposite direction. We call it the learning to technology approach. Begin with a learning problem, diagnose that

problem, and then prescribe one or several excellent tools that will work to solve that "problem." We could also say begin with best practices you want to achieve and then fit the tool to that challenge. Become the doctor, not the pharmacist.

In our lists we grouped the many characteristics of both devices and software into six major categories, followed by a focus on the organization to deliver those teaching and learning benefits. Our argument for this arrangement centers on excellence in teaching and learning—the idea that technology use must be tested for both individual and group growth in a global world. Thus, we end the listings under each characteristic with encouragement to collect data on that characteristic and report it widely. We give the major reason for this in our conclusion: Actual data and evidence collection is beyond the scope of this article. There are sources that will help in that focus, so first focus on results and then develop techniques to measure effect.

We are quite certain every reader will be able to add both items under each characteristic as well as find examples that have produced results with real learners in their schools. Perhaps this list can be the foundation of a major conversation in professional learning communities and in technology-focused professional development. Here is the list:

EFFICIENCY (STUDENTS AND ADULTS WORK TOGETHER SMARTER)

■ Both students and adults build organizational skills to handle the world of information and technology and turn it into a foundational tool to boost their learning. Examples:

- Shared calendars helped everyone meet deadlines.
- Group project roles, deadlines, and responsibilities led to more efficient collaboration.
- Individuals built their own information spaces that gave them power over the onslaught and juggernaut of the Internet.
- Communication across the room, the school, the community, and the world allowed for projects of a larger scope.
- Writing and research were enhanced by tracking bibliographies, quotes, sources, note taking, and editing.
- Customized search engines that probed in-depth into information and documents provided better and more relevant searches.
- Gadgets, widgets, RSS feeds, and alerts connected learners automatically to needed content, news, blogs, and people.
- Collaborative construction of documents, presentations, and creative works were done in real time.
- Collaborative creation of works that could be tracked, monitored, edited, developed, and assessed by students and teachers over time had a direct effect on quality of thinking and sharing.
- Collaborative linking and sharing of resources brought a wider variety of information into the pool for various learners.
- Opportunities to deliver products that represented learning also reflected the students' learning style.

■ Technology assists provides everyone the opportunity to create professional-looking presentations, products, reports, videos, audio, and mashups.

- Technology assists benefit all learners whether they are gifted, challenged, or have varying learning styles.
- True differentiation to boost productivity becomes a reality with a variety of tech tools.
- Work time with many applications streamlines searching, building, and constructing so more time can be spent in thinking, reasoning, and sound decision-making as well as analysis, synthesis, and reflection.
- Student-centric technology allows customization and provides the ability to tailor learning to individual student needs.

Evidence of the effect of technology on efficiency is collected and reported widely.

MOTIVATION TO LEARN

■ Variety and novelty of a technology or a new technique piques attention, motivation, and engagement. Examples:

- A Geek squad of students taught the entire school new technology in one week.
- A class was offered for 1/4 credit per year for students to tend the help desk, participate in training for computer repair, and provide a regularly published "Tips" newsletter for the school community. Previously "bored" students suddenly had a purpose in coming to school.
- A plethora of choices of devices, tools, and techniques facilitated wide choice in product creation.

■ Use of technology boosts engagement of a higher percentage of learners as compared to textbook lecture strategies. Examples:

- Social networking skills began to extend toward a new culture in academic skills.
- Using blabberize.com, elementary students were able to share information from their "animal reports" in a much more dynamic way.

■ Real problems and issues boost both engagement and deep understanding. Examples:

- Using a handy miniature video camera, students were excited to interview law enforcement personnel about a school disaster plan they were creating.
- Projects across borders brought a sense of community, sharing, and learning across cultures.
- Presentation tools encouraged students to reach out to adults in their communities and work to solve real-time problems.

■ Personalization of learning allows all learners to make choices, to take command of their own learning, and to capitalize on their personal strengths.

- Many tech tools allow experimentation and playing with ideas thus nurturing creativity and inviting innovation.

■ Presenting, performing, and sharing with peers stimulates the quality of products, work, and the desire to participate fully. Examples:

- Young children each created a "slideshow," which they presented to parents.

• Presentations by individuals and groups were available for simultaneous sharing, analysis, synthesis, and assessment.

• Student presentations became more sophisticated using mash ups and a variety of technologies.

■ Collaborative spaces extend beyond purely social concerns toward, constructing, sharing, and motivating others, and present opportunities to not only raise student interest in learning, but also allow them to grow from each other's insights. Examples:

• Many tools for forming reading networks, sharing spaces and encouraging, critical analysis promoted a high interest in reading, writing, and enjoyment of multiple genres in numerous small to large group environments. Such groups took on a life of their own.

• Collaborative spaces raised "students' level of concern" and encouraged them to collaborate when they could read thoughtful responses of their peers using their literature circle wikis.

Evidence of the effect of technology on motivation to learn is collected and reported widely.

DEEP UNDERSTANDING

• Certain tech tools allow for both individual and collective knowledge building in conjunction with the process skills that are being developed. Examples:

• A group of various non-native English speakers created varying pictorial representations to understand science and social studies concepts.

• Older students developed electronic resources for younger students and learned about child development at the same time.

■ When content, substance, original and creative thinking, logic, and reflection are the focus of assessment over the admiration of glitzy and slick presentations, the focus of presentations and projects turns toward academics. Example:

• Students began to notice that adults were more interested in the content of their presentations rather than splashy tech features. When one group got a higher grade for their presentation than did a special effects presentation with little substance, the word got around: Know your stuff!

■ Real and authentic problems or issues combined with inventive uses of technology boost sustained interest, deep understanding, and engagement. Examples:

• A collaborative study of school violence and bullying utilizing many Web 2.0 tools expanded student interest in taking major action both in their school and across schools in their community.

• Lead teachers designed a Web 2.0 environment to facilitate the study of a Professional Learning Community. They modeled the building of deep understanding of professional concerns as they learned how to use the technique with their students.

• Live television coverage and webstreaming of school events allowed students to learn the production process and provided an opportunity to share their voice with the community.

• Web-based student publications—a school newspaper (or literary journal)—provided dynamic environments for student journalists and writers to hone their skills in a 24/7 environment while also learning about the editorial process and the importance of authority.

• Technology can change the way we engage with content and/or actually add to content. Example:

• The use of GPS technologies had an effect on how students saw the geographic and political world. One class proposed a novel two-state solution between Israel and the Palestinians, and sent their proposal to the parties involved.

■ Deep understanding is stimulated by the delivery and interaction with resources via technology that can be done no other way. Example:

• Video of how a human heart actually works enhanced deep understanding along side two-dimensional diagrams, descriptions from the printed page, models of the heart, and data from various sensing technologies.

Evidence of the effect of technology on

deep understanding is collected and reported widely.

LEARNING HOW TO LEARN (21ST CENTURY SKILLS)

• Certain tech tools allow for building both individual and collective learning skills competence in conjunction with the content knowledge and deep understanding that are being developed. Example:

• Students used mind mapping tools such as Mindmeister, Gliffy, bubble.us, and MyWebinspiration to build ideas about people, places, and issues as a small group; then they jigsawed to understand varying interpretations.

■ Multiple literacies that involve new techniques and new methods of analysis evolve as new competencies are required for new tools and applications. Example:

• Adults noted that social networking required new participatory skill sets as Jenkins describes in *Confronting the Challenge of Participatory Culture: Media Education for the 21st Century* (2006). The adults focused on those skills across a semester measuring progress across time.

■ Learning how to collaborate as a creative and skilled group member can be done across blogs, wikis, and back channels. Examples:

• Before doing their collaborative research, students, classroom teachers, and teacher-librarians used a Google Spreadsheet to create suggested rules about team responsibility during research. After brainstorming, the entire group looked at the suggestions on the spreadsheet as a whole and then built a common set for the project at hand. After the project, the class reflected on progress made in collaboration.

• When students worked collaboratively online and teachers were able to view the history of their documents, all participants of the collaboration became accountable for their contribution and students took ownership of their collaborative products.

■ Finding quality information on the Web and sorting through the voices of who is saying what to me for what reasons and for what gain is an essential life skill. Examples:

• Collaborative teams searched for and evaluated the credibility of web sites in order to defend their use in a joint project.

• Instruction about how to evaluate a student's product regarding the quality of information included was the theme of a professional development opportunity session with follow-up three months later.

■ Learning the research process and other information literacy skills is a part of building content knowledge. Examples:

• Students used tech assists to help in the research process including search engines, note taking, attribution, analysis, synthesis, writing, presenting, and reflection.

• Students used various tech tools to do collaborative research in addition to building individual knowledge. They could discuss what they knew as individuals as well as an entire group.

• Students with a variety of abilities were able to research using differentiated web resources and combined learning in a group project.

■ Content and media creation is available to everyone in the school community and the principles of intellectual property can be explored. Examples:

• The school created its own internal "YouTube" to showcase the best of the best creative and academic products.

• The entire school community learned how to strike a balance between content creation and the ethics associated with intellectual and creative property.

• The entire school community used the Creative Commons and other content repositories to build and share content that can be repurposed and shared.

• Expanded ideas of fair use were promoted such as those included in "The Code of Best Practices in Fair Use for Media Literacy Education," available at **http://www.centerforsocialmedia.org/resources/publications/code_for_media_literacy_education**, and Joyce Va-

lenza's article "New Fair Use Code of Practice: A Call to Action" available at **http://www.schoollibraryjournal.com/blog/1340000334/post/1200036320.html?q=fair+use.**

■ The research skills using information literacy models are expanded into the larger realm of 21st century skills. Examples:

• During a research project, media literacy, creative thinking, and critical thinking were stressed.

• Research skills regarding guided inquiry were matched to new standards at both state and national teacher-librarian conferences.

■ Tech tools can be selected with specific 21st century skills in mind (critical thinking, problem solving, collaboration, information literacy, ICT literacy, flexibility, innovation, creativity, global competence, and environmental literacy). See the MILE Guide from the Partnership for 21st Century Learning (2009). Example:

• In a study of African countries, the class used Google Maps to peer into the actual geography, culture, with a sense of real time exploration to enhance true global understanding that could not be done with print or other multimedia.

Evidence of the effect of technology on learning how to learn is collected and reported widely.

CREATIVITY AND CONTENT CREATION

■ The web opens the flood gates to individual and group creation of serious content. Examples:

• Students wrote for Wikipedia and published serious reports/projects on YouTube and other sites hoping they would go viral.

• Students used various technologies to present information about how to not only find information, but how to use information effectively on Facebook.

• In a global learning experience, groups of students were formed including members from other countries. In spite of language difficulties, joint mashups were made.

• Students took folktales from various cultures in their global groups and re-wrote them with a different cultural perspective. Video re-enactments of both versions were made and shared.

■ Both formal learning and informal learning combine to build the creative and the serious self. Example:

• A band instructor encouraged self-creation and performance both at school and at home via music generation software and performance that went global.

Evidence of the effect of technology on creativity and content creation is collected and reported widely.

INCLUSION OF DIFFERENT TYPES OF LEARNERS

• Various assistive devices provide opportunities to those with physical disabilities such as low vision, deafness, and limited mobility. Examples:

• The Geek squad produced a Jing video about text-to-speech software on various devices and played the video to the entire school with a challenge to teach the skill to family members or neighbors who might benefit.

• Text-to-speech software allowed those with low vision or are completely blind to listen to texts.

• Skype and other communication technologies allowed children and teens to communicate in real time across the world.

• IVC (Interactive Video conferencing) enabled deaf learners to communicate by signing.

• Chronically ill students continued to be involved in school projects by using online technologies.

• Both adults and students organized class tests, assignment calendars, and student folders using Web 2.0 tools so disasters such as hurricanes, epidemics, and power outages did not stop school.

• Various tools such as Kindle were analyzed and tested by students for their usefulness as inclusion.

■ Teacher-librarians build expertise along with technology staff of the school to be masters at wise and effective use of technology in order to boost the quality of teaching and learning. Examples:

• Teachers with an instructional problem in their classroom often came to the teacher-librarian for recommendations on just the right Web 2.0 tool to use together in solving the problem.

• Technology programs at conferences were regularly attended as professionals incorporated the best ideas encountered into their schools for students with learning, physical, and attitudinal challenges.

■ Second language learners benefit with tools that build reading, writing, and sharing skills, as well as tools that bridge the language gap such as visuals, mind mapping, vocabulary boosts, and translation tools. Examples:

• A class used BookFlix to read children's books in English and Spanish.

• Databases and other online resources were available in a variety of languages for the students' use during a project they were working on.

• Individualized tutoring technologies such as "My Reading Coach" helped children learn to speak and read English.

• ESL students found technology tools to be more forgiving of their mistakes and thus were more motivated to return to them for further language instruction.

■ Tools and options that appeal to various learning styles are offered as a matter of accomplishing any task or assignment. Examples:

• The ability to collaborate with others helped students learn from one another in a less threatening environment.

• Students were able to continue work at home or in other locations via the Internet, using online document producers, flash drives, and e-mail.

• Class presentations were created in a variety of formats, combining student skills and experiences.

■ Non-traditional learners are provided the tools needed to both engage them and include them in the learning at hand. Examples:

• Shy but articulate students who did not speak out in class suddenly bloomed in

online collaboration and discussions.

• Conversely, students who were excellent speakers but poor writers applied their talents using a variety of media as they completed assignments, all accepted by the teacher.

• Evidence of the effect of technology on inclusion of different types of learners is collected and reported widely.

ORGANIZATIONAL CONCERNS AND SUPPORT

■ The technology leadership team of the school and district include tech directors, administrators, teacher technologists, teacher-librarians, representatives of the faculty, and representatives of the students and their parents. Examples:

• When doing renovation, teacher-librarians and the technology staff were housed in the same facility and therefore could work even closer together.

• Tech savvy teachers along with the tech director and the teacher-librarian formed a professional learning community charged with maximizing the effect of technology on teaching and learning.

• The school and district provide equitable access to networks and devices as well as access to information and resources that promote excellence in teaching and learning.

■ Robust wireless access is available throughout the school, in particular the learning commons. Example:

• The IEEE standard 802.11g was replaced by 80211n that provided ubiquitous access to an entire school community.

• Emergence from a school library and computer lab into a Learning Commons concept is an important aspect of moving to the center of teaching and learning.

■ Each student is equipped with a device of choice to access materials and resources 24/7/365. Example:

• In anticipation of the installation of an 802.11n standard network, the district committed to open each school's network to any and all devices that various students owned personally in addition to those purchased by the school.

■ Expertise to assist with networking, trouble shooting, peer tutoring, and developing technological expertise includes both adult experts and peers in a "you help me, I help you, and we all learn together" atmosphere. Examples:

• The school geek squad of students had a mission to be of assistance to every teacher and student in the building. They prided themselves in being able to teach the entire school a new application in a matter of hours or days.

• Technology leaders developed a wide range of "experts" within the system and readily facilitated the expansion of teaching and learning across the learning community.

• Entire departments of tech "experts" were organized at the district level to assist with technology concerns encountered in teaching and learning.

■ Professional development in technology focuses on long-term sustainability of both best practices using technology and experimental applications and strategies that affect teaching and learning.

• Students are considered partners in the development of technology systems, practices, policies, as well as dissemination, and other issues related to the spectrum of utilizing technology in education.

• The Learning Commons staff has the responsibility to provide the rich and high quality information environment in which learners can thrive. Such an environment requires a substantial financial commitment to provide the information and media plus the networks and technologies to access it.

• The foundational principles of intellectual freedom extend to networks, devices, tools, and information.

• Partnerships with other organizations, the community, consortia, and granting agencies provide the wherewithal to implement the constant change and improvement required to keep pace with technology.

■ Teacher-librarians along with other technology professionals collect data about the effect of technology on teaching and learning over and above reports concerning networks, computers, and spending on software/databases. Example:

• The teacher-librarian recommended several Web 2.0 solutions to solve the problem of students not writing enough or of high enough quality about what they were reading in literature or on other academic topics. The data on the use and effect of those tools was collected and disseminated widely.

CONCLUSION

During the era of No Child Left Behind (2002) excellence was measured in terms of performance on one or several standardized tests. In the new era of Race to the Top (2009) with money flowing presumably toward innovation and multiple measures of achievement, there is a new opportunity for teacher-librarians and teacher technologists if they realize they have the power through technology to move into the center of teaching and learning. There is a great opportunity to have major influence on the drive toward excellence and demonstrate there is power in the results achieved by both individuals and groups; both adults and learners.

Instead of a group of technologies and apps waiting to be used, consider the number of learning and learner challenges for which particular applications are especially good in making a difference.

We suggest that you focus first on the learning problem or challenge; on the problem at hand; that challenge faced. Then and only then introduce particular technologies that you have some confidence will work and that have succeeded in the past. However, do not be afraid to take a risk with newer and more exciting technologies and applications that come down the pike. It all keeps getting better and better; the opportunities get greater; and the track record easier and easier to recognize, document, and report widely.

NATIONAL STANDARDS DOCUMENTS

From AASL

Standards for the 21st-Century Learner: **http://www.ala.org/ala/aasl/aaslprofttools/learningstandards/standards.cfm**

From ISTE:

NETS (National Educational Technology Standards) for Students: **http://www.iste.org/Content/NavigationMenu/NETS/ForStudents/2007Standards/NETS_for_Students_2007_Standards.pdf**

NETS for Teachers: **http://www.iste.org/Content/NavigationMenu/NETS/ForTeachers/2008Standards/NETS_T_Standards_Final.pdf**

NETS for Administrators: **http://www.iste.org/Content/NavigationMenu/NETS/ForAdministrators/2009Standards/NETS-A_2009.pdf**

From the Partnership for 21st Century Learning:

Partnership for 21st Century Skills. Route 21: **http://www.21stcenturyskills.org/route21/**

MILE Guide (Milestones for Improving Learning & Education) **http://www.21stcenturyskills.org/documents/MILE_Guide_091101.pdf**

MILE Guide Chart: **http://www.21stcenturyskills.org/images/stories/otherdocs/p21up_MILE_Guide_Chart.pdf**

MILE Guide Online Assessment: **http://www.21stcenturyskills.org/index.php?option=com_wrapper&Itemid=95**

MILE Guide Workshop Kit: **http://www.21stcenturyskills.org/images/stories/otherdocs/p21up_MILE_Guide_Workshop_Kit.pdf**

The Intellectual and Policy Foundations of the 21st Century Skills Framework: **http://www.21stcenturyskills.org/route21/images/**

International perspectives:

Co INCITS (International Committee for Information Technology Standards): **http://www.incits.org/new_stds.htm**

From the U.S. Government:

National Educational Technology Plan: **https://edtechfuture.org/**

Common Core Standards Initiative: **http://www.corestandards.org/**

STATE STANDARDS DOCUMENTS (SAMPLES)

• Arizona Technology Standards: **http://www.ade.state.az.us/standards/technology/**

• Massachusetts Technology Standards: **http://www.doe.mass.edu/edtech/standards.html**

• Washington Educational Technology Standards: **http://www.k12.wa.us/edtech/techstandards.aspx**

Check out your own state or Provincial government for technology standards.

OTHER INFORMATION

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Challenge Based Learning: **http://ali.apple.com/cbl/index.html**

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Learning Tools: **http://c4lpt.co.uk/learningtools.html**

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Murmuration

Building a Participatory Culture

"Conversations are crucial, whether they are virtual, digital, or in person."

ALLISON MACKLEY

Abstract: Building a participatory culture among faculty and within the classroom is not an easy feat. It is in this type of culture, however, that people learn to value one another not only as individuals but also as essential members of the community. From the inspiration that lies within the poetic, natural occurrence of an event called murmuration, lessons emerge. Like the starlings that gather into swooping waves during which they communicate and work in unison to meet a common goal, we must learn to fly with one another in a way that is mutually beneficial. Ultimately, a participatory culture is realized with invitations and willing participants who engage in collection, reflection, and contribution.

If humans were more like starlings, we would all experience the grace and fluidity of murmuration. A murmuration is a poetic event of nature when starlings naturally come together to create a community of interwoven relationships that support the entire group. In his TED talk, "Four Principles for the Open World," Don Tapscott relates this natural wonder to the opportunity that we have, as humans, to gather together, respect the knowledge of the crowd, and take action towards a common goal (2012). For those who have witnessed this extraordinary wonder of life, whether with starlings or with humans, you notice an ever-changing pattern of individuals coming together for a shared purpose, while moving in and out of the group to address a common challenge or to scout out the next roosting place. Sergiovanni (1994) proposes:

> Community is part of our nature. Given the opportunity, most of us will opt for community as the metaphor for how we will live our lives and how we want our students to live their lives in school. We humans seek meaning and significance above all, and building purposeful communities helps us to find both. (p. 95)

This occurrence would be impossible without meaningful interactions among participants and a reliance on the expertise of individuals.

Fortunately, we are *all* experts. Each one of us has something that we can contribute to our own murmuration. As a result, our peers, our students, and our community members are fortunate. At the same time, building healthy relationships that allow us to learn from one another takes a lot of hard work. Making that effort is essential not only to support a collaborative culture among our peers but also to spark a contagious energy that we owe to our students. As teachers, it is our nature to develop environments that create positive impacts within and beyond our classrooms. We can't, however, be successful all of the time. According to DuFour, DuFour and Eaker, (2008), "When confronted with difficulty and uncertainty, it is natural for people to seek the security and comfort of the status quo" (p. 421). As professionals, these situations beg us to consider how we can use our talents to welcome each and every person into a participatory culture. It begins with a vision, one which happens "when people work together to conceive of new ways of combining existing knowledge, structures, and personnel, boundless potential, passion and results are possible" (Zmuda, 2010, p. 65).

COLLECTION

We simply need to look around us to find inspiration. As professionals we are not often given the time to go out into our school, to engage in the classrooms of others, and to have the conversations that are so necessary to our learning. Deprived of these opportunities, we exist without the cultural knowledge that brings wisdom to our practice. Conversations are crucial, whether they are virtual, digital, or in person. They are a vital component of any relationship that allows us to learn about and more deeply understand each other. We need to share in our colleagues' successes and support one another as we develop our own collections. DuFour and Eaker (1998) suggest professional learning communities as a successful strategy for sustained school improvement (p. xi).

Learning communities are not a new concept for teacher librarians. Laurie Wade, high school assistant principal, describes it best when she defines our school's library as "more than a place for gathering information but a place for engagement,

collaboration, participation, innovation, conversation, and interaction with technology—a learning-based environment for global citizens" (personal communication, March 19, 2013). This "learning-based environment" builds the foundation for the school as a learning community, one in which all members are invited to participate.

There were several ways in which the district's leadership built upon this foundation. There were high school restructuring committees, Middle States Accreditation action plans, leadership institutes, and curriculum revisions; however, systemic, continuous change only began when we made what Zmuda (2010) calls "an unwavering commitment to progress" (p. 17). Our administrators refer to it as a razor-sharp focus on student learning and engagement.

Dale Reimann, high school principal, began the school year with several goals in mind:

- Share leadership responsibilities.
- Individualize opportunities.
- Communicate by listening, asking questions and responding.
- Tie decisions to professional goals.
- Mobilize ideas.
- Encourage reflection.
- Develop quick and simple measures of accountability.

(personal communication, March 16, 2013)

With these goals in mind, our faculty began to understand that our leadership team, as facilitators, not only listened to what we *wanted* to learn but also thought about what we *needed* to learn (City, Elmore, Fiarman and Teitel, 2009, p. 142). This notion did not bring on new initiatives; it settled us, allowing for a renewed sense of professionalism. It opened up possibilities.

With the beginning of our school year came a new opportunity. We flipped our in-service. This "un-service," as we called it, invited each of us to join in a conversation, one that was significant to us. We had a voice, and those voices came together with markers on large paper sheets, where we recorded the problems that we wanted to address about our practice. DuFour and Eaker (1998) suggest, "It is clear that the effort to transform a school into a professional learning community is more likely to be sustained when teachers...collectively engage in problem solving, action research, and continuous improvement practices" (p. 117).

The "un-service" format allowed us to choose a topic of concern, to decide how we interacted in small groups, and to prioritize solutions that might work best for our school. Beyond the sense of ownership that was felt throughout the school, the real power was in our collective experiences. Muhammad (2009) explains this paradigm that comes about in professional learning communities as the realization that "we are much more effective together than we are separately" (p. 112). Learning how to help ourselves and each other only comes with the opportunity to contribute and to be part of the *collection*.

Seth Godin writes that when we are "focused on giving people dignity, respect and a chance to speak up," we gain an opportunity to become "hooked into the realities and dreams of the tribe" (2013). He shares that we become connected and aware that the "single most effective way to move forward is to help others move forward as well... [We are] able and interested in not only cheering people on, but shining a light on how they can accomplish their goals" (ibid). Authentic experiences with our colleagues help us realize that our students need the same type of interactions with their peers. Students need to gather a lifetime's worth of experiences, perceptions and memories. Without this opportunity to *collect* from others, students might never realize their potential as part of the greater community. Collection breeds insight, ideas and innovation. Invite students to explore to the edges. It's in the middle where mediocrity finds its home.

REFLECTION

Assimilating our collection of new information with current background knowledge is a natural process, one that most of us accomplish without much thought. A conscious effort to make that invisible process visible is the real challenge. Our brains work to create new lenses from which we view the world, but it is through reflection and collaboration with others that we become catalysts of systemic change. Yet, it is too often that we stand alone. Sergiovanni (2004) believes, "When a school achieves a balance between individual autonomy and collaborative work, it can harness all of its intelligence, creativity, and leadership to solve problems and be successful" (p. 49).

Because society calls for an educational model that forces us into segmented schedules, we act as individuals. As a result, there are few opportunities during our day to reflect deeply; there is even less time to practice this experience with others. In *Revisiting Professional Learning Communities at Work: New Insights for Improving Schools*, the authors recognize, "Cultural norms exert a powerful influence on how people think, feel, and act, and because educators are so immersed in their cultures, they often find it difficult to step outside of their traditions and assumptions to examine their conventional practices from a critical perspective (DuFour, DuFour & Eaker, 2008, p. 90). Because this type of reflection is so challenging, reflection as a transformative learning strategy, for our students and ourselves, often gets lost.

In *Burned In: Fueling the Fire to Teach,* Friedman and Reynolds quote Jim Burke, "*Reflection* calls for us to take time to listen—to ourselves and from our guides—if we are to move ahead and regain some of our sense of clarity and purpose. Reflection, while personal, need not be silent or done alone" (p. 7). It is fortunate that our district has adopted a professional goal that builds in the opportunity for reflection. Throughout the school year, as individuals and with our peers, we have made a commitment to "Turn up the HEAT" in our classrooms. Using the LoTi H.E.A.T. Framework as a tool, teachers have been able to study their own practice as well as the practice of others in order to create what LoTi calls "a digitally-charged learning environment (2011). The Framework, which measures higher order thinking, engaged learning, authentic connections, and

technology use, is meant to develop the habit of frequent reflection.

Through the use of faculty meetings, in-service time, and professional learning networks, we have started to create an environment in which we can ask thoughtful questions and take part in crucial conversations about our practice. The growth required to develop this kind of participatory culture was evident in our English department curriculum writing team. We subscribed to Jacobs' (2010) belief stated in *Curriculum 21: Essential Education for a Changing World*: "Updates in our curriculum content should be at the heart of our work for our learners and our own professional development" (p. 59). We worked to reflect and "re-vision" our curriculum content and assessments to enhance student learning opportunities and to embed information fluency skills, but more importantly, we submersed ourselves in the difficult work of learning how to be effective collaborative professionals. This was a small step for our school but an immense leap for one department.

Until we gained consensus among all teachers to value the goal of creating a participatory culture, we know that slow, small steps are the best way to affect change and to make professional development a habit rather than a contrived series of events (Wiggins & McTigh, 2007, p. 245; 268). The district's next move was to relieve five high school teachers of our extra duties, thus creating Instructional Technology Coaches (ITCs) who would collaborate with teachers as they integrated meaningful technology into their classroom instruction and adopted the HEAT Framework. Joe McFarland, Assistant Superintendent for Curriculum and Instruction defined the establishment of this new "duty" as the following: "The district's 21st Century Technology Committee began to take action on the district's vision of technology use by making full use of teacher expertise and planfully developing a structure that softly nudges people to take risks" (personal communication, March 25, 2013).

As teacher leaders, the ITCs provide professional development opportunities during and after the school day, fashion attainable marking period goals for the faculty, and meet regularly to learn from our own experiences. Each of these activities calls for reflection and collaboration with the goal of supporting teaching and learning. Tschannen-Moran and Tschannen-Moran (2011) share the following:

Good coaches respect teacher awareness, choice and responsibility. They understand teacher experiences and show empathy and appreciation. They recognize vitality and build on teacher strengths. As such, coaching in schools can increase teacher professionalism and raise the bar of teacher effectiveness to a continuous and collective striving for excellence. (p. 13)

Although a few teachers were leery of the role of the ITCs, confusing collaboration with evaluation or questioning the ITC's expertise, the benefits of engaging in positive professional relationships resulted in enhanced lessons, a culture of reflection, and newly-formed partnerships.

Brianna Crowley, an English teacher who also serves as an ITC, explains what reflection has taught her about the role of leaders:

An important lesson that I learned about building a collaborative culture among teachers is about the role of leadership. Rather than leaders using their skills and positions to solve problems or train people, leaders should use their skills to identify and promote the leadership in others. In every collaboration, a leader's primary goal should be identifying and promoting the qualities of the other, so the capacity of that individual grows. Collaboration is only truly realized when both parties feel that they have skills and ideas that are valued. Promoting a collaborative culture means promoting the leadership of others.

(personal communication, March 20, 2013)

It is this type of reflection that changes the way we work with others. The lens through which Brianna and other faculty members in our school look impacts the way we nurture and participate with one another—recognizing our individual strengths and valuing our differences.

In his blog, *Dangerously Irrelevant*, Scott McLeod claims, "We are weird, until we are not. We can grow up to be ourselves, until we cannot. We can learn anything we want, until we learn to believe we cannot" (2013). Reflection gives us permission to appreciate individualities, to continue growing, and to know that we can learn anything we want. Whether in our own minds or in the presence of others, we own our reflections, and students must believe that they own theirs too.

Questions spark their curiosity, develop their resiliency, and inspire innovation. In a profession that often requires us to provide all the right answers, it's sometimes difficult to live with our questions long enough to make a positive impact on our practice. Reflection causes us to pause. Be patient. Ask someone else to come along.

CONTRIBUTION

The collaborative satisfaction that comes from the ability to share and learn with another person can be transformative, and approaching work with our own unique perspectives and understandings provides each of us with a valuable way to contribute. Experts can be valuable resources in developing our collective wisdom, but experts are not always the best teachers. They often live within the confines of the knowledge and norms within their own field. Experts frequently exude a confidence that hinders their abilities to envision a world that is different, a world that welcomes innovative leaders rather than one that seeks followers. A participatory culture, on the other hand, is built upon the belief that the equitable sharing of ideas invites us to respect the common knowledge and challenge current paradigms. Contribution leads to change.

City, Elmore, Fiarman and Teitel., (2009) state, "Students are not likely to take risks, collaborate, learn together, and experience higher-order tasks unless their teachers are doing so" (p. 174). Contribution can elicit a sense of vulnerability. Joe McFarland elaborates on this by explaining that leaders have to be vulnerable. They have to have a willingness to make mistakes (personal communication, March 15, 2013). It is through these mistakes that

the learning is made possible. Our school community has made many mistakes, but through these contributions, we have been able to risk vulnerability and to learn that the people with whom we connect provide us with help.

It would be ideal for us to have a recipe for success, but building a participatory culture has to come from within individuals. Sergiovanni (1994) believes:

There is no recipe for community building—no correlates, no workshop agenda, no training package. Community cannot be bought or borrowed... Recipes are *too easy* to implement and for that reason they too often result in practices that are grafted onto the school without significantly influencing the school for very long. (p. 5)

I have, however, found some lessons that have guided us toward success:

In the change process educators must keep the focus on improved student performance. Through this focus, collective accountability emerges (Zumuda, 2010, p. 177).

We call on principals, in particular, to begin blurring the lines of distinction between those who lead schools and those who teach in them (Berry, 2011, p. 208).

Teacher leadership should be prioritized as a key strategy for sustainable student learning growth and school improvement (Daughtrey, 2010).

Academic leaders must accomplish reforms by design. Reform "by design" means that the actions taken are deliberate and focused on a clear and defensible end result. Merely exhorting, demanding, and hoping won't accomplish reform (Wiggins & McTighe, 2007, p. 178).

The engine of reform is the intrinsic incentive that comes from seeing where you are versus where you desire to end up (Wiggins & McTigh, 2007, p. 203).

Facilitators help create the conditions under which learning occurs by building trust within the group, developing lateral accountability among network members, and transferring responsibility to the group (City, Elmore, Fiarman & Teitel, 2009, p. 146).

Although many school reform initiatives of the past engaged educators in superficial change at the margin of professional practice, the PLC concept calls upon them to engage in deep, substantive, real change. And real change is *really hard*! False starts, mistakes, and setbacks are inevitable, and how educators respond to those mistakes determines their success or failure in implementing the concept (Bellanca & Brandt, 2010, p. 89).

Probably the most significant action school districts can take in changing the nature of professional development is to provide meaningful, engaging programs that respect the intelligence and good will of teachers and help them grow in terms of knowledge, awareness, and practice. Such professional development is characterized by teachers' ability to select the topics they want to learn more about and the opportunity to work collaboratively with colleagues (Sonia Nieto as cited in Friedman & Reynolds, 2011, p. 126).

We keep it simple with collection and reflection and solidify the foundation of our emerging participatory culture with our contributions. Will Richardson encourages this type of participatory culture by suggesting, "It's not do your own work,' so much as 'do work with others and make it work that matters'" (2013). This lesson should spill over into our classrooms. Invite your students to share their own experiences and create an environment in which they can learn from the experiences of others. Through your actions in and out of the classroom, show students the power of contribution. Do what you can with what you know. Be generous.

We have the ability to impact the future in this critical time of change. Initiatives, directives, and proposals do not make a difference without the promises found within a participatory culture. Whitby (2013) calls for the following:

To maintain relevance as educators, they need to employ relevant technology learning tools for education, connect and collaborate with other professionals to improve skills and knowledge within their profession, and use PLNs [Professional Learning Networks] to improve their profession and hold off the barbarian politicians and business people banging down the gates of education.

We must look beyond our traditional structures, examine our professional practice, and challenge our assumptions. In his book, *Teaching 2030: What We Must Do for Our Students and Our Public: Now and in the Future*, Berry envisions the future:

But what we foresee will require more than another explosion of new technology and innovation. We imagine social change of a very high order, transforming a narrow conceptualization of teacher's work—one that has produced more than a century of claustrophobic teaching policy—into an absolute realization that teaching is a subtle and intricate profession that must be supported by an equally subtle and intricate policy approach. (p. 13)

For now, we celebrate our short-term wins and reach to accomplish long-term goals. Our schools and our students rely on us. As the culture begins to unfold we must, as August (2013) reminds us, make a conscious decision to protect it with unwavering commitment and courage.

Is it possible to have the same kind of commitment and combined effect as the starlings? Through our own type of murmuration, we can develop a participatory culture for ourselves and for our students. We are all connected. The sooner we realize this, the easier it will be to develop a professional model of collaboration centered on dialogue and discovery. When we have candid discussions about our practice and celebrate the work of others, we all benefit. Let's develop the kind of relationships that allow us to fly among our peers, fluently and gracefully. Let's honor the whimsical ways in which we float into and out of our collective experiences. Let's gather in spontaneous and breathtaking collaborations to share and to swirl in our conversations. You are invited. Let's do this.

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Learning and Teaching in WANDA Wiki Wonderland:

Literature Circles in the Digital Commons

"The speed, ease of use, and collaborative nature of the Internet environment is unique in the history of literacy."

JUDI MOREILLON WITH JENNIFER HUNT AND SARAH EWING

Knowledge workers, most 21st century students, and many citizens in the United States spend a great deal, if not most of their time negotiating meaning in the ubiquitous world we call "cyberspace."

In the past few years, the passive consumption of Web 1.0 ideas and information has been overtaken and surpassed by the active participatory tools of Web 2.0.

Anyone with a computer and Internet access anywhere in the world can create online content and post it on web sites, blogs (contraction of web log, an online journal usually maintained by one person), wikis (a collection of Web pages designed for multiple users to contribute or edit content), and more. In their book, *Wikinomics: How Mass Collaboration Changes Everything*, Tapscott and Williams use the term "digital commons" when they refer to collaborative activities involving the read-write web (2006).

In the participatory culture of the digital commons, people co-create content. In the process, they have the opportunity to learn and practice collaborative skills and strategies that may support and accelerate humankind's ability to respond to and solve many of our planet's unrelenting problems. The speed, ease of use, and collaborative nature of the Internet environment is unique in the history of literacy. No other technology for reading and writing has been adopted by so many people in such a short time (Leu et al., 2007).

PUTTING WEB 2.0 TO WORK

In the 2007-2008 school year, Jennifer Hunt, language arts teacher for the 8th grade pre-Advanced Placement class wondered how she could harness the power of Web 2.0 tools to develop her students' literacy skills and deepen their engagement with literature and ideas. To that end, she wrote a successful Qwest Arizona Technology in Education Alliance Classroom Technology Integration Competitive Mini-Grant to add eight computer workstations to her classroom for student use in online literature circles. In the summer before the 2008-2009 school year, Ms. Hunt and I, the newly-hired teacher-librarian for the Emily Gray Junior High–Tanque Verde High School (EGJH-TVHS), met to collaborate on fulfilling her goals for this year-long grant project she called WANDA (Works Analyzed Notated Discussed & Archived), **http://wandawiki.wikispaces.com/**.

As a classroom teacher and teacher-librarian team, we co-planned, co-taught, and co-assessed students' wiki work. We shared responsibility for selecting and gathering print and electronic resources.

We modeled and demonstrated the academic and technology components of this project, developed rubrics together, and jointly assessed the students' work. Sarah Ewing, Ms. Hunt's student teacher, joined our team in Spring 2009. Additionally, library science graduate students in the young adult literature course at the University of Arizona (UA) and EGJH–TVHS library student aides also participated in literature discussions with the 8th grade students. We all contributed to empowering and challenging the 8th graders and improving their learning outcomes while we learned alongside them.

ONLINE LITERATURE CIRCLES

Literature circles provide students with choice in what they read and allow them to discuss and collaborate in an inquiry-based framework. This discussion format is intended for students to make personal connections to the texts they read and to describe and discuss the issues raised in literature selections through social discourse (Short, Harste, & Burke, 1996). The WANDA project, **http://wandawiki.wikispaces.com/2008-2009+Literature+Circles**, added an additional technological element to students' learning by providing them with the digital means and support to create wikis and use other Web 2.0 tools to organize, discuss, and present their responses to the texts and to collaborate with others in their classroom and beyond.

The purpose of literature circles is to nurture life-long readers and invite critical responses to literature by providing students with choice, a safe environment for social discourse, and a combination of structured and unstructured activities to enhance their reader–response experience. We asked students simply to (a) choose books they wanted to read from a particular genre or other organizing criterion, (b) reflect on their reading, (c) discuss their reading with others in groups reading the same book, and (d) construct and publish their understandings of the elements of literature with respect to each title around which they interacted.

We also planned with specific standards-based learning outcomes in mind. Throughout the year-long project, specific targeted objectives changed, but Table 1 gives an overview.

In the WANDA curriculum standards-based literature circles, students constructed affinity spaces where people with common interests came together to share knowledge and participate in a shared endeavor (Gee, 2004). Eighth-graders negotiated and reached consensus as to the books they read, the pace at which they read them, determined (some) project deadlines, criteria for (some) projects, and participated in self-assessment. Students used the wiki-based discussion forums for conversations, sharpening their writing and communication skills, and presenting their multimedia responses to authentic audiences: grade-level peers, campus mates, university graduate students, and a worldwide readership, including readers of this article.

Although all the 8th grade students were in a pre-AP course, they came to the literature discussions and the use of the online tools at various levels of proficiency. This is a salient feature of Web 2.0 participatory culture. Participants possess varied strengths and prior experience. In an affinity space, "different kinds of knowledge are valued for different kinds of activities, and this knowledge is accessed across a range of resources, thereby providing many different options for participation and ways for participants to achieve success, recognition, and status in the space" (Black, 2009). In different groups and at various points in their discussions and projects, students of all levels of proficiency had opportunities to be leaders, to teach, and be taught by other group members.

As facilitators of students' learning, Ms. Hunt and I structured the work so students who were reading print texts could engage in a digital learning experience in which they used and created hypertext documents using wiki technology. One goal of the online literature circles was to push students' thinking and knowledge production through negotiated social discourse. "In the best digital media experiences, they [students] are challenged to think harder and to weave together what they know rather than to have it presented to them predigested" (Dresang, 2000, p. 78). Linking print text and digital production was at the heart of our teaching and learning goals as a means to boost student motivation and engagement and deepen their comprehension and responses to the literature. We used multimedia technologies to create an authentic, inquiry-based learning experience for students (AASL, 2009, p. 24).

ORGANIZATION OF INSTRUCTION AND LITERATURE SELECTION

Students participated in four small group literature circles; each circle lasted six to eight weeks. Ms. Hunt and her 8th grade student aide set up all of the wikis for the groups and invited student members to their chosen novel space. Each wiki also had a student organizer who oversaw the administrative functions of that wiki. This person was chosen by each literature group. In order to encourage students to learn to work with a variety of classmates (and to choose novels based on their own preferences rather than the interests of their friends), students were not allowed to work in a group with the same person more than twice.

For the first wiki, I provided booktalks and students chose from a set of American Southwest–themed books. These books were selected for two reasons. First, students could apply their background knowledge to support their comprehension of these texts and their connections with the settings could help them achieve the learning objectives related to the impact of the setting on the mood and tone of the book (Moreillon, 2007). Secondly, this literature circle included conversations with students in the School of Information Resources and Library Science at the University of Arizona. Graduate students shared their WANDA wiki experiences in the online forum during their graduate course and posted to the Southwest Literature web site, **http://southwestlit.com/pages/fall08.htm**, work completed by the 8th grade students. For this first online literature circle, the 8th grade students formed groups during their class period, and published their work at **http://wandawiki.wikispaces.com/Southwest+Literature+Circle+Books**.

The second literature circle centered on fantasy or science fiction books and groups were formed from different sections

of the same course. In other words, members of a group could come from any one of three classes, which made it necessary for students to conduct all their wiki work virtually. They began by searching online for book reviews from a teacher-selected list and were invited to recommend additional titles. The students determined their top three choices and formed groups; see **http://wandawiki.wikispaces.com/Fantasy+%26+Science+Fiction+Wikis**.

For their third literature circle, students chose historical fiction books that addressed the time period they were studying in their social studies class. Miss Ewing, the student teacher, provided a list and again students added to it if a title met the historical time-period criterion. Again they formed groups from different sections of the same course; see **http://wandawiki.wikispaces.com/Historical+Fiction+LC**. Our plan for the third circle was to invite students in other EGJH language arts classes to join our literature circles. Unfortunately, other students in our school do not have sufficient access to reliable computers and the Internet.

The fourth and final literature circle was based on an author study. Ms. Hunt, Miss Ewing, and I selected author Jacqueline Woodson's work in an effort to increase cultural diversity in the texts students read and interject timely compelling social issues into the literature circle discussions. Students researched Ms. Woodson and her books, determined their top three choices, and formed groups across class sections. EGJH-TVHS library student aides (high school students) joined the 8th graders' discussions on the social issues raised in Woodson's books; see **http://wandawiki.wikispaces.com/Woodson+Author+Study**.

CO-PLANNING, CO-TEACHING, AND CO-ASSESSMENT

Ms. Hunt and I took an inquiry approach to this project. We had specific content objectives in mind, but we encouraged students to take the lead and direct their own learning while we observed them and watched for teachable moments. This is one of the biggest benefits of co-teaching. We each had another set of eyes and hands that could monitor students' progress and a peer with whom we could handle the challenges. We encouraged self-directed learning while holding students accountable for meeting specific learning objectives and project deadlines.

We co-taught lessons on netiquette and modeled effective and ineffective face-to-face and online communication. Initially, students engaged in role play activities to learn these skills and continued to practice them throughout the year. We co-taught lessons on the principles and elements of design. Then, the students evaluated various web sites based on design principles. I taught lessons on fair use and we engaged students in scenarios related to determining fair use of multimedia products. Along with the students, we explored the challenges of distributing wiki work on the Web. We taught students to create their own media or to use copyright-free images and to properly cite sources using a free online citation generator.

Ms. Hunt also taught many lessons in the classroom related to story elements and writing. I took the dominant responsibility for teaching students Web 2.0 creativity tools. Throughout the project we shared responsibility for developing assessment rubrics and checklists, and we co-assessed student work. We also presented our collaboration at the Arizona Technology in Education Teaching and Technology Conference in January 2009; see **http://wandawikiwonderland.wikispaces.com/**.

INTEGRATION OF MULTIMEDIA AND WEB 2.0 TOOLS

In order to compose media to represent their thinking, students at first followed what

TABLE 1: Content Area and Other Standards

Language Arts (Arizona Academic Standards)	Identify, analyze, and apply knowledge of the structures and elements of literature. Analyze the effect of setting on mood and tone. Interpret, analyze, form opinions, and/or express feelings about pieces of literature and selected elements within them. Employ strategies to comprehend text. Apply the writing process to selected written work.
Educational Technology (Arizona Academic Standards)	Identify social, ethical, and human issues related to using technology in daily life and demonstrate responsible use of technology systems, information, and software. Use technology tools to enhance learning, to increase productivity and creativity, and to construct technology-enhanced models, prepare publications, and produce other creative works.
Standards for the 21st Century Learner (AASL)	All four strands.
Partnership for 21st Century Skills	Creativity and innovation. Communication and collaboration. ICT (Information and Communication Technologies) literacy.

TABLE 2: AASL Skills, Dispositions in Action, Responsibilities, and Self-Assessment Objectives (http://www.ala.org/aasl/standards)

Characteristics of Successful Online Collaborators (West & West, 2009)	AASL Standards	AASL Strands	AASL Indicators
Openness	Inquire, think critically and gain knowledge.	Responsibilities	1.3.4 Contribute to the exchange of ideas within the learning community.
	Share knowledge and participate ethically and productively as members of our democratic society.	Dispositions in Action	3.2.1 Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations. 3.2.2 Show social responsibility by participating actively with others in learning situations and by contributing questions and ideas during group discussions. 3.2.3 Demonstrate teamwork by working productively with others.
Integrity	Inquire, think critically and gain knowledge.	Responsibilities	1.3.1 Respect copyright/intellectual property rights of creators and producers. 1.3.3 Follow ethical and legal guidelines in gathering and using information. 1.3.5 Use information technology responsibly.
	Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.	Skills	2.1.5 Collaborate with others to exchange ideas, develop new understandings, make decisions, and solve problems.
	Share knowledge and participate ethically and productively as members of our democratic society.	Dispositions in Action	3.2.1 Demonstrate leadership and confidence by presenting ideas to others in both formal and informal situations. 3.2.2 Show social responsibility by participating actively with others in learning situations and by contributing questions and ideas during group discussions. 3.2.3 Demonstrate teamwork by working productively with others.
	Share knowledge and participate ethically and productively as members of our democratic society.	Responsibilities	3.3.1 Solicit and respect diverse perspectives while searching for information, collaborating with others, and participating as a member of a community.

CONTINUED ✒

Self-Organization	Inquire, think critically and gain knowledge.	Self-Assessment Strategies	1.4.2 Use interaction with and feedback from teachers and peers to guide own inquiry process.
	Share knowledge and participate ethically and productively as members of our democratic society.	Self-Assessment Strategies	3.4.1 Assess own ability to work with others in a group setting by evaluating varied roles, leadership, and demonstrations of respect for others' viewpoints.
	Pursue personal and aesthetic growth.	Responsibilities	4.3.1 Participate in the social exchange of ideas, both electronically and in person. 4.3.4 Practice safe and ethical behaviors in personal electronic communication and interaction.

Poole (1985) refers to as "The Principle of Least Effort." They relied exclusively on the tools embedded within the wiki or tools with which they were familiar. They experimented with color and design using the wiki tools. They tried different page layouts, fonts, and other text features. They used Paint or other drawing programs, and they freely used copyrighted images and other media from the Web without citing their sources.

This was a surprise to Ms. Hunt and me; we had constructed the rubric so original media would earn the greatest number of points. Students seemed willing to sacrifice a point or two for the ease of taking someone else's work; sacrificing points is not a common choice for many pre-AP students. After all, they had been "borrowing" other people's property for "educational" use throughout their schooling. Ms. Hunt and I recognized the teachable moment, and along with students, we explored the rules for distributing copyrighted materials on the Web. We provided students with a pathfinder and a number of sites to find suitable copyright-free images. I taught them to use EasyBib to generate citations for information and images not of their own creation (**http://egjhtvhslibrary.pbworks.com/Multimedia_Projects**). We practiced and then gave lit groups the opportunity to revise their work and make it publishable. Sadly, nine out of twelve groups (75%) decided not to make the necessary changes, and only three of the Southwest novel wiki lit circles were published at **http://wandawiki.wikispaces.com/Southwest+Literature+Circle+Books**.

In their second and third literature circles, students practiced what they had learned about copyright and distribution on the Web. They cited their sources and became more sophisticated in the creation of original media. One group had experience with iMovie and owned the equipment, and so with parent support, created an on-location film at the Pima Air and Space Museum. Still, Ms. Hunt, Ms. Ewing, and I noticed students did not find and use many of the creative Web 2.0 tools we felt would enhance their ability to express their understandings of the story elements in the books they read.

Therefore, before the students began the fourth and final Woodson Author Study circles, I introduced them to a series of Web 2.0 tools so they would have options for embedding multimedia elements in their wiki Web pages. I shared VoiceThread, **http://voicethread.com/**, to create narrated slide shows in order to booktalk the titles they read Wordle, **http://www.wordle.net/**, to create word clouds of main ideas related to characters, setting, or plot; and Newspaper Clipping Generator, **http://www.fodey.com/generators/newspaper/snippet.asp**, to provide viewers with background information or to share snapshots of compelling aspects of the books. Students were invited to use these tools in any way that would support their learning. The Woodson Author Study wikis, **http://wandawiki.wikispaces.com/Woodson+Author+Study**, are the most media-infused and hands-down the lit circle work that students most enjoyed sharing with their classmates, school mates, families, and friends.

BEYOND THE TOOLS: SKILLS, DISPOSITIONS IN ACTION, RESPONSIBILITIES, AND SELF-ASSESSMENT

In his article "Library 2.0," Harris (2006) talks about the use of blogs, podcasts, and other Web 2.0 applications in the literature and reading promotion efforts of teacher-librarians. Says Harris, "The heart of the concept, though, is not about the tools, but rather the communities and the conversations that they make possible" (p. 53). The result of the shared endeavor by the 8th grade students is a multimedia archive of their conversations, individual and shared meanings, their development as 21st century participatory culture wiki workers as well as thoughtful readers, writers, and media-makers. They created a community of learners within and among their literature circle discussion groups and they learned and practiced important skills, dispositions, responsibilities, and self-assessment strategies in the process.

West and West (2009) identify three personal characteristics of people who are successful in online collaboration: openness, integrity, and self-organization (p. 28). In their wiki work, these high-achieving students were challenged to stay open to suggestions from their team members and they practiced relinquishing control. Inviting others to modify their work with the goal of improving the joint work was a new experience for many WANDA students. Accountability is inherent in the wiki space; the history for each page records what and when each team member contributed. Stu-

dents' integrity was immediately apparent to their teammates and to their teachers. Those who were slow to engage in the work received peer as well as educator pressure to earn the trust of their literature circle group. This level of accountability also supported students in what West and West call "self-organization." They became more aware of their own thinking and learning processes and applied metacognition to the self-assessment of their work. In the wiki, there was tangible evidence of their ability to be flexible in order to work through differences of opinion, work ethic, and style.

In their work on WANDA, the 8th grade students had the opportunity to develop the traits described by West and West, which are represented in the *AASL Standards for the 21st Century Learner* (2007) indicators. Table 2 shows some of those connections.

REFLECTION ON WANDA

In her further discussions of radical change principles of interactivity, connectivity, and access applied to students' information-seeking behaviors, Dresang (2005) suggests that researchers might benefit from ferreting out "the potential of new and exciting ways of knowing in the digital age" (p. 192). In the process of designing their learning spaces, collaborating with peers and others, and creating multimedia responses to novels, these 8th grade students maximized the potential of wiki technology to explore literature. They achieved in the content-area objectives set out by their teachers, and they did much more.

These students, whether they are fully aware of it or not, began to experience the powerful benefits of a 21st century collaborative learning environment; they began to prepare themselves for living and working successfully in a participatory culture. Their collective achievements were not without struggle and challenges, but they learned lessons in community-building and collaborative partnerships that will serve them well. As their teacher-librarian, I was privileged to team up with their classroom teachers as an instructional partner and to be part of this shared learning journey. This level of meaningful, high-achievement, high-impact teaching and learning is one for which I will always aim in my collaborative work with 21st century students and educators.

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"Transforming the physical to the virtual is a step that teacher-librarians need to take in order to make their libraries relevant in the 21st century . . ."

Growing a Knowledge Building Center

SYDNYE COHEN

Teachers and teacher-librarians are in the business of knowledge building. Therefore, our libraries should be knowledge building centers.

After all, the school library is a place where we store information, both digital and physical. Transforming the physical to the virtual is a step that teacher-librarians need to take in order to make their libraries relevant in the 21st century, and the physical space should not be all that different from the virtual knowledge building center.

In a quest to make the Brookfield High School library in Brookfield, Connecticut more relevant, I took to heart a Joyce Valenza (2007) blog post about how she planned to spend the summer transferring her pathfinders to a wiki. I tucked that piece of information away. When school reopened in August 2007, the wiki craze hit Brookfield and I was creating wikis with students from every discipline. Even though I do not often see math classes in the library, math teachers also wanted their own wikis. Also, when teachers brought their classes to the library for research, I began using the wiki pathfinders, but they were in the same format as the pathfinders on paper. The foundational elements remained the same, only the technology that delivered them was different. That had to change, but I needed a game plan.

PREPARING FOR THE BUILD

Fast forward to May 2009. I read *The New Learning Commons: Where Learners Win!* by Carol Koechlin, Sandi Zwann, and David Loertscher. With such good information, I was ready to transform the library into a learning commons. My principal and I called Dr. Loertscher to ask questions about the learning commons model and he invited me to participate in his online class on the subject that fall so I could learn more.

During the class I was able to see how students in the class who were earning credit worked with us, the practicing teacher-librarians. Together we created a Knowledge Building Center (KBC) template to use with our students and posted to it Dr. Loertscher's class site by November. We learned about Google Apps, ways to share information collaboratively online and we had access to experts and to the most current information in the library world.

In November, I also attended the Treasure Mountain Retreat, a think tank of the "rock stars" in the library world that meets for two days prior to the American Association of School Librarians (AASL) conference. My foundational beliefs of what the library should accomplish in the lives of students were challenged by many of the presenters at Treasure Mountain and AASL. I heard Ross Todd (2009) talk about what we measure as librarians gathering data and how we measure it. His presentation kept me awake late into the nights after the conference as I wondered how I could improve my assessment of student learning. Todd said that for years we have been counting the students who walked through our doors, the numbers of classes that used the library, and the books that flew out the doors, but we did not count the students who succeeded at our lessons. Todd continued that the library had to be a place for knowledge creation and knowledge experimentation.

I had been counting the beans for years; the beans of students who passed through

the library door and the beans of teachers who brought their classes to the library. I had been proud of the numbers of beans I counted and the fact that the number of teachers who brought their classes to use the library had soared from almost none to about one for every period we are open (some months that number exceeded the number of periods we were open!). I realized just getting the students into the library did not mean they were learning.

COUNTING OUR BEANS

I returned from both meetings ready for change. Armed with a template for the KBC and knowing that so many of my students had been exposed to wikispaces because of their teachers' wiki frenzy during the previous school year, I plotted an action research project. I designed a survey that asked about the research habits of our students.

At Brookfield, we were instituting a new schedule—one in which the teachers who teach the same courses have a common planning period every four days to collaborate. We call these groups collaborative learning teams (CLTs). They are similar to the Learning Commons Partnership Teams outlined in *The New Learning Commons* book where the authors suggest the team meet in the library. Having the teams in the library gives me the opportunity to collaborate with them as they get ready for their research projects.

I asked teachers whose classes were scheduled in the library for permission to have their classes take the survey and I was able to poll 250 students. This was important information to see if the KBCs (I call them Pathfinders Plus) would have an effect on statistics about students' database use. I wanted to poll the students before they used the KBCs and again after they had used them for a school year.

The results of the survey indicated that most students do not use databases. Eighty-two percent of students responded that they used Google as the first choice for research (Figure 1). Some students use databases while at school but almost never use them at home (Figures 2 and 3), despite

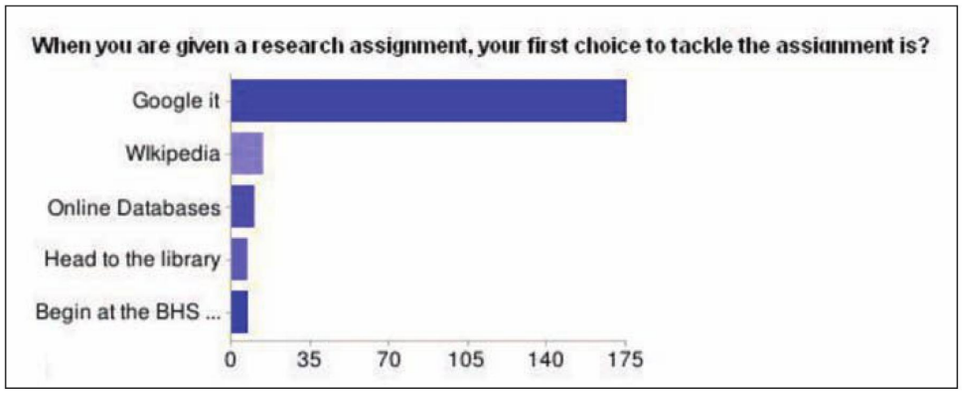

Figure 1. Student Survey—They Google It

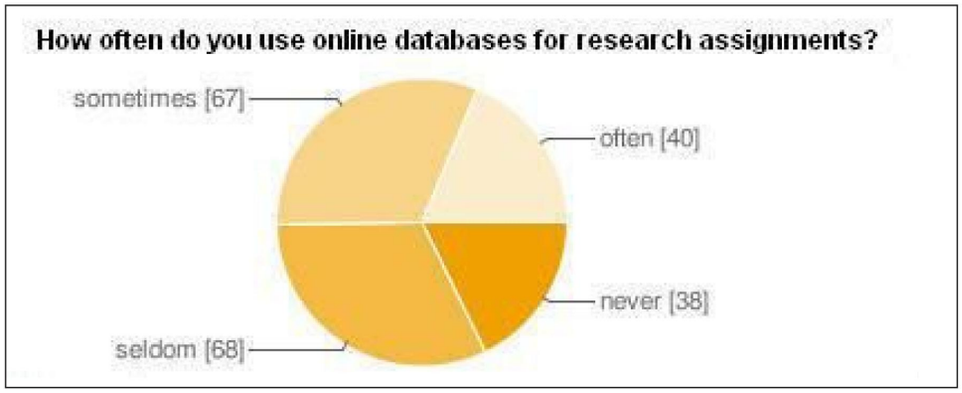

Figure 2. Database Usage

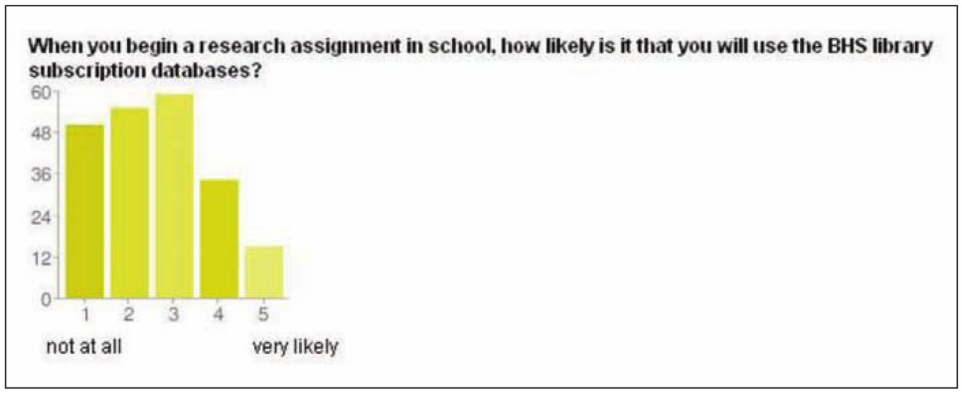

Figure 3. Database Usage

receiving handouts with password information.

SET THE STUDENTS LOOSE!

The next phase of the research involved creating the KBC for students' own research projects. I met with three of the four social studies teachers who teach grade nine students during their collaborative learning team meetings.

For the last ten years students at Brookfield have been conducting research projects about the "Greatest Greek". Over time, the projects have evolved from simple PowerPoint presentations (I would literally have to teach students how to insert a picture!) to a Voicethread, which allows pairs of students to work collaboratively at anytime and anywhere. The teachers and I decided the best format for the presentations was a Voicethread, but we wanted the students to tell the story of their chosen Greek person in their own voices, not on the slides. We limited them to no words and no note cards. We also wanted to ensure they were not carried away with the bells and whistles of the program before

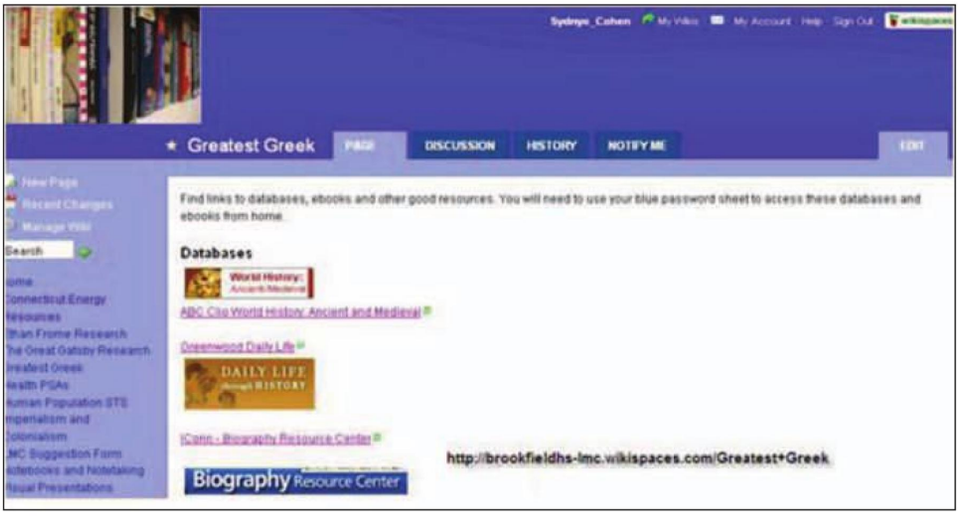

Figure 4. Greatest Greek KBC

they completed their research. The social studies teachers created a storyboard that outlined the categories of proof students needed to document in their research and left a space for the picture that would represent that category. We decided on an annotated works cited requirement because we wanted to see exactly what each source provided and the annotations were the way we could get this information. We used Noodle Tools for their note cards and for the Works Cited. I created a wiki page that included links to databases to which we subscribe that had good information about the ancient Greeks, links to eBooks, and a link to Noodle Tools and to Voicethread. I included the assignment and hoped I had provided the students a "one-stop shopping" experience for their project (Figure 4).

The students came to the library three times with their teacher. During their first visit, they chose their Greek and conducted research in books. During their second visit, they were introduced to the KBC and continued their research by working on their works cited. Once the students had their storyboard and their works cited completed, they were free to work on the Voicethread. During the third visit, many were able to complete their Voicethread. They knew what pictures they were looking for and what visuals they needed to tell their story. They mounted their completed campaigns in their classrooms.

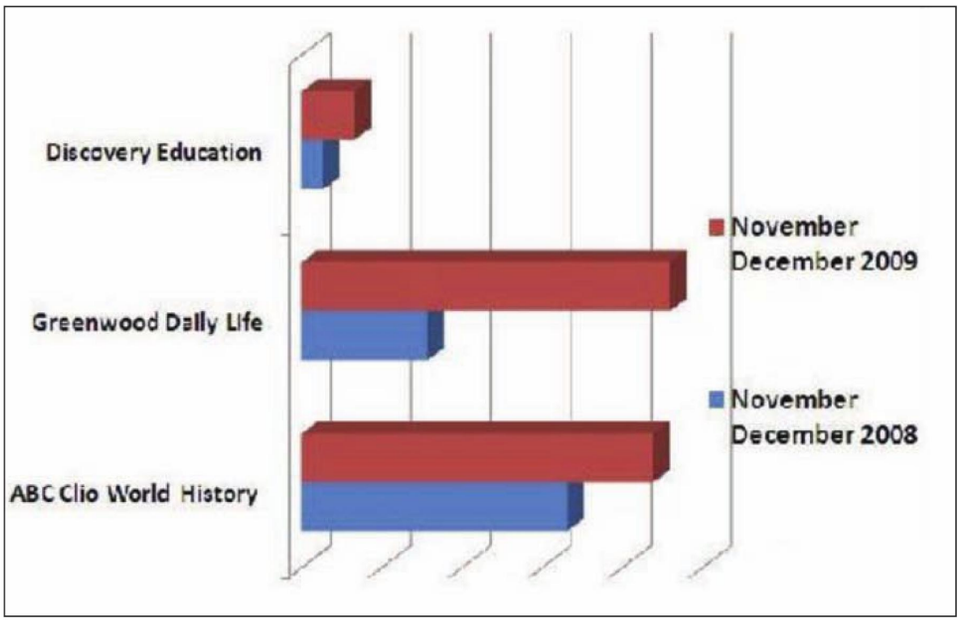

Figure 5. Database usage results over a one year period

THE RESULTS

I was pleased with the results as I saw the students in the library. When I asked the teachers about the results, they were pleased as well. However, the work was not over. I needed to provide data that backed up the anecdotal observations about the student projects. I looked at usage statistics and found marked increases in the use of online databases. I was able to compare the current year's usage with the previous year's data and found that in every case usage had increased and sometimes more than doubled (Figure 5).

I was elated with this information. Students were seeking reliable sources in their research and I hoped this transformation from Googling to using databases would be the beginning of a trend. Clearly the KBC had been the impetus for their "one-stop shopping" research experience. Then I took the survey one step further to find out how often the students used the KBC and how the teachers felt about their projects. I went back to the drawing board and designed a very short survey, which asked students about their research experience. I found that of the students that used the KBC, the majority used it up to three times during the research process and 65% found it helpful (Figure 6).

One of the social studies teachers asked me to include a question about student success: Did they feel successful with the process and the product? The information provided by the students about their success was very valuable to the teachers and to me. Students said they were able to find the resources they needed and that the storyboard helped them to organize their ideas. Students self reported a success rate of 98% (Figure 7).

The teachers echoed the student's rate of success. They were very pleased with the projects and felt that there had been an improvement in student knowledge over the products of the past years. They were especially impressed with the ability of the students to tell the story of their Greek and answer questions presented by the class. They had no note cards and had not memorized the information; they had clearly learned it and could relate it to their

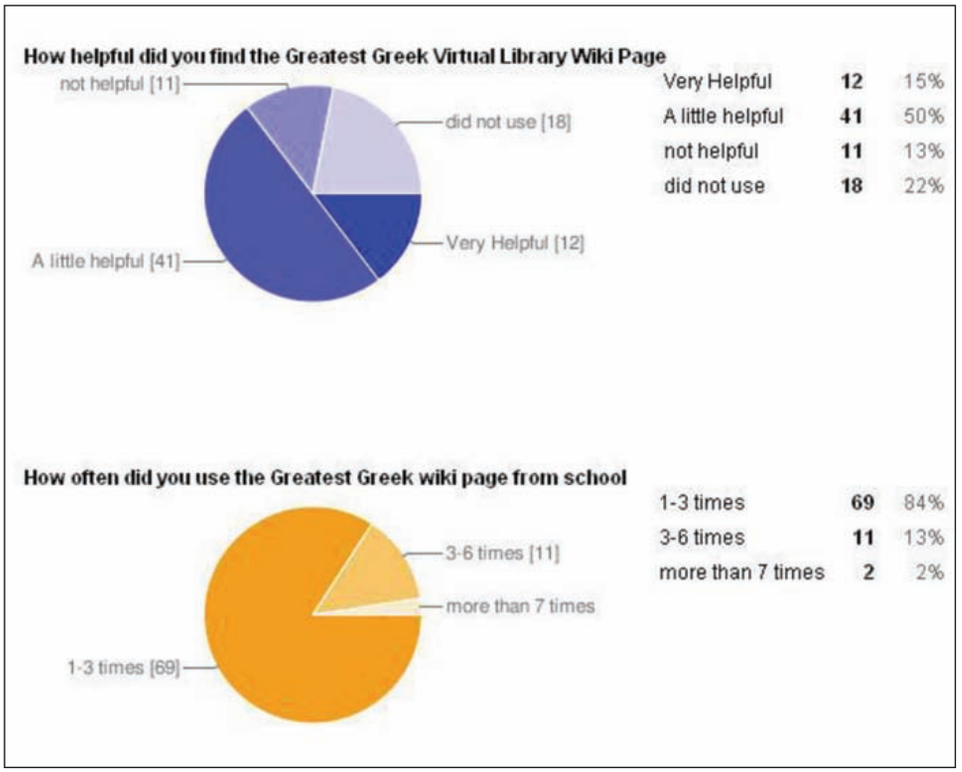

Figure 6. Post KBC student results

peers and their teachers. The teachers felt the sources used and depth of the research was reflected in the student presentations.

I was delighted to find that by creating KBC wiki pages, our students can gain knowledge from reliable sources. Now I wanted more. I wanted the students to be more active participants in their learning. I wanted them to be producers of information. My next attempt at a KBC took me there.

MORE PARTICIPATORY LEARNING

In preparation for a unit on renewable and non-renewable energy, I met with the grade nine science teachers to discuss how we could use the KBC to its best advantage. The grade nine students were already familiar with the concept. I wanted to incorporate a lesson on evaluating web pages in this unit. I accomplished this by having the students complete a lesson on web site evaluation and then go to the web to find a credible web site about their chosen energy source. Students added links to these sites on the KBC (**http://brookfieldhs-lmc.wikispaces.com/Alternative+Energy**) and then joined the discussion page to talk about why their source passed the evaluation tests. Their teachers and I were able to comment and question them in the discus-

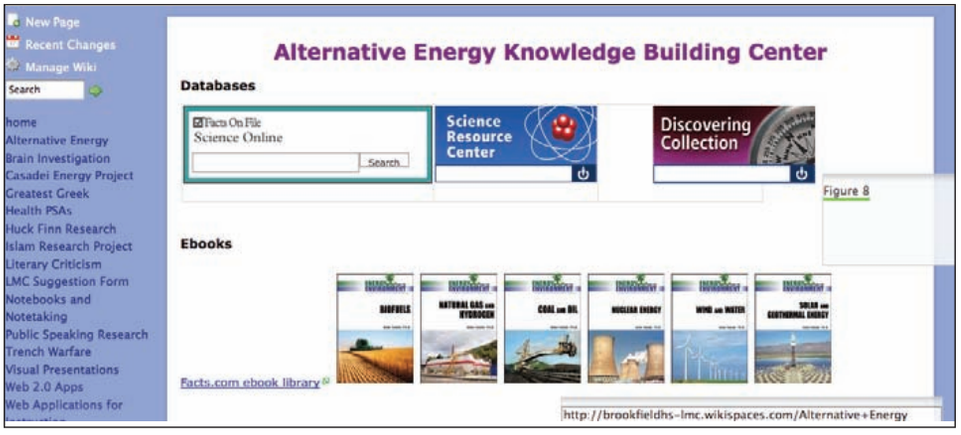

Figure 6. Student anecdotal data

Web 2.0 Tools Mentioned

Google Forms http://docs.google.com
Google Presentations http://docs.google.com
Live Binders http://livebinders.com
Prezi http://prezi.com
Voicethread http://voicethread.com
Wikispaces http://wikispaces.com

sion forum. The good sources of information and the KBC grew with each student's additions. The teachers found useful sources and added them as well. I created the page with the links to our databases and eBooks, and I added a link to Noodletools, Prezi, and to Google Presentations as we used these two Web 2.0 tools for student projects. I added a tutorial on how to use these two tools and students and their partners created their presentations. The teachers and I found one more Web 2.0 tool that enabled us to upload all the student presentations to an online binder called Livebinders. I added a link to the binders and made a tutorial for them that I posted on the KBC. As they uploaded their presentations, the KBC updated too.

We now have a true KBC with information generated from the teacher-librarian, from the grade nine science teachers, and from the students. True to the KBC mission, we became participatory members of this online teaching and learning space (Figure 8).

BROADCAST THE TRANSFORMATION

Our school schedule allows me the privilege of meeting with groups of teachers in my library every day. This ability to work collaboratively with them as well as instituting "listening lunches" and experimenting in the world of Web 2.0, has made me realize that I have created a true learning commons, both in the physical and the virtual worlds. Creating a "mash-up" of Joyce Valenza's pathfinders, Ross Todd's assessment strategies, and Dr. Loertscher's vision of the learning commons has enabled me to transform the research experience for Brookfield High School's students. What has resulted is a virtual world where "the learning commons is a giant, ongoing conversation and a warehouse of digital materials—from eBooks to databases to student-generated content—all available 24/7 year-round" (Loertscher, 2008). By building KBCs, teacher-librarians can do that—build places of knowledge. Additionally, to keep students engaged in 21st century skills, we need to engage in them in their learning. The KBC moved our library into a common space for all of us to learn together with and from each other; and I have just ordered my Learning Commons sign.

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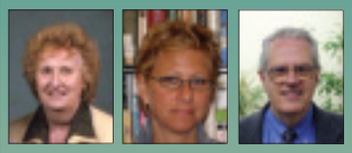

"Twenty-first century skills are taught just in time to spur content knowledge."

Knowledge Building in the Learning Commons

CAROL KOECHLIN, MICHELLE LUHTALA, AND DAVID V. LOERTSCHER

For the past several decades various library program elements such as reading promotion, information literacy, and technology use have been offered as beneficial to teaching and learning.

The Lance and Todd studies, among others, have documented that such activities, among many others, have made notable contributions to achievement. This was reaffirmed yet again in the Third Colorado Study conducted by Lance et al in 2010.

While we are impressed by our own work in the field, we have not realized a sense of our indispensability across the wider educational community. One of the greatest stereotypes librarians face is that our profession is all about stuff; packets of information in various forms constitute the physical medium that we acquire, move around, inventory, and protect. In turn, we have argued, that it is not so much about the stuff as it is the use of the stuff as stated in our national and international documents. However, stereotypes die hard, particularly when digital devices move information and media around far more efficiently than do humans and when the general public perceives that information is free.

What do schools really need to improve results? What is it specifically that we are prepared to offer that would break the stereotype and add recognizable evidence of the critical role school library programs play in school improvement? Let us suppose each teacher-librarian or other prospective candidate for a job were asked to state succinctly the expertise they bring to a school that would add value and produce impressive results for both the teaching staff and the learners. Consider the following four central areas of expertise needed now that could be explored in a job interview or presentation:

If you examine the school library literature of the past decade, one can see the four major program elements pushing excellence in the school:

- **Collaborative Instructional Designs** that have emphasized the banning of "bird" units and substituting active inquiry that engages, requires real investigation that builds deep understanding in the content areas, critical thinking, and 21st Century Skills with adults as facilitators.
- **High quality Information and Media** as a substitute for happenstance encounters that result from a search engine, an outdated book, or a propagandistic media message. This is particularly important as teacher-librarians broker excellent quality digital textbooks and are the negotiators with vendors in the world of fee and free.
- **Clever Use of Technology** where Web 2.0 tools combine with learner-preferred devices and technology systems to actually boost learning and collaborative intelligence. We skillfully draw upon social networking abilities that contribute to academic success.
- **Basic Literacy** for every learner in the "reading" of all forms of print and multimedia for learning to read, reading to learn, and building a life-long reading habit.

During our interview or presentation, we would be able to demonstrate our expertise and the methods we use personally to "keep up" and put into practice the best of the best ideas that produce results. Professionally we are on a constant learning journey to build the highest level of expertise.

The central message to our school is that we know how to organize and build a community of learners that merge the "old" library and traditional computer lab into a learning commons with a mission to achieve the school's improvement goals. And, at the heart of this learning commons is a parade of exceptional learning experiences that build individual understanding

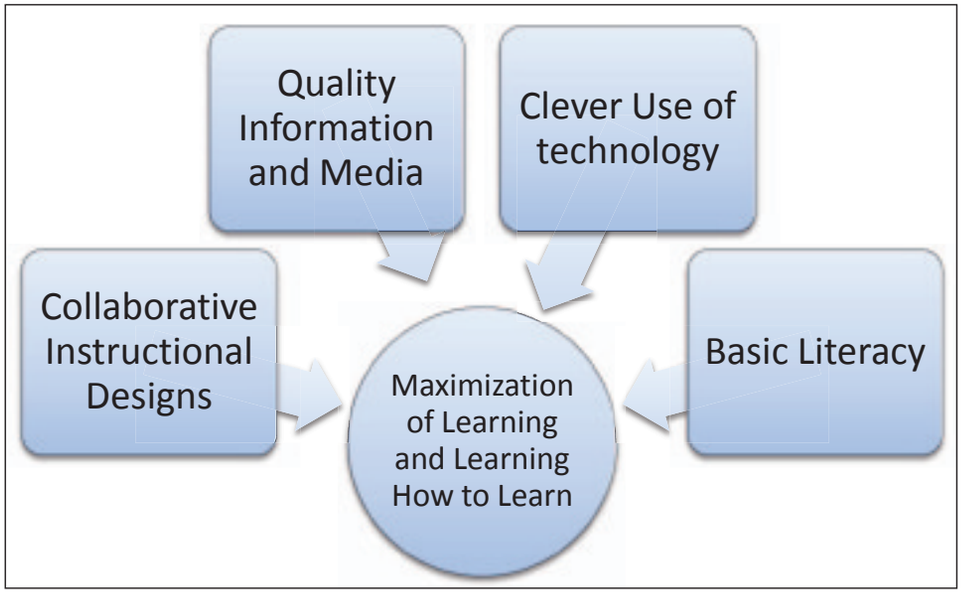

Figure 1: The Expertise of the Teacher-librarian in Knowledge Building

and expertise and spur the development of collective knowledge. The result is transformational as both student and teacher growth is evidenced. Everyone gets better and better.

Thus, as illustrated previously, the mission of the learning commons program would be to maximize learning and learning how to learn in the school.

> **Thinking Interlude:** Think of the various standards documents you know such as the AASL Standards (2007), The Common Core Standards in the United States (2010), or Provincial documents in Canada, The P21 Initiative (2008); the ISTE NETS standards (refreshed editions, 2009), or the National Technology Plan (2010). Do these documents support the four-pronged expertise model shown in Figure 1? What fits or does not fit? What elements are missing?

Basic to this transformational approach is an attitude across school culture that everyone is pushing toward excellence rather than a collection of isolated pods under mandate to achieve a minimal score on some form of high stakes test. Consider the characteristic of the classroom teacher who melds their isolated pod into the learning commons environment.

If we compare the classroom teacher to a general practitioner in medicine, the GP of education would call on various specialists such as reading specialists, curriculum coordinators, assessment specialists, or teacher-librarians to consult in producing the healthiest client possible; diagnosing problems and interventions where needed. And, as a team, the goal is not merely to meet minimal expectations or standards, but to exceed them in a giant push toward excellence.

Thus, as a team, they would not be satisfied in bell curve results; they would not be interested in separating sheep from goats; rather, they would be interested in enabling every leaner to reach the highest potential possible. Continuing the medical analogy, general practitioners and specialists are interested in excellent health, not minimal survival.

In an assessment world, one of the criteria of a great teacher would include the reaching out to the specialists of the school for collaborative partnerships that would produce results not possible in the classroom alone. Likewise, the mark of a great teacher-librarian would be that every partnership with a classroom teacher would produce results not achievable in the library alone.

Thus, by any measure, two heads would be better than one in any of our favorite program initiatives:

In order to accomplish the model proposed here, we put forward two major ideas:

- characteristics of exemplary knowledge building units and lessons that we label **Super Learning Experiences.**
- a structured environment where collaboration is a natural that we label the **Knowledge Building Center.**

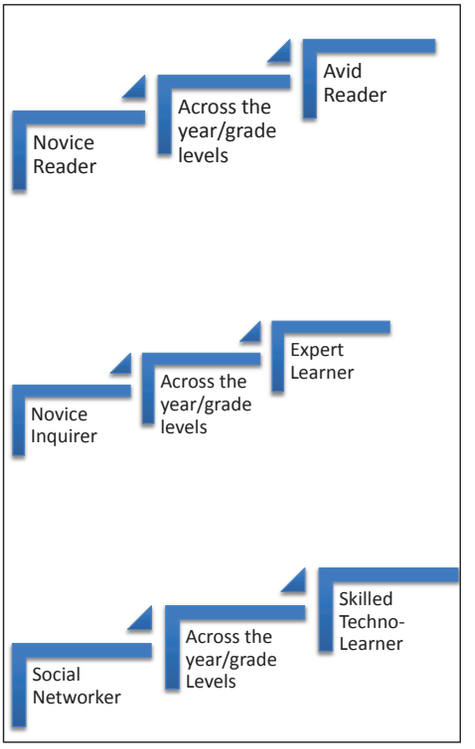

Figure 2: The Learner's Steps to Super Learning Experiences

As we proceed with our description of the characteristics of a great learning experience, we offer a vignette from a very creative teacher-librarian, Michelle Luhtala, who has implemented much of what we describe here (p. 30).

SUPER LEARNING EXPERIENCES REQUIRE ATTENTION TO ENVIRONMENT

In a recent book, *Curriculum 21: Essential Education for a Changing World* (2010), Heidi Hays Jacobs said: "Rather than being victimized by our program structures, we should be creating new types of learning environments for a new time and for various types of teaching and learning. **Not to do so is a declaration not to learn.**"

> **Thinking Interlude:** Before we present our list of characteristics of transformative learning experiences and their environments, think back to the very best learning experiences of your

own life. What characteristics did they possess that engaged you as a learner; that made them memorable to you; and, perhaps changed your life? Compare your list to ours and make a list of your own.

CHARACTERISTIC OF SUPER LEARNING EXPERIENCES

• The learning experience happens in a physical/virtual environment conducive to active investigation under the direction of adult coaches.

• Standards and learning outcomes are selected from state/provincial/national documents that provide minimums the learners are to surpass.

• The problem, project, or quest engages the learners; they are engaged because the task is relevant and meaningful.

• Learners encounter a wide range of information from which they must develop deep understanding.

• The learners use quality information and media in their learning journey.

• Each learner develops personal expertise in the topic at hand and adds that expertise to the pool to create collaborative intelligence.

• Adult coaches facilitate learning collaboratively (classroom teacher, teacher-librarian, teacher technologist, reading specialists, councilors, outside experts, other specialists, parents, etc.).

• Technology use supports the active investigation of the problem/project and actually contributes to the learning and learning how to learn.

• Sound instructional designs are used to spur active inquiry, higher-level thinking, habits of mind, and creativity.

• Products include both individual and collaborative creations in written and multimedia formats.

• Twenty-first century skills are taught just in time to spur content knowledge.

• Sharing both individual and group work takes on many forms and a variety of events.

• Differentiation allows for multiple routes toward excellence.

• Almost without exception, every learner meets or exceeds expectations for the learning experience.

• A variety of formative and assessment measures chart progress of individuals and groups of learners.

• After the unit is complete, the adult coaches and learners participate in a metacognitive big think and decide how they can do better during the next learning experience together.

After creating a number of transformations of typical learning experiences that exhibit many of the characteristics above, a graduate student at San Jose State University created the following model of what a super learning experience might look like that she dubbed a "Knowledge Building Journey":

Thinking Interlude: Compare a learning experience you have recently participated in to the characteristics list and the learning journey model. What strategies did you experience that would exceed any of those characteristics? In what areas could the learning experience have improved? What areas seem difficult or unfamiliar? What experimentation could happen to test the various characteristics for an improved result in your school?

KNOWLEDGE BUILDING CENTERS AS AN ENVIRONMENT FOR SUPER LEARNING EXPERIENCES

Whether a particular learning experience is face-to-face, totally online, or a hybrid between the two, there are a variety of tools now available that create a very different virtual learning environment. We call them Knowledge Building Centers. They are easy to construct and open the doors to the world of collaborative learning as opposed to one-way directive assignments. A Knowledge Building Center can be used with a single class, several classes in the same school, across schools, or across the world. They are "home base" for the adult coaches and learners at any time and on any devices for the duration of the unit or project. They are giant conversations where everyone is helping everyone else to meet and exceed the task or challenge at hand.

Virtual Knowledge Building Centers are:

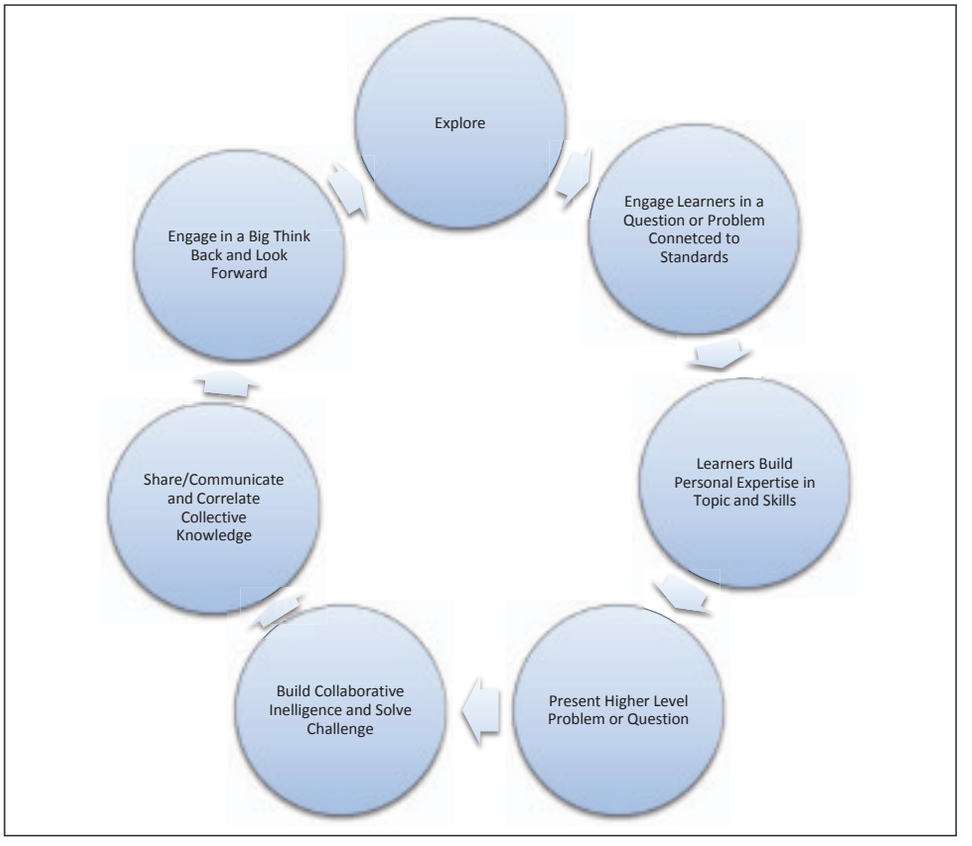

Figure 3: Knowledge Building Journey

• Collaborative construction zones between adults and students.

• Places to learn, solve, work, create, think, achieve, shine, demonstrate....

• Participatory learning centers.

• Higher level thinking and metacognitive environments.

• Ventures into the real world of information.

• Free or almost free.

• Simple to create on a variety of technologies.

Using Google Sites or a variety of other tools, a simple "room" is created for each learning experience across the year. A sample Center template is shown below:

Instead of the classroom teacher being alone and creating isolated assignments, adults, specialists, classroom teachers, administrators, experts, and parents are building knowledge and learning how to learn skills together. Notice the features of this template:

• The hook or problem of the knowledge building environment is placed at the center and entices the learner to become engaged in the problem, or question, or quest to be explored.

• Around the central hook are various rooms where the adults and learners will do their work, building, and collaborating. There are rooms for tools, calendars to keep us on track, resources we all recommend, places to store our products, a museum of previous projects, our assessments, the project plans, and, most important of all, a place where all the adults and the students are collaborating, helping, constructing, thinking, and communicating.

• The knowledge building center for the unit can incorporate any of the Google Apps and other Web 2.0 extensions that are valuable for that learning experience. For example, students can be doing collaborative writing in a Google document; can be creating a video with Google Video, can be using a chat, email, and/or the knowledge building site to communicate and discuss progress, can be creating a Google presentation, can be using outside tools such as Voki to create and comment on presentations, doing digital storytelling podcasts, or a hundred other possibilities.

What is also transformative is the change from a teacher's directive assignment into a collaborative learning experience. For the specialists in the school such as teacher-librarians, teacher technologists, reading coaches, counselors, experts from the community, administrators, and the parents, they find themselves automatic partners with the classroom teacher as coaches, partners, builders, cheerleaders, all concentrating on high quality teaching and learning. The era of the isolated classroom teacher is over. And if both adults and learners do a big think or metacognitive reflection at the end of the learning experience, everyone reflects on how well we did and what we can do better next time. Like watching the videotape of the football game played last Friday, we are all doing analysis and synthesis, and looking for strategies to make learning experiences

Figure 4: A Sample Knowledge Building Center Template

A Real World Example *by Michele Luhtala*

New Canaan High School (NCHS), in this high-performing district. Last year, 92% of our students went on to college after graduation, and our standardized test scores ranked among the highest in the state.

My career as an educator began in the classroom. I taught social studies for ten years before becoming a librarian. The transition was disconcerting in two related respects. I struggled with the randomness of my face-time with students. The teach-and-run model confounded me: No follow up, no opportunity to revise, no chance to see the students' finished work, let alone assess what they had learned. And worse, because instructional time was so short, I was forced into the role of lecturer—a teaching practice I had long ago exchanged for a more constructivist approach.

According to the National Training Laboratories (NTL) Institute, learners retain 5% of what is said during a lecture. This figure has been questioned by a number of naysayers. Even if it is inaccurate to some extent, the Learning Pyramid still shows that lecturing is the least effective means of instruction.

Using our web page traffic statistics, we learned that many of our students were working on assignments long after the school library closed (9-10 p.m. is 15% busier than 9-10 a.m., our second highest traffic hour). If they were only retaining 5% of what we were teaching them, how were they applying our lessons to their research? And how, given our limited time with them, could we ever find out? Faced with these instructional challenges, my colleague, Christina Russo, and I decided to use web-based tools to improve instructional reach, and reduce passive learning by creating a hybrid online/in-real-life (IRL), library program.

HOW DO YOU MANAGE?

We designed our online companion program—essentially a Knowledge Building Center—-to mirror the taught curriculum at NCHS. We built it one project at a time, and our courseware now features online *library lessons* for over 250 NCHS projects from all disciplines. We use Moodle as a course management system—it is open source, which means a) it is free, b) product development is extremely responsive, and c) it is not restrictively proprietary. Student enrollment is voluntary; this allows us to track organic, need-based membership. We have broken the program into the four school year quarters. Since membership is project-driven, 63% of all NCHS students belong to each library Moodle quarter. Freshmen and sophomores turn to it more readily than seniors, for whom it did not exist when they entered the school, and juniors who were almost finished with their first quarter of high school before we launched it. Students are automatically de-enrolled after a period of inactivity so membership truly represents active participation. Clearly, it is still growing.

BLENDED LEARNING EXPERIENCES

If students only retain 5% of what we say in a lecture, and the entire program is available online, why teach face-to-face (F2F) at all? In 2009, the United States Department of Education conducted a study that determined that online learning is more effective than F2F, but that hybrid instruction is the most effective of all. Student testimonials confirm this. We recently interviewed our students about their blended learning experiences. Our purpose in the interview was to show the importance of learning-by-doing, but our students surprised us by saying, they grasped concepts best by learning independently—as long as there was someone to facilitate learning.

During the first year, it was exhausting to assemble the online program, but now in year three, it is quite manageable. The core instructions are in place for many projects and we are focusing on incorporating multimedia support. A typical "project block" might include the assignment, narrative instructions, links, graphic organizers, video

tutorials, screen shots, online checklists, cloud based collaborative resources, a discussion forum where students can generate collaborative and communication threads with classmates, NCHS faculty and support staff, as well as reference librarians from the public library. Because this is a protected (requires authentication) environment, we can take liberties with providing access to resources we could not openly post online. We also provide authentication information for databases and direct links to our eBooks—which students appreciate.

ENCOURAGING INDEPENDENT LEARNING

The hybrid program has been transformational. While we always intended to cycle through all the expected phases of collaborative instruction, we were missing steps when we taught exclusively face-to-face. Now we have many more opportunities to follow through and assess student learning. We often add resources to project blocks as student needs emerge. It allows us to deliver unprecedentedly responsive instruction. Looking at the list of 21st century learning skills, as delineated in the Partnership for 21st Century Learning (P21), this model helps students develop problem solving, productivity, responsibility, and self-direction among others.

Our online delivery allows the library program to provide a level of curricular standardization without impeding individual teacher creativity. Each student working on a given project works from the same project block, regardless of the teacher. So if one particular teacher is reticent about collaborating with the library, we can send students in that teacher's class instructions via email directing them to the affiliated online courseware, essentially circumventing reluctant instructional partners. This helps students recognize that curriculum extends beyond their immediate class, and encourages them to seek collaboration and support from classmates in other sections, thus honing their communication and collaboration skills as well as guiding them toward independence.

INSTRUCTIONAL FACILITATORS

We use the platform to promote our role as instructional facilitators. When meeting with classes, Moodle helps us to model how to use information and communications technology resources to advance learning not only for students, but for our colleagues as well. They are often quick to offer suggestions, revisions, and enhancements, thus it provides a vehicle for instructional collaboration. After seeing us apply innovative technologies and resources to curricular instruction, teachers are eager to solicit our expertise when developing units and planning professional development activities. The library Moodle's value to new teachers is immeasurable as it lays out for them every research project, enhanced with teacher and student contributions, assigned in the school over the past three years. It adds transparency to the program exposing its breadth, in its entirety, to all New Canaan High School stakeholders.

We now have ample opportunities to pre-assess and post-assess to measure our students' individual and group growth against a baseline. This is especially instrumental in providing support to classroom teachers who are grappling with the new federal mandate for Response to Intervention (RTI). We often embed tools for self-assessment and peer-evaluation (i.e. online bibliography evaluation forms—created in Google Forms). Because they are online, we can analyze trends without having graded the work. We can also monitor collaborative conversations, and provide targeted support to those who need it. The hybrid program allows us to differentiate and reduces the incidence of over-teaching students who are ready to work independently.

CHOOSE YOUR SOFTWARE WISELY

It is important to carefully evaluate the medium for delivery before launching an online companion to a face-to-face instructional program. A social studies teacher, Bob Stevenson, introduced us to Moodle. Because it is open-source, product development is organic and needs based. It is not always intuitive however, which intimidates technophobic teachers. As our project blocks evolve into portals for a wide array of support resources, it is increasingly important for us to embed HTML code—namely iframes for other web-based resources like online videos, presentations, calendars, forms, social applications, and so on. Not all commercial courseware products offer this. It is also important for the software to allow peer-to-peer communication that does not require teacher configuration. Synchronicity with the school or district's Student Information System (SIS) is critical. The availability of portable device applications (phone and tablet apps) is another important consideration when choosing software.

Connectivity is a challenge. Hybrid programming presumes that learners are connected. According to the Pew Research Center's Internet & American Life Project's February 2010 report, *Social Media and Young Adults*, 76% of teen households have broadband connectivity and another 10% have dial-up service. It also tells us that 41% of teens in the lowest income bracket use their phones to go online—which indicates that a significant number of students without connected home computers are using their phones to cross the digital divide. A school or district that is truly committed to delivering hybrid learning will find a way to help bridge the gap for learners without Internet access.

THE LIBRARY IN THE CENTER

Our blended online and face-to-face program thrusts our library program into the epicenter of the NCHS curriculum. Teachers and students use our Moodle as a starting point for projects. It serves as a guide for lesson planning, and it engenders a culture of resourcefulness among students and faculty. It democratizes instruction, further aligning our program with the principals of 21st Century learning. It is participatory: educators, support staff, students, and librarians can all collaborate, exchange ideas and showcase best practices. It is our virtual complement to our physical learning commons environment.

better and better across time. Each knowledge building center is one step toward better and more sophisticated learning through technology.

While students and adults might be somewhat wary the first few times they experience a collaborative knowledge building center, as they figure out the collaborative nature of the space, they are very likely to take ownership of that work space and experience what we would term the construction of collective intelligence.

In a second example, Kathryn Lewis and Lee Nelson of the Norman Public School District, Oklahoma, who use Moodle extensively, created a sample knowledge building center for their staff (This knowledge building center is of a poetry unit created by San Jose State Universities students: Jamie Renton and Kristi Lomicka. Their full unit can be found at **https://spreadsheets.google.com/ccc?key=0AkkdWYq2f0WvdENEZmpJa0NyTHF0MzJndktIejV3dkE&thl=en#gid=0**.

An Interlude of Examples. In order to get a firmer conceptualization of Super Learning Experiences in the Knowledge Building Center environment, the graduate students in the school of Library and Information Science at San Jose State University created a number of transformations of traditional learning experiences into higher-level examples. You can inspect these examples at: **https://spreadsheets.google.com/ccc?key=0AkkdWYq2f0WvdENEZmpJa0NyTHF0MzJndktIejV3dkE&thl=en#gid=0**

The higher the transformation number, the more sophisticated the example including work spaces beyond the lesson plans.

THE CALL TO ACTION

These fine examples mark just the beginning of the potential successes that new environments and design expertise will bring to learning and learning how to learn. Teacher-librarians are in an excellent position to bring about this maximization of learning and teaching by collaboratively designing super learning experiences within virtual knowledge building centers that engage learners in the real world of learning like those that Michele Luhtala and her Learning Commons team are building.

Moving teaching and learning to real world environments that allow learners to flourish and develop to their highest potential is the call. Inspired by these examples and armed with your own expertise we urge you to proceed to create knowledge building experiences and spaces at the heart of your learning commons program.

Share your ideas and inspiration. We look forward to hearing from you! We continue to gather exemplars of super learning experiences and knowledge building centers for our ongoing professional growth on the School Learning Commons Knowledge Building Center: **https://sites.google.com/site/schoollearningcommons/**.

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"... I define a teacherpreneur as 'someone who organizes a classroom venture for learning and assumes the risk for it.'"

Influencing Positive Change: The Vital Behaviors to Turn Schools Toward Success

VICKI DAVIS

Editor's Note: For this article, we have asked Vicki Davis to envision and share her views on the "state of technology in education and the challenges to which we need to rise."

Euripides said, "Nothing has more strength than dire necessity." Clearly, this is where we are in education.

With dropout rates soaring, standardized test scores stagnant, budgets being cut, and businesses arguing that educators are not providing the skill set students need to help them be successful, we are at a turning point.

Many educators feel like the proverbial "bad child" who is always in trouble and told all the things he cannot do (don't make Johnny hate reading, don't let Suzy quit school, and stop letting them fight in the lunchroom and stream it to YouTube.) A cacophony of voices arising from such books as *Disrupting Class* (2008), *Grown Up Digital* (2008), and *The World is Flat* (2007), declares the shortcomings of education and dire consequences if we do not change.

W. Edwards Deming, father of modern industrial engineering, says "It is not enough to do your best; you must know what to do, and THEN do your best." In his book, *In Influencer: The Power to Change Anything*, change researcher Ken Patterson (2008) states:

"The breakthrough discovery of most influence geniuses is that enormous influence comes from focusing on just a few *vital behaviors*. Even the most pervasive problems will often yield to changes in a handful of high-leverage behaviors" (p. 23).

What are these high leverage behaviors? From watching the transformation of my own school and reading current research, I hypothesize that there are six vital behaviors that hold the key to the positive transformation of schools.

ENCOURAGING TEACHERPRENEURSHIP AND ACCOUNTABILITY

Research cited by the *Wall Street Journal* in a February 2008 article, *What Makes Finnish Kids So Smart*, states that Finland was named the best education system in the world. The article says:

"'Finnish teachers pick books and customize lessons as they shape students to national standards...' In Finland, the teachers are entrepreneurs".

An entrepreneur is "someone who organizes a business venture and assumes the risk for it." So, I define a teacherpreneur as "someone who organizes a classroom venture for learning and assumes the risk for it." This term can broadly be applied to anyone who works with students or organizes student learning: teachers, teacher-librarians, IT integrators, and curriculum directors. Teacherpreneurship is truly an attitude that permeates a school at every level.

Susan Israel's book *Breakthroughs in Literacy* (2009), analyzes case studies in K-8 classrooms where teachers had breakthroughs in student reading. Israel concludes her analysis with this powerful statement:

"What we learn... is that teaching is more than giving students a choice... or linking instruction with students' learning styles. It is about personalizing teaching for specific students, lessons, or skills" (p. 194).

In fact, the success of many charter schools according to the authors of *Disrupting Class* is that they give educators "the freedom to step outside the depart-

ment structures...with the flexibility to create new architectures for learning" (Clayton, M. C., p. 209). As shown in these three examples, clearly teachers must customize the classroom.

When looking at organizations that successfully change, Herold and Fedor (2008) point out,

"There is no such thing as 'organizational change...'. When we say an organization has made the transition from 'point A' to 'point B,' we really mean many individuals within the organization have changed their behavior, so that collectively the organization now reflects these changes" (Herold, D. M., & Fedor, D. B., p. 70).

So, how do we empower the customization of the classroom? First, we must realize how many restrictions educators have. Educators often have no choice in their own classrooms. Their lesson plans are written for them, or even worse... scripted (Bernard, S., 2007). In many cases, they are not even allowed to arrange the classrooms in the ways they want because they have to share space with other teachers (Armstrong, C., 2009). Change leader Don Berwick, who was head of the Institute for Health Care Improvement's 10,000 Lives Campaign, said "The biggest motivators of excellence are intrinsic. They have to do with people's accountability to themselves" (Patterson, K., p. 109). The 10,000 Lives Campaign saved 10,000 lives by helping healthcare professionals make better decisions by appealing to their intrinsic motivation to do no harm. In the same way, I believe successful change will appeal to the motivation of teachers to help their students learn.

So, how do we unleash the intrinsic desire of teachers to help students learn and help teachers make the sacrifices it will take to get there? Figure 1 shows it well that "The difference between sacrifice and punishment is not the amount of pain but the amount of choice" (Patterson, K., et al., p. 106).

So, it is time we give educators choices. Hold them accountable to the standards, but let them choose the tools, web apps, web sites, resources, software, technology, and perhaps textbooks that will best help their particular class learn based upon the learning styles and unique interests of the students. Let them create spaces for learning that may not be in traditional neat rows or involve school desks at all!

Teacher engagement precedes student engagement and to engage our teachers to make the sacrifices necessary to promote excellence, we must empower teachers. Teacher-librarians, tech directors, and other specialists in the school are essential partners for teachers who are willing to change. Administrators should encourage this AND hold teachers and those who support them accountable, or teacherpreneurship will just be another failed initiative. Teachers cannot shoulder this alone.

BUILDING THE BRICKS AND CLICKS: ASSEMBLING THE TOOLS THAT FLATTEN CLASSROOMS AND EXPAND MINDS

Don Tapscott in his book *Grown up Digital* (2009) analyzes today's generation of students and recommends:

"Instead of delivering a one-size-fits-all form of education, schools should customize the education to fit each child's individual way of learning. Instead of isolating students, the schools should encourage them to collaborate" (p. 122).

This individualization and collaboration happens in two places: face-to-face and online. Both should be customized for and by the students and educators inhabiting these spaces. Perhaps no theory better embodies this thought than the Learning Commons:

"We posit that both adults and young people need to learn to build their information spaces and to learn to be responsible for their actions in those spaces. Since our clients are under our influence only part of the day, we need to help them learn and create rules of behavior in both the real world and in the digital world" (Loertscher, D., Koechlin, C., & Zwann, S., 2008, p.3).

The Learning Commons is the perfect companion to the teacherpreneur and is a space that houses librarians, media resources, technology resources, and IT integrators in a common place that is designed to be both functional and comfortable with some spaces even resembling the comfortable seating areas found in the local coffee shop. "The Learning Commons as the center of school improvement, offers a lifeline from the frustration often expressed in the teacher's lounge" (Loertscher, D., Koechlin, C., & Zwaan, S., 2008, p.65).

But learning extends beyond the school

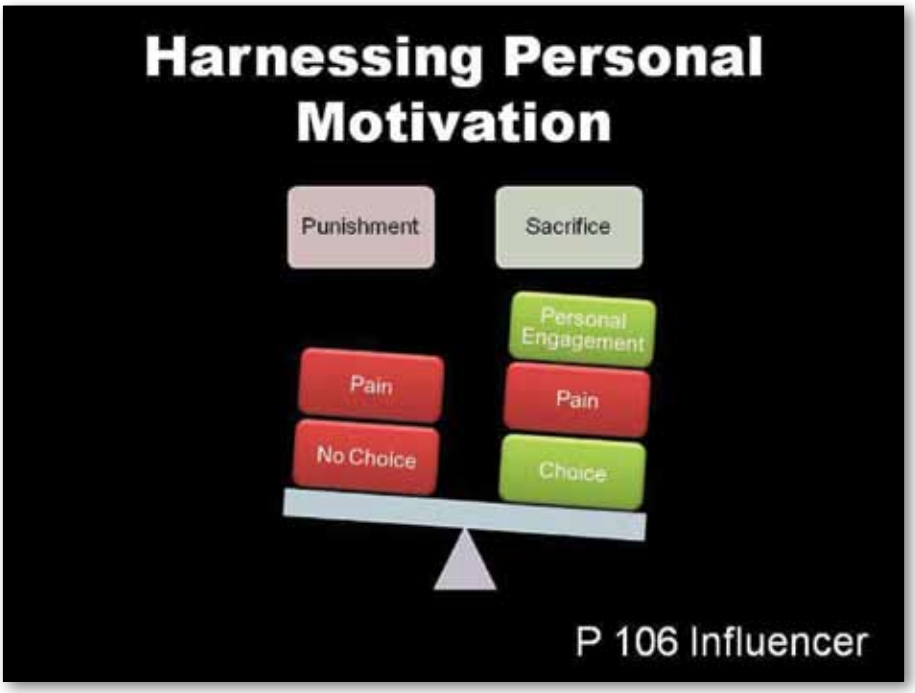

Figure 1. According to Ken Patterson, the difference between sacrifice and punishment is the amount of choice.

yard onto the Internet. As perhaps the only positive side effect of the threat of H1N1, many schools are rushing to find places online for their students to collaborate and for the first time looking at moving outside their walls. The sites a school will access are places the teacher-librarians, tech directors, administrators, and classroom teachers should discuss frequently as they explore what other schools in their area and around the nation are using. Although fear often holds many schools back, there are amazing, beneficial learning experiences using just about any Internet tool.

In addition to providing a wide variety of tools, schools like mine are looking for others around the world to "partner with a purpose" as we create common curricular projects that teach subject matter, 21st Century tools, digital citizenship, collaboration, and culture. To learn more about these global collaborative projects, visit **http://www.flatclassroomproject.org.** World class curriculum directors have world maps with push pins marking the global experiences of their students. World class IT directors will continually seek out new, safe tools to hone the technological prowess of their students.

KAIZEN: EMPOWERING PERSONAL LEARNING NETWORKS

"Everyone is going to need to make an audacious commitment to learning to survive" (Porter, B., p. 47).

The third vital behavior is to empower all employees to develop a personal learning network so that they may continually research new topics and refine their practice. The Japanese call this method of improvement Kaizen which means "continuous improvement" (Ten 3, 2009).

In research on the best teachers at the college level, Ken Bain (2004) found that:

"Great teachers are not simply great speakers or discussion leaders; they are more fundamentally, special kinds of scholars and thinkers, leading intellectual lives that focus on learning, both theirs and their students'" (p.134).

Currently, our model of professional development in schools is a "binge"-approach where we have educators sit in 10 to 20 hours of class over several days. This rarely creates systemic change. However, embedded professional development programs such as "23 Things" by Helene Blowers (23 Learning 2.0 Things: **http://plcmcl2-things.blogspot.com/**), are showing amazing, transformational change in their participants. In my own career, it was four years ago when I committed to take fifteen minutes three times a week for my own personal research and development and that practice has improved my classroom the most.

Personalized learning must begin with the adult educators in the school. We should develop these personal initiatives ourselves or perhaps alongside our students. This has happened with the Tech Angel program in New Zealand (Tapscott, 2009).

LOOKING AT PERFORMANCE AS PART OF THE PROCESS

"Assessment and individualized assistance can be interactively and interdependently woven into the content-delivery stage, rather than tacked on a test at the end of the process" (Clayton, M. C., 2008, p. 111).

I find that as I am teaching students to construct movies on a topic such as Digital Citizenship or the trends in information technology that the richest learning experiences and assessments occur at that moment. We must differentiate instruction based upon the learning styles in our classroom allowing students to record, act, reflect, blog, video, program, and engineer products that represent their learning on a topic. We must also evolve in how we assess a student's progress through a body of knowledge and mastery.

Many schools are so eager to master the test that the test has become school and that makes Jack a dull, frustrated boy uninterested in coming to school just so he can take another test. We forget that except for professional exams like the MCAT, life does not have written tests. As we move toward improving our education systems, we must also evolve and improve our assessment methodologies.

When teacher-librarians, tech directors, and other specialists in the school collaborate and co-teach, if they all adopt an assessment attitude throughout a learning experience reflecting with the students about what they know and are able to do, and then reflect together as adults, the likelihood of excellence in teaching and learning is exponential rather than incremental.

SELECTION OF THE RIGHT MESSENGERS

"The message is no more important than the messenger," says Donald Hopkins of the *Carter Center*, which was responsible for amazing results in eradicating the painful guinea work in 23 of 30 targeted African countries. Hopkins found that when outsiders moved into communities they were met with polite nods and very little action. It was when they began working with the chiefs and medicine men of the village that they saw improvement (Patterson et al., 2008).

Our schools have become too dependent on outside consultants and presenters while allowing change leaders and knowledgeable experts to languish in their cubicles, unnoticed and un-empowered to help things change.

Research shows that effective promoters of change spend a disproportionate amount of time with two types of leaders: formal leaders and opinion leaders (Patterson et al., 2008). Formal leaders are the administrators and those who have staff reporting to them. Opinion leaders are the people who are knowledgeable, generous with their time, and trustworthy and they often are the vital link between an entire school system and positive change.

In order to help teachers incorporate methodologies to improve student learning we must honestly look at the messengers of such change. Defining the messenger is not to be relegated to a marginal afterthought but as a paramount decision that will determine whether your initiative is adopted or becomes just another byword. Additionally, it should never be the whim of just one person on your school staff to sift through the wide variety of messages in education today but instead, teacher-librarians, tech directors, teachers, curriculum directors, and other specialists should be included in the planning school practices.

REEVALUATE DATA STREAMS

To change a person's focus, one must take a look at the data that the person focuses upon. "The fact that different groups of employees are exposed to wildly different data streams helps explain why people often have such different priorities and passions," says Patterson (p. 234). With the wide use of student information systems and the explosion of data mining, we must be careful that we are showing the proper data stream.

Patterson and others emphasizes in his book that to change behavior we must change the data stream. The thing that concerns me about the data streams in most schools is that they only consist of one thing: standardized tests. Two years a go, I heard researcher Dr. Robert McLaughlin speak on this very topic; he said,

"the assessment industry owns conversations that educators started–like math standards... We should be having educators talking with educators about what excellence looks like and how it needs to be fostered. We need to be cataloging best practices in learning technology. Our terms as professional educators should be to catalog our content. It is not hard, it just isn't happening" (Davis, 2007).

But why are we only looking at standardized testing when other research suggests that "a seldom-examined factor, student aspirations, plays an integral role in students' educational accomplishments"? (Plucker, J. A. & Russell J. Q., 1998, p. 252-257). By looking at student aspirations, student environments for learning (including incidents of violence), and other research-proven factors, we can improve the process of learning and thus improve the outcomes of learning. By the time the low test score comes back it is too late. We must refocus on the data that helps us focus on the process. But as we harness our data streams, we must be careful not to swing toward too much data as the research also shows that leaders "often undermine the influence of the data they so carefully gather by overdoing it" (Patterson, p 235).

"Teacher-librarians, tech directors, and other specialists in the school might have data streams connected with their own specific tasks such as network speed, circulation of materials, and number of lessons delivered about information literacy or networks. But, these data streams, standing alone, do not measure our effect on teaching and learning. It would be much better to select a few data streams of our own that

demonstrate our effect on teaching and learning. These are the measures that put us at the center of school improvement" (Loertscher, D., personal communication, October, 18, 2009).

IN CONCLUSION

Technology is intertwined throughout these six key vital behaviors we should encourage among educators and in schools to help facilitate change. However, it is never about the technology but about how the technology is USED to improve learning. Doing our best and trying hard is not enough if we are doing the wrong things.

Right now, the only certainty ahead of us is that we must sacrifice our time, energy, and creativity if we are to turn the course of education. And yet, the few years it takes to turn this most important institution of society are but a glimpse in the long span of education, which began when Socrates sat on a rock instructing his students orally. "We are all in this together" and this is indeed perhaps the noblest battle—the battle for success—being fought in our society today. For this is the battle for the very future of our planet and one, my fellow educators, which we cannot afford to lose.

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"A Learning Commons is a common, or shared, learning "space" that is both physical and virtual."

The Virtual Learning Commons and School Improvement

DAVID V. LOERTSCHER AND CAROL KOECHLIN

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Do you have a library website? If so, how often do the students and teachers in your school explore and utilized the great links you provide for them?

Do they go straight to Google? If you feel that your webpage might be losing out to Google, then consider creating and building a new environment that better mirrors the participatory digital world your students and teachers like to work and play in. Start fresh and build a giant collaborative learning space for the school known as the Virtual Learning Commons.

WHAT IS A LEARNING COMMONS?

A Learning Commons is a common, or shared, learning "space" that is both physical and virtual. It is designed to move students beyond mere research, practice, and group work to a greater level of engagement through exploration, experimentation, and collaboration. The Learning Commons is more than a room or a website; it allows users to create their own environments to improve learning. It's about changing school culture and about transforming the way learning and teaching occur. This concept was introduced by the authors in *The New Learning Commons Where Learners Win*[1], published in 2008.

THE VIRTUAL LEARNING COMMONS: A DEFINITION

The Virtual Learning Commons (VLC) is the online force of the Learning Commons; it's a digital learning community in which the whole school participates. It is *not* a library website that only provides a one-way stream of useful information. Instead, both the instructors and the students of the school collaborate to establish the VLC as a place where individuals and groups are actively learning, communicating, and building together in real time. This participatory community of learners is powered by software that allows many contributors, and it is as public or private as the school wishes it to be.

In a recent article in *Library Journal*, David Weinberger calls for libraries to reinvent themselves as 'platforms.' He urges libraries to switch from a portal mentality to one of an infrastructure that is ubiquitous and persistent. "A library as platform is more how than where, more hyperlinks than container, more hubbub than hub."[2] The school VLC has the potential to become the 'infrastructure' Weinberger argues for, so schools can better deal with the messy business of learning, celebrate and archive results, and move together towards school improvement.

VARYING PERSPECTIVES

The Virtual Learning Commons totally changes the dynamics of learning. It is set up as a client-side environment rather than a top-down information service. Because of this perspective, each individual and group uses it for their own varied purposes:

For the school administrator, the VLC is the center of school improvement and experimentation.

To a specialist such as a reading teacher, it is a place to foster reading improvement and engagement across the entire school.

For the teacher librarian and the teacher technologist, it is a place of collaborative learning and the center of the push to make information and technology actually boost the quality of teaching and learning.

For the athletic coach, it is the place for sporting events and opportunities.

For the student, it is the 'go to' place to find assignments, join and participate in school groups and clubs, find tools and tutorials, or share and build knowledge with other students across the world.

For the classroom teacher, it is the place to build collaborative learning experiences for students with the help of school and district specialists. It is the place to encounter experts and invite parents to participate in activities and learning.

Overall, the VLC fosters a sense of ownership by everyone in the school. It is a place where everyone is reaching for and exhibiting excellence. The VLC represents the culture of the entire school. It is designed with change in mind and remains in a state of perpetual beta as it evolves to serve the community that jointly owns it.

We are advocating a new way of thinking, not only about school libraries but about learning for the future. A tour of the Learning Commons, in both its physical place and virtual states, will give you a taste of the endless possibilities to drive school improvement. Jessica Hansen provides a vision of the Learning Commons in the following four short videos: http://www.screencast.com/users/jlyn_81/folders/Virtual%20Learning%20Commons

MORE EXAMPLES

Here are just a few examples of what might be happening in the Virtual Learning Commons across various grade levels:

The entire school district is adopting the Common Core Standards or some other major initiative across all levels. The VLC is the center for forming research teams, planning, experimentation, news, professional development, and assessing progress.

The physical education department is conducting a wellness campaign across the school. Using the VLC, students can report their fitness activity levels, share recipes and nutrition advice, and arrange real-time athletic meets.

The teacher librarian is encouraging all students to participate in the state book awards program. She uses the VLC to promote literacy through reading, critical thinking through voting, and first-hand research by communicating with the authors and other school groups across the state or province.

The student iStaff team (like a geek squad) is promoting several new Web 2.0 tools to be used by students and teachers across local schools. They post the tools and tutorials and man a virtual help desk to assist the use of those tools.

Fifth grade students are helping second graders to research various animals in preparation for their trip to the zoo. They use a knowledge-building center on the VLC to help their young partners prepare for the excursion, both in and out of school.

The PTA is launching a school-wide environmental project with teams from each classroom. The VLC serves as communication center to organize tasks and meetings.

The debate club won a recent tournament! They showcase their victory in a VLC blog that details the major contests, their journey to the competition, and their trophies.

The seventh grade class is raising funds to help pay for medical expenses of a fellow classmate involved in a terrible accident. They sponsor a campaign across the school where anyone can give a donation for every book read by anyone in the school. Details found on the VLC.

A SENSE OF COMMUNITY

A spirit of team membership, supportive friendships, and organizational fervor is well known by most during some part of their lifetimes. As growing Internet Communities develop, we see the same comradeship and engagement in all types of cases such as online games, Wikipedia, political causes such as the Arab Spring, Internet fund raising, folksonomies, and many other collaborative construction projects.

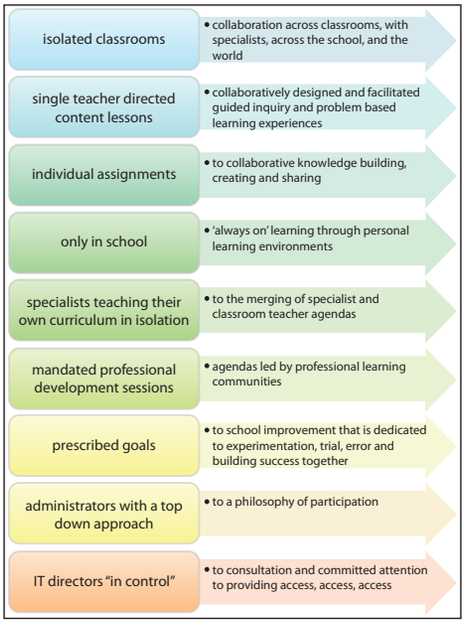
Is it really possible to have that same spirit of purpose and passion in a learning community of a school or online learning group? Many schools try to create school spirit by focusing on sports, around which students can thrive and community members and parents can participate in as well. Building the same sense of participation and pride around academics has proved much more difficult.

With young people claiming that boredom is the main problem with school, some have suggested a variety of ways to engage students in order to combat high dropout rates in middle and high schools. Michael Fullan strongly suggests that if schools are going to truly improve, the solutions for teachers and the solutions for students must come as a package.[3]

The VLC is a package that provides 'solutions' for teachers and students to learn, play, and grow, when technology is leveraged in ways that encourage participation. In the visual below, we outline a few of the transitions that can evolve in a VLC.

BUILDING THE VIRTUAL LEARNING COMMONS

In the past three years at San Jose State University, instructor David Loertscher and graduate students have been constructing Virtual Learning Commons sites using a va-



riety of software. During the spring of 2012, the class did a study of the past efforts and then created five major rooms or portals into which the Virtual Learning Commons might be divided. Each portal would have its own construction team who are allowed to edit, build, and create. And, owners of the entire VLC could have the power to regulate the whole. Thus, there would be a system of control but also a decentralized structure to allow a true collaborative culture to develop. No one person would be constructing the VLC but rather groups of contributors, and thus a participatory culture blossoms.

THE FIVE MAIN PORTALS OF THE VIRTUAL LEARNING COMMONS

During the Spring 2012, the class at San Jose State University analyzed a number of creative efforts and combined all the efforts into five main sections or portals:

Here is a brief introduction to each major portal. As you read about our ideas for each portal, consider your own school needs and where you would start in the construction of a VLC. What is important for your school and district right now? How could a VLC enable and engage students and teachers and drive improvement for your school? You might link into the VLC template and follow along. It is at: https://sites.google.com/site/templatevlc

THE INFORMATION CENTER

This portal is the opening page of the Virtual Learning Commons. It is somewhat like the traditional school library home page in that it links the user to a wide range of useful resources and tools, databases, libraries, museums, activities, the Learning Commons orientation, etc. It is the point of entry for the other major portals. To capture and keep interest, the front page features a 'hook' in the center which draws in the user to the entire site.

THE LITERACY CENTER

This is the arena where a whole school culture is emerging around reading, writing, speaking, listening, creating, consuming, enjoying, collaborating, and celebrating all things connected with a variety of literacies. Here are the digital book clubs, the writing clubs, the book or movie trailers. This center should include work and activities done in single classrooms linked to the Learning Commons, across classrooms, across grade levels, across schools, across districts, across the state, and across the world. Various activities come and go as interests are sparked, created, implemented, and then decline. Presidents of school clubs post, teachers post, administrators post, and everyone is commenting and participating in projects, activities, celebrations, and discussion.

THE KNOWLEDGE BUILDING CENTER

This is the learning community of the Virtual Learning Commons. Here is where the teacher librarian, the teacher technologist, and other specialists are designing and conducting collaborative learning experiences with classroom teachers. The learning experiences can range from one-class participation to multiples classes and learning challenges around the globe. Because of the transparency of the VLC, the very best of learning in the school can be tracked and archived.

THE EXPERIMENTAL LEARNING CENTER

This is the heart of experimentation, testing, trial, success, and failure—and projects of school improvement and action research in the school. It is not only a place constructed and frequented by administrators, but where the leadership team of the school, grant projects, or adoption of new initiatives such as Common Core evolve and thrive. Both adults and students are experimenting in the space; it is the place to take risks knowing that it is okay to fail and regroup for success.

SCHOOL CULTURE

This portal is the main draw for students because it is the living school yearbook. This is the home of the sports videos, club activities, trips, performances, contest winners, happenings, candid camera tours, and more. It is THE place to check every day to see what is going on. And, something from this page becomes the 'hook of the day' on the Information Center front page.

A PERPETUAL BETA CULTURE

We recommend that you experiment a bit with the template and structure that we have created. Form a focus group to look at a beginning structure and then brainstorm what will work in your school or online environment. We suggest that focus groups consist not only of adults but of the young people who will be using the VLC. Without their help, participation, and expertise, the VLC is likely to be ignored in the same way that the original school library website usually is. And, as the project begins to grow and flourish, we must all remember that it will evolve regularly as new needs arise, different people participate, and technology becomes more sophisticated.

BUILD YOUR OWN VLC WITH OUR TEMPLATE

You can use our free template to create your own VLC. We selected Google Sites as the main architecture for the Virtual Learning Commons, but there are other

platforms as well. We chose Google Sites because it:

Is free and available 24/7 across most platforms

Allows differing participants to edit various pages

Is fairly simple to learn

Is located in the cloud

Allows collaborative construction of a learning space

Works both on the inside and outside of a Google Apps for Education school

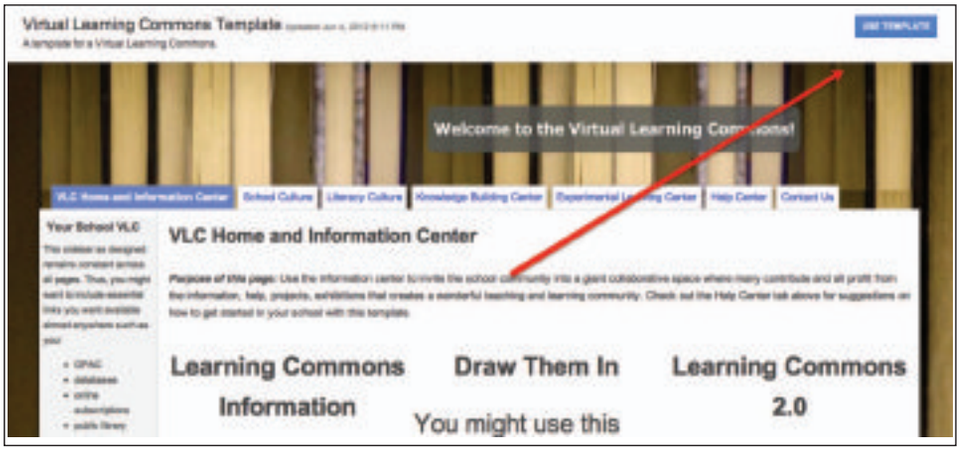
So, while the reader might be limited to or more interested in a different platform and software application, we suggest that the features built into the Google Site platform be used to judge how well a different platform would serve. Thus, as you read how the template we have built would work, a different platform should be able to deliver the same or better features.

We suggest that the best way to get started thinking about a VLC is just to create a VLC for your school and start testing and experimenting with it to understand both the possibilities and the opportunities. Then you can judge whether what we have created is better and more versatile than what you already have or want to have. And, if the following directions are insufficient, we have laid out much more extensive directions in *The Virtual Learning Commons* book listed in footnote number one.

GET STARTED. PULL DOWN THE TEMPLATE

Preliminaries

First, get a Gmail account. You must have a Gmail account to be the owner of a Google Site. Next, try Firefox or Chrome—or whatever seems to work best on your system—as a browser, but beware of Internet Explorer. Next, look at one or several tutorials available on the Web about how to create and use a Google Site if you have not used this tool before. If you get stuck, just get in the habit of searching for a 'help site' or tutorial about your problem with Google Site construction.



Download the Template

Go to the following template address: https://sites.google.com/site/templatevlc At the top, you will see "Use this template." Click that. It might look a bit different on your browser, but it is there.

Sign in with your Gmail address if you are asked.

Next, click on the Virtual Learning Commons Template. It will have a red box around it—as illustrated below if you succeed. Next, name your template. This could take several tries because you have to name the template something that has not been used before and because you also have to figure out the picture password. After you type the code in successfully, you may have to wait up to a minute; this is a good sign that you have succeeded, so be patient. The picture below shows the critical information you should pay attention to.

When the new template appears on your screen with the new name, you are now owner of that site—the *sole* owner--and you are ready to create and build. If you want to do this with a group, then you will have to share the site.

Build Your Own

Now you are ready to play, experiment, and build. We have many more ideas and suggestions in our book, but in the meantime we invite you to treat this as a sandbox for experimenting and developing ideas before actually constructing the real thing.

SO WHAT AND WHAT'S NEXT? USING THE VIRTUAL LEARNING COMMONS AS THE BASIS OF SCHOOL IMPROVEMENT

School improvement initiatives occur in every school with the hope from administrators that either continuous improvement or radical change might increase the bottom line of schools: learning. In many of the U.S. states, the current initiative revolves around Common Core. What is happening in your school? Who are the key individuals spearheading that change?

We suggest that the virtual learning commons become the center place for improvements and progress of all kinds and that this effort is a collaborative among those initiating the change—administrators, the teacher librarian, the teacher technologist, and other specialists in the school. To capture this central virtual place along with the participation of those concerned—from teachers to students, to specialists, etc.—is to move the concept of "library" into the heart of teaching and learning and make it the ubiquitous and persistent learning infrastructure that Weinberger suggests

We hope our examples from Common Core will spur ideas for your own program.

One challenge of Common Core is for students to encounter complex texts in short research projects that involve technology. Users of various multiple sources of information are to not only understand the texts but build arguments, take positions, and write their responses intelligently and persuasively. A few examples might help:

Teacher librarians, knowing that many classroom teachers will be faced with this challenge, volunteer to create a space in the virtual learning commons under the experimental learning center for experimentation to materialize, success showcased , failures analyzed, and teachers and students grow together.

Several of the faculty and the specialists of the school use knowledge-building centers to construct collaborative learning spaces where both adults and students grapple with topics that utilize complex texts to build deep understanding and produce sophisticated written responses. Such experimentation is the foundation of the professional development taking place in the school, and because the virtual learning commons is available 24/7 and open to only those who are participating, the space becomes a true collaborative learning community bent on improvement.

Another example from Common Core is the increased use of non-fiction to augment reading by students across the school. Here, the teacher librarian—along

with reading specialists and teachers—creates all types of reading clubs, digital storytelling, book clubs, and other enjoyable initiatives across the school to stimulate the wide reading of more non-fiction. This push is highlighted in the literacy center of the virtual learning commons.

It becomes common knowledge that such school improvement initiatives are one important piece of the learning commons, and everyone knows that the VLC is the place where the work, experimentation, and the showcasing of results is positioned.

MOVING FORWARD

As authors of the Learning Commons concept, we are very pleased to discover adoption of our work on many levels in the U.S. and Canada. Still, we continue to advocate for the Learning Commons concept to press deeply into the center of teaching and learning in a school. It needs to be at the heart of the learning community and be recognized for its contributions to education. The learning commons in the school evolves from a place of storage and retrieval of materials; it is now the transformation center where "all the good stuff" turns into learning. No longer should the teacher librarian and other specialists in the school find themselves on the outside of the classroom door knocking to get in; instead, by establishing a giant collaborative community, the virtual learning commons elevates the classroom into participatory learning experiences within and beyond the school community. The Virtual Learning Commons naturally knits the library resources, computer lab, reading skills center, technology center, and maker space all into a truly new phenomenon that is bound to drive improved teaching and learning and thus school wide improvement.

We urge experimentation and communication with us as you initiate this new learning environment in your school. The VLC is an opportunity to establish a whole new dimension to learning in your school. It is the authentic fusion of learning and technology educators need and not to be shelved

[1] Loertscher, David V., Carol Koechlin, and Sandi Zwaan. *The New School Learning Commons where Learners Win*. Hi Willow Research and Publishing, 2008. A second edition of the book was published by Learning Commons Press in 2010.
[2] Weinberger, David on the library as platform in *Library Journal:* http://lj.libraryjournal.com/2012/09/future-of-libraries/by-david-weinberger/
[3] Fullan, Mchael. 2012. *Stratosphere: Integrating Technology, Pedagogy and Change Knowledge*. Don Mills, ON: Pearson Canada Ltd.

David V. Loertscher is a professor in the School of Library and Information Science, San Jose State University. Loerstcher is co-editor of *Teacher Librarian* and a valued author and publisher of many professional texts in the field of school librarianship. He is a past president of the *American Association of School Librarians* and an international consultant.

Carol Koechlin is an experienced educator who to contributes to the field of information literacy and school librarianship through writing, consulting and facilitation of professional learning.

Personal Learning Environments in the Learning Commons


"In the Learning Commons, a Personal Learning Environment (PLE) is critical to building capacity for learning to learn."

DAVID V. LOERTSCHER AND CAROL KOECHLIN[1]

The sheer volume of information available today renders it impossible for everyone to know all there is to know on specific topics of interest.

It is in fact becoming increasingly difficult at times to find reliable, relevant data. This is a problem caused by the Internet and the seemingly endless number of tools available to store and share data. Although there is a promise of 'super' organization and distribution of information in projected Web 3.0 revelations, we need to right now empower learners, and the adults who coach them, to take control of their learning. We can do this by helping them shape their personalized environments. Every learner, whether child, teen, or adult, needs a virtual space of their own which is dedicated to helping them access, manage, and understand information and to helping them contribute to their knowledge building environment. One might term this the new and larger world of information literacy.

In the Learning Commons, a Personal Learning Environment (PLE) is critical to building capacity for learning to learn. Both students and educators are coached and supported in constructing, managing, and utilizing their PLE to the fullest potential. The Learning Commons takes responsibility for building and maintaining flexible physical and virtual environments conducive to the best learning for all types of clients and their needs. However, a PLE is different. It is a specific world designed by the user to best meet their individualized information, learning, social, and recreational needs. Individuals and groups can actually build on the rich networks, resources, and tools already established in the Learning Commons to extend their own learning universe.

Thus PLEs are driven by a need to make sense of the vast world of information and ideas and take advantage of technologies and tools available. In addition, they tap into the expertise of others in order to learn, to build knowledge, to create, to collaborate, and to share within their specified community and the broader learning environment.

Let's break down the concept.

Personal – It's all about the interests and the needs of each learner, whether child, teen, or adult. Tools and resources and contacts all need to be selected by the learner or the PLE will have no relevance.

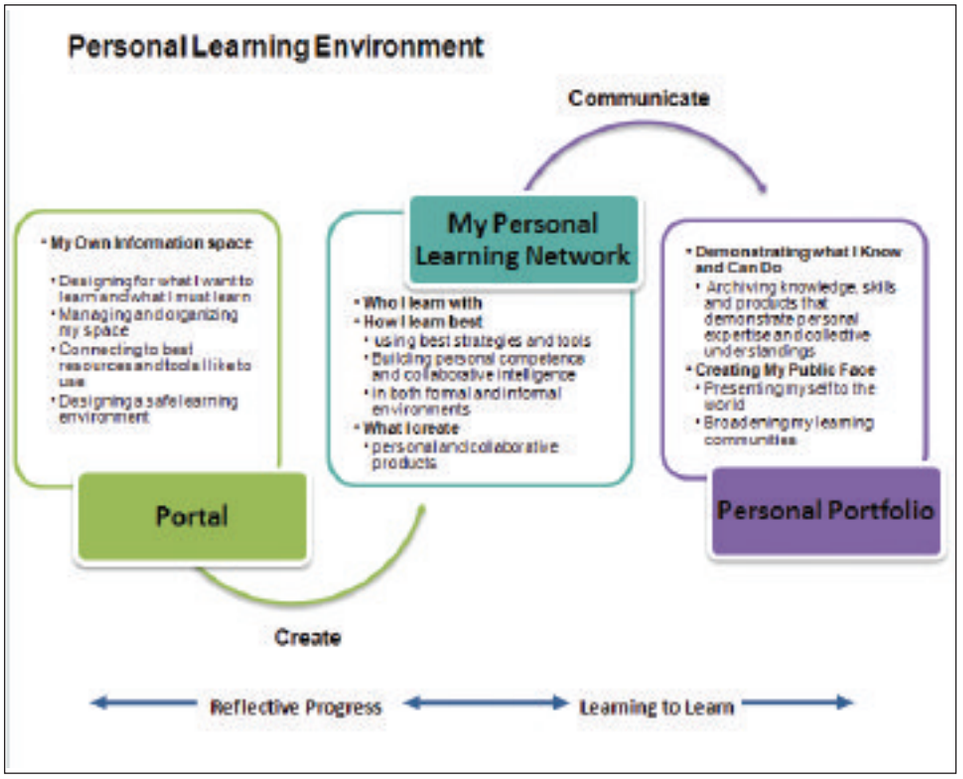
Learning – It's all about learning and that learning should be self-directed. The learner needs to be in control, test ideas, collaborate, create, make mistakes, and fix them and keep on learning. This approach holds true for both formal and informal learning.

Environment - It's all about creating a safe but empowering learning space. The role of the Learning Commons is to ensure that everyone has access to the best tools, resources, skills, and supports to work and play and learn. It is about creating a culture of learning by fostering habits of mind conducive to learning how to learn. These habits include curiosity, a desire to make sense of the world, empathy for others, value of self, the need to take charge, and a sense of community.

To further define the personal learning environment, study the following model that divides the PLE into three distinct stages of development. Each phase empowers the learner to manage specific aspects of their learning potential. Each phase is a critical component of ensuring success. When put together, the result is powerful. Strengthened by continuous reflection and goal setting, the PLE sets up learning for life.

The first question for teacher librarian is to examine one's own personal learning environment. How do you as the information expert in the school manage your own world. Perhaps we begin with ourselves

1 This article is an adaptation of chapter 7 in: Loertscher, David V, Carol Koechlin, Sandi Zwaan, and Esther Rosenfeld. *The New Learning Commons Where Learners Win*. 2nd Edition. Learning Commons Press, 2011. Distributed by http://lmcsource.com.



The Structure of a Digital Personal Learning Environment

and then enlist the assistance of young learners as we further our own expertise. Let's examine more closely each of the three elements of the PLE:

BEGIN BY BUILDING THE PORTAL

Portal construction tools continue to appear and are getting more sophisticated over time. Perhaps the easiest one to begin with for kids, teens, and even adults is iGoogle or the Start Page in Google Apps for Education. It takes very little time to understand what is happening when using these tools. Then as awareness of more complex software emerges, the idea of coming into command of one's own information world is set. We are embracing what we wish to spend our time learning and rejecting everything else. And, if we want to go out into the larger world, we can go there as we please. We teach and learn how to create our own "filters" realizing that no wall is foolproof, but intruders are blocked for the most part and our skill in information management grows to meet our changing needs and interests. For schooling, we will want links to our teachers, the school Learning Commons, and anything else connected to our academic world. For other interests, we will invite selected information and people into our space.

THE PORTAL LEADS TO THE CONSTRUCTION OF THE PERSONAL LEARNING NETWORK

In the personal learning network or PLN, we are doing our work, connecting, producing, and creating both as a individual and in collaborative groups. The PLN is the place we are developing 21st Century Skills. We are listening, connecting to experts, hanging out our work for inspection and feedback, growing, and evolving. It is the place for formal schooling, but as importantly, it goes far beyond the classroom as we purposefully explore interests, passions, abilities, or just try to keep up in a field in which we are already an 'expert'. Will Richardson and Rob Mancabelli, in their book *Personal Learning Networks*, suggest a few of the many tools that help us connect and share. These include Diigo, Google Reader, and Blogger. These tools help keep us organized and provide a chance to express ourselves to the world. To this list, we would suggest any of the collaborative Google tools such as Google Documents, Google Draw, Google Presentations, and other tools such as SpicyNodes that help us mind map what we know personally or collaboratively.

FINALLY, CREATE THE PRIVATE AND PUBLIC PORTFOLIO

Whether in formal or informal learning, sharing our work to develop a bank of our own personal and collaborative expertise is an essential part of the current connected world. For our bank of products, we select those that we want to be made public. We hang out our personal shingle. We come into command of our public face, knowing that prospective employers or opportunities come to those who get noticed. Tools such as Google Sites, YouTube, blogs, wikis, and the Creative Commons are simple tools to push our best feet forward. We become digital curators (collectors and organizers), who exhibit our work to the public.

The advantage for both young people and adults, is that the tools for construction are ubiquitous and can be stored in the cloud so that our PLE is available to us wherever, whenever, and on whatever device we choose to access it. It can be constructed to follow our progess and sophistication over the years, or, it can be broken down into useful segments. For learners who change schools often, the cloud-based PLE transfers along with us and informs, as we choose, our new adult learning coachese.

EMPOWERING THE LEARNER

A PLE enables learners to build on their own strengths and experiences. Every student comes to school with established knowledge building worlds. Regardless of demographics, economics, or ability, everyone has skills, ideas, and dreams built outside of school. The influence of these personal worlds is very individual, and consequently the visual below will look very different for every learner. Helping students transfer expertise from their worlds of play, home life, culture, and personal interest to the academic world is that much easier in a networked environment. When learners realize that their

personal expertise in social networking, computer skills, knowledge of music or of gaming have relevance to their academic world, then educators have an opportunity to broaden the influence they have in the academic sphere. Teacher librarians help students build personal learning environments that enable them to organize and manage both their personal worlds and their academic worlds

Within the portal and networked spaces of a PLE, students are encouraged to gather and organize links to resources, tools, friends, and experts that will help them expand all their interests both inside and outside of school. It is hoped that learners will discover that often there will be opportunity for connectivity between personal interests and their formal school life. Within their Personal Portfolio students will store and organize their photos, stories, projects, and works in progress. They will also decide how, when, and where to responsibly share with others their success, their ideas, and their creations so that they maintain a healthy constructive public profile. The thoughtful intentional design and construction of a PLE requires planning and know how, but inventiveness and creativity will keep the PLE fresh and exciting.

INDICATORS OF LEARNER SUCCESS

How do teacher librarians and other adult coaches determine if the PLE is making a difference and preparing students for college and careers? Besides asking how effective our own PLEs are in helping us manage our own learning environment, we can put out a few indicators of success for those we teach.

We need to remember that Personal Learning Environments are not just a good idea for learners and their adult coaches. They should also have an outcome that pushes everyone toward mature habits in the information and technology world we currently inhabit. The diagram below provides some assessment points of what we might really value.

And who is the judge of the traits listed in fig. 1? The major judge is the creator of the PLE. Is your PLE bringing yourself into command of your own information world? Do you have a PLN that connects you to information sources that are stretching your mind? Have you assembled the tools that help you learn both as an individual and as a group? And, are you building a true picture of what you know, understand, create, and can exhibit?

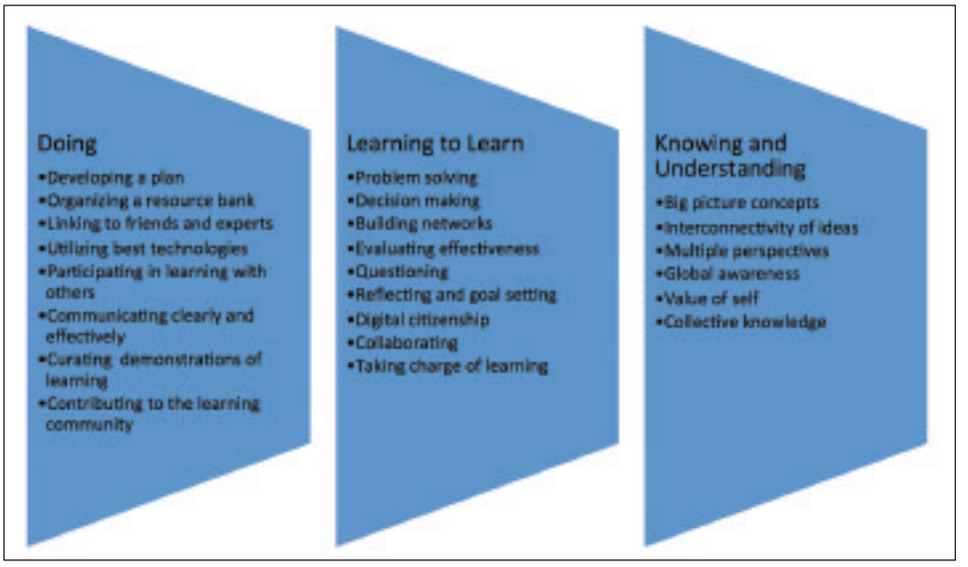


Figure 1.

A second judge or advocate or mentor is the teacher librarian as the principal information coach in the school. While working with individuals, the teacher librarian begin to notice the bending of social networking skills over into academic skills. They see kids and teens opening sharing expertise with each other and with the adults in the building. They see sophistication in information and technology tools as learning problems and projects are presented. They watch both personal expertise and collaborative intelligence arise and grow as the school year progresses. Most importantly, they develop the program of the Learning Commons in such a way that the PLE becomes foundational

SYSTEMS AND NETWORKS THAT SUPPORT PERSONAL LEARNING ENVIRONMENTS

In the early years of high tech, many school districts made the assumption that the district would have to purchase the computers, the networks, the learning management systems, and control everything from a central location in order to "protect" the children and teens. Those expensive systems are in decline, and more open and affordable solutions are emerging. In this YouTube video, a young sprout educates a traditional teacher about this new world of open personal learning networks: http://www.youtube.com/watch?v=a9zSd5Gs6Mw

Instead of locking systems down, many school districts and individual schools are joining Google Apps for Education, a free and safe environment that works in the cloud and on many personal devices.

Google Apps for Education has over 50 different tools that can be used for knowledge building centers, personal learning environments, enclosed e-mail systems, and the building of portals and portfolios. These systems can be used 24/7 and can be exported to follow the various learners and teachers if they move. Such more open and cost effective systems are coupled with the teaching of digital citizenship in order to meet the challenges of state and federal requirements of safety. It just takes a tech director who is willing to experiment with and willing to participate in the creation of tech systems that actually boost learning rather than simply continuing with a locked down system that prevents many types of learning.

Many districts are opening up networks to staff and students so they can use their own personal mobile devices at school. BYOD (Bring Your Own Device) is popular

for professional meetings and conferences. All learners would benefit from the immediacy of having the world in their pocket whenever they need it. If that learner now is empowered by a well organized effective PLE then the the notion of 'anytime, anywhere learning' is realized. However the school networks have to be open enough to function this way. Stephen Abram comments on this topic at: http://stephenslighthouse.com/2011/09/10/preparation-for-living-in-a-public-world/

BRIGHT IDEAS TO BUILD ON

Check out the PLN journey of one perpetual beta principal who understands that effort reaps rewards: http://lynhilt.com/effort-in-reward-out/

See this example of a group PLN in action: http://edupln.ning.com/

Experiment with creating a visual resume: http://signup.vizualize.me/74xzi

See how professional learning environments are changing: http://jeffhurtblog.com/2011/08/25/ten-learning-shifts-for-conferences-events-associations/

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Curation for Learning : how people are curating, utilizing, and sharing information - a digital curation example using Scoop It by Buffy Hamilton http://www.scoop.it/t/curation-for-learning/p/529594589/digital-curation-education-in-practice-catching-up-with-two-former-fellows-gregory-international-journal-of-digital-curation

One interesting article that addresses digital curation is "How Can Web 2.0 Curation Tools Be Used in the Classroom?", at http://mindshift.kqed.org/2011/08/how-can-web-2-0-curation-tools-be-used-in-the-classroom/ A good example of curation for a specific purpose is *Technology Integration*, curated by Robin Sellers at http://www.scoop.it/t/technology-integration

Finally, check out the public face of Eric Sheninger, Principal of New Milford High School, NJ at: http://ericsheninger.com/esheninger/videos

Online Learning: Possibilities for a Participatory Culture

David V. Loertscher and Carol Koechlin

Online courses are proliferating rapidly for children and teens. What is driving this virus in education? Does online learning really have anything to do with learning? Students are dropping out and tuning out of courses. What is to be done?

We have discovered that some U.S. states are now requiring young people to take at least one online course during their schooling. This is perceived as a solution to educational financial crunches and touted as a way to make good use of technology. These misconceptions are fueled by confusion with past-century distance learning and entrepreneurial businesses that clearly smell the potential monetary gains.

It seems that the construction of these courses is based on an effort to guarantee content delivery and make a profit. To provide sustainability and maximize profit to the investors, a course needs to be developed, tested, revised, and then sold over a period of time with many students. These "design once, teach many" courses are expected to produce very predictable results. For example, when students sign up, they may face the assignment to complete a certain number of modules in the class. Each module is very directive: read this, listen to a lecture, do that, take a test, repeat if necessary. Predictably, students find this instructional design deadly boring. And the research saying that such courses provide temporary improvement but not long-lasting results is beginning to appear. Just like postsecondary school, the dropout rate is very high because online coursework is not about learning and thus is not pedagogically sound. It is another cookie-cutter approach to education based on financial profit rather than student improvement.

But from the perspective of those working in the wide world of information and technology, we see another major problem. Any specialist in the school who has a mission to make a difference across the school—such as a teacher librarian, a teacher technologist, a reading teacher, or an instructional coach—immediately notices that they are locked out of such approaches. In such packages, all the information and technologies to be used are supplied as part of the package. There is no need to go outside of the package for anything. To the instructional designer of such courses, this makes the outcome more predictable: everyone has read or heard or done the same thing and thus can be tested on the same thing. Predictability is the major selling point. Some companies provide some choice, but even that is locked in. We repeat: the teacher librarian and other specialists are locked out. And we notice that we are not the only ones worrying about such issues and possible solutions.

Do students really need to be out in the world of information? Do they really need exposure to a variety of technologies? The argument is that with much more freedom allowed, that predictability factor is lost. It is all about performance on a test that allows this cookie kid to be compared with that cookie kid across the world.

To those interested in predictability, the idea of "real" learning—engagement, creativity, and self-directed learning—is nice, but impractical and not cost effective. Engage any of the companies in such a conversation and you will get a sales pitch that describes wonderful this or wonderful that, but direct teaching of content and predictability reign.

Over the past ten years, a variety of content management systems have emerged that provide the structure of an online learning experience and the instructor supplies the content. Some of the popular systems are Desire to Learn (D2L), Canvas, Blackboard, and Adobe Connect. These systems come with a considerable cost to the institution, but their major drawback is that the structure itself encourages traditional top-down learning experiences. There are ways to add lectures, specific assignments, discussion forums, and grade books. We have not seen these packages used for coteaching by the classroom teacher or professor and the teacher librarian. The very structure of the software encourages and reinforces that the "proper" way to learning is through direct instruction, lecture, assignments, rubrics, and traditional assessment practices.

THE RISE OF THE LEARNING COMMONS CONCEPT

In 2007 we started working on a concept that would transform the isolated school library and computer labs to the Learning Commons and published our call to lead the way in 2008. We re-envisioned the school library as both a physical and virtual participatory learning space where the various specialists of the school officed and worked together to make major differences in teaching and learning across the school. Both places were to be participatory, with a sense of ownership being developed by both learners and teachers. Both spaces were envisioned as collaborative, focusing on designing best learning experiences and environments and the idea of commons, as well as growing together as learners.

As more and more closed online education began to raise its head as teaching machines had done decades earlier, the authors wanted to elaborate on the concept of the Virtual Learning Commons that would be a replacement for the static and one-

way stream of information from librarian to patron. We, along with many others, were noticing that patrons were googling around the library. We also noticed that early adopter classroom teachers who were using technology began to design their own classroom websites that were directed at their own classes and rarely, if ever, included either teacher librarians or teacher technologists. Unwittingly, many specialists were assisting teachers in developing their own course websites that perpetuated the idea of the isolated teacher in the isolated classroom. The teacher learned to provide not only assignments but also the information and resources to be used in accomplishing the varying tasks. Thus the authors wrote a second book and expanded the idea of a collaborative Virtual Learning Commons in 2012.

In this virtual space as it has been developed over the last several years by the authors and graduate students at San Jose State University, five major participatory virtual "rooms" were developed:

- The Information Center
- The Literacy Center
- The Knowledge Building Center
- The Experimental Learning Center
- School Culture

It was in the Knowledge Building Center that we envisioned that the teacher librarian could move squarely into the center of teaching and learning in the school to become the "heart of the school" that had been the focus of the school library program back as far as the 1960s but not realized in many school library programs.

What could be done in virtual space that seemed so difficult in many schools? The answer to that question came in the appearance of collaborative technologies, often referred to as Web 2.0, and the emergence of a suite of tools known as Google Apps for Education. These tools were not just ways of creating multimedia or enhancing efficiency, but they could be used to deepen understanding of topical content in ways not possible before. The emerging popularity of the SAMR**[Q: spell out]** model led the way for educators to search out and implement new ways to boost teaching and learning to new heights. Best of all, these tools were free or very inexpensive and could be used on a number of devices either furnished by the school or owned by the student. A major advance toward equity was now possible.

Using such tools brought new possibilities for the assessment of teaching and learning. Instead of relying on one set of scores that measures a singular aspect of learning, assessment could now focus on multiple measures at three important levels:

- Personal expertise: what the individual knows and is able to do
- Cooperative group work: demonstration that when a product or project must be built to specifications, that each individual could contribute a piece, a puzzle piece as it were, into the mix and that the pieces would fit together to make a whole that "worked" or made sense, or filled a requirement in the overall learning experience
- Collaborative intelligence: the idea that truly collaborative work by learners could create something new when added together; new ideas, new solutions, inventions, creative solutions. The whole would be greater than the sum of its parts.

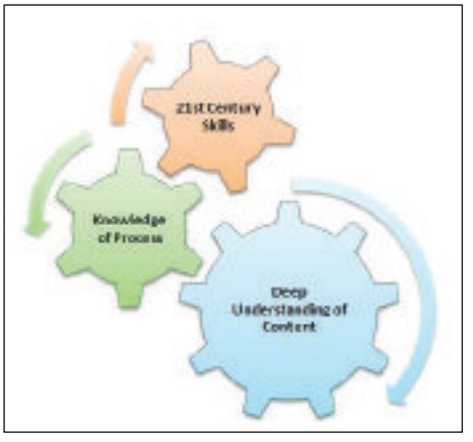
In reality, assessment could be as varied as individual learners and could not just celebrate the meeting of an expected level but could exceed that expectation. Looking at a variety of measures, the coteaching partners could celebrate the percentage of learners who rose above what was originally expected rather than concentrating on just achieving minimums.

PUTTING IT ALL TOGETHER

We asked ourselves a variety of questions:

- How could two adults make working collaboratively a natural experience rather than a contrived one?
- How could learners participate and grow as learners in a networked flat environment rather than in a pyramidal top down directed teaching experience?
- How could a vast array of information and technology resources be saddled to promote wide learning rather than narrow fulfill narrow expectations?
- How could engagement be stimulated to help learners achieve more than minimal expectations?
- How could assessment efforts recognize diversity, creativity, and even innovation on top of the normal minimums?
- How could the best ideas from constructivist experts and disruptive technologies be used under an experimental model and under a best practices model?

There is a growing number of voices shouting out a much more constructivist approach to teaching and learning, but demonstrations of this are lacking. In this article, we recommend three approaches that put teacher librarians and teacher technologists at the center of online learning experiences. These approaches also ensure that learners develop and apply the skills needed to build understanding and accomplish the work, a clear comprehension of the process of learning in a networked world, and the expectation that these two factors will drive a much deeper understanding of the topical content of the unit as pictured in this diagram.



The three approaches are:

- Knowledge Building Centers
- Book2Cloud
- QuickMOOC

The foundational idea of all three approaches is that when a teacher librarian or teacher technologist joins forces with a classroom teacher, a creative synergy produces proven results. If these partners then adopt a participatory partnership with the students in a learning experience, then much richer, more engaging, and beyond minimal outcomes actually occur. Consider the possibilities of encouraging ev-

ery student to meet or exceed expectations rather than just achieving the minimum. Consider the possibilities of high engagement, the building of resilient learners, and the possibilities of real projects and experiences that push young people into a much more self-directed world of learning. It is not just about being minimally ready to get into some kind of college or career; it is all about exceeding the expectations that businesses and educational institutions expect; or it is all about young people launching their own future world as entrepreneurs, inventors, ready to make changes for the better in in society and in the world. To accomplish this task, the very structure of online learning would make a collaborative and participatory learning culture seem like a natural way of designing a learning experience.

Below is the description of three approaches mentioned above for teacher librarians and teacher technologists to consider promoting to the people they work with .

Each of the learning designs could be used by students to

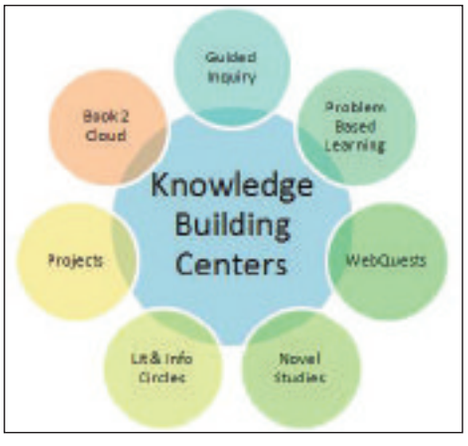
- proceed through the experience alone or with a group, with mentors totally online
- experience a "blended learning" approach where some online learning is used alongside the mentors in a physical school environment
- use the model course as a jumping-off place where learners design their own learning experience under the guidance of the mentors

In any case, the learning is structured in such a way that at least two adults are mentoring the learning experience as coteachers. And the students are expected to become self-directed responsible learners rather than just being asked to fill a series of closely structured assignments.

KNOWLEDGE BUILDING CENTERS

This approach to designing excellent learning experiences in new collaborative environments was first introduced to readers in an article in this journal, "Knowledge Building: The Heart of the Learning Commons," volume 38, number 3. Since then this approach has been refined and adapted successfully by many teacher librarians willing to experiment with the template (https://sites.google.com/site/knowledge-buildingcenter/) as pictured below:

Many types of project-based and inquiry learning experiences work very well in the Knowledge Building Center (KBC) environment because the actual learning organization is available anywhere, at any time, and on various devices, as shown in the illustration below. This visual expands on some possibilities: What makes it unique is its design to encourage collaborative coteaching by the classroom teacher, the teacher librarian, and any other specialist. The appropriate adult mentors are "in the room" together as they plan, teach, and assess the learning alongside a participatory culture of learners. The KBCs can be constructed around a number of instructional designs, and because the template is a Google Site, it is available to both adults and learners 24/7. These learning experiences can be used and then moved to a museum as evidence of experimentation with learners and documentation of impact by each of the mentors. KBCs are particularly useful when linking various classes in the school together or classes across schools or groups around the world, no matter the time zone. And if you don't care to use a Google site, the template will provide ideas for working in other technologies, such as Moodle.



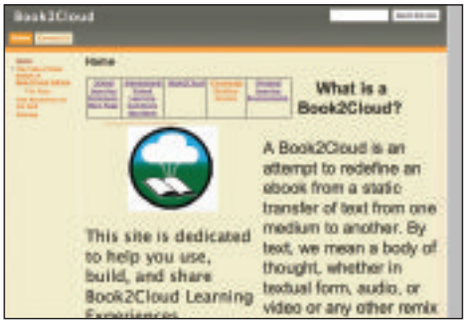
Virtual Knowledge Building Centers are collaborative construction zones between adults and students

- places to learn, solve, work, create, think, achieve, shine, demonstrate
- participatory learning
- higher level thinking and metacognition
- ventures into the real world of information
- free or almost free
- simple to create on a variety of technologies
- super learning experiences

In our book *The Virtual Learning Commons: Building a Participatory School Learning Community,* you will find an entire chapter with much more about the potential of KBCs to actually transform learning into new and exciting experiences, as well as other KBC template designs and examples to explore created by teacher librarians.

BOOK2CLOUD

A Book2Cloud experience presents learners with an engaging text, document, video, or other material that challenges the mind and requires deep investigation to create meaning. Using this "text," a virtual room is created where individuals or small groups create meaning around pieces and parts of the text and then put them together to build deep understanding of the whole. You can see many examples and explanations at https://sites.google.com/site/book2cloud/.

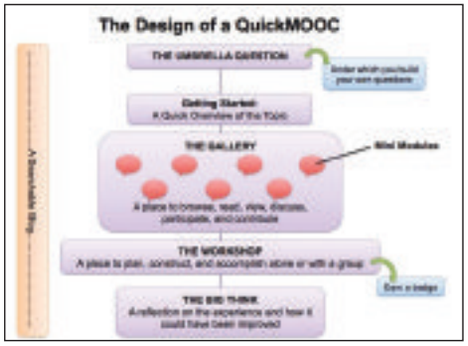


We have created a Book2Cloud free template for easy construction of such learning experiences in your own school. You can find this template at https://sites.google.com/site/book2cloudtemplate/home.

Book2Cloud is most appropriate when you want to help learners understand the power of curation and collaborative learning. It is also an important tool for those working on complex texts as a part of the Common Core standards in the United States.

QUICKMOOCS

A third approach to collaborative online learning is a variation on the currently popular MOOC (massive open online course) movement popular in the university community. A QuickMOOC takes a topic similar to a unit of instruction rather than an entire full-length course; a way of spending two to three hours in an on-topic participatory community where the learner is in command of his or her own learning. As illustrated in the instructional design model below, a learner can come into this learning experience either as an individual or with a group under the guidance of such mentors as the teacher and the teacher librarian. Here they encounter an umbrella question and then develop their own questions that fit under the larger topic. They proceed to a room where they get started by building background knowledge and then into a gallery where there are many possibilities to build their knowledge depending on what they already know and what they want to pursue. Using this knowledge, they progress to the workshop with lots of possible projects or pathways to follow, and this will lead to some kind of badge or conclusion they work out with their mentors. Finally, this is topped off with a Big Think where they reflect on what they have learned and how they learned it. Instead of exiting, they can stay in this participatory community as long as they wish, mentoring others, contributing content, ideas, or other resources. Here is the model:



The first QuickMOOCs to be developed center on professional development topics for teacher librarians and classroom teachers, but others are on the radar for individual learning units directed at K–12 students. For example, one topic centers on the creation of the physical learning commons in the school. Unlike the other two approaches, there is a small fee to take one of these short courses as a way to encourage a higher completion rate. The major difference in this online learning design is the idea of self-directed learning under the guidance of mentors, the idea of joining a participatory community, and a variety of outcomes based on the individual learner's need and interest. Descriptions of the various offerings are at http://quickmooc.com.

CONCLUSION

So what do we need to consider when designing online learning? If "learning" is what we are after, whether blended or totally online, then a move must be initiated from locked-in, content-driven packages to participatory knowledge-building experiences. Learners need to be free to work individually, cooperatively, and collaboratively, with the best information available in technology-rich learning environments. Teacher librarians and teacher technologists are uniquely positioned to lead in inventive ways to make online learning really work. Bring your expertise and the rich resources of the library learning commons into the center of online teaching and learning. Seek new ways to work with teachers to infuse learning to learn skills and processes with curriculum content in online environments. Experiment with our ideas and models and templates and create your own. Share back with us and with your professional networks. Help the online learning thrust move into the new networked world of participatory knowledge building.

Lead—don't be locked out!

Coteaching On and Off Line

A Tech Tip

David V. Loertscher

For at least a half century, teacher librarians have been saying to classroom teachers, "Can we help? Can we partner? Coteach?" Along the way, the idea of "helping" has stuck in many educators' minds, but partnering has been a more difficult concept. Seemingly countless books this author has reviewed for *Teacher Librarian* center on the concept that the teacher librarian, if mentioned at all, is a person in the support role but not really a person to be viewed as an equal.

We are a helpful bunch—it's the reference librarian in all of us—but how do we make that step into parity as a colleague with invaluable expertise? We are happy to build a bibliography, create a LibGuide, or pull resources, but is "gathering" the central role that dominates the perception of who we are and what role we play?

There is so much emphasis on the classroom teacher as the "king of the classroom." And technology often enforces that time-honored model. Almost all the content-management systems out there presume that a course, unit, or problem-based learning experience is an entity owned by the teacher, designed by the teacher, and is the sole guide of what needs to be learned, how it is to be learned, and how learning will be assessed. Even the new Google Classroom makes the assumption that the sum of learning is under the control of a single person.

The structure of an online learning experience or a blended learning experience presumes autonomy and a top-down approach to learning. After teachers are equipped with new technologies, they often transfer what they did in pretech days over to the new system. Little has changed, and critics keep yelling that technology does not make any difference. Yes, the assignments are now available 24-7, but the content has not changed. In Reuben Puentadora's SAMr model, his lowest level is substitution, and it shows little hope of increased learning through technology. The idea that I am now working on a computer vs. paper and pencil, while interesting at first, soon loses its luster as typical boredom sets in.

So as one-to-one computing and content-management systems become ubiquitous, are teacher librarians left out of partnering and condemned to a supporting role again?

No, No, No! Don't Let It Happen!

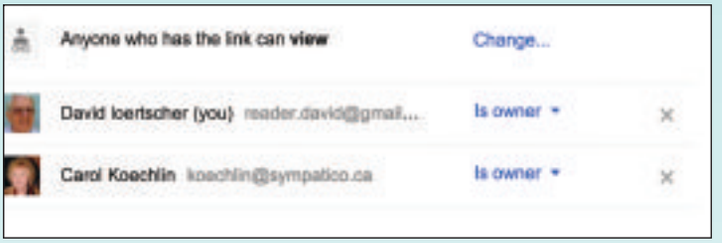
The trouble is that if you find yourself outside the circle of learning once again, we are right back in the same mud puddle.

There is a way inside the circle. There is a door, and it is wide open if you just take a second look. A simple design characteristic of many systems has the unintended consequence of building parity rather than isolated dominance. What do we mean?

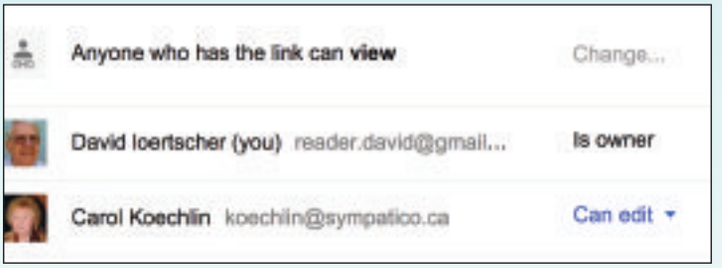
What systems are being used? Google Sites? Moodle? A content-management system like Blackboard? Google Classroom? Simply find out if a learning system is set up for a lesson, unit, or course—does the system allow for multiple instructors at the "ownership" level? Ownership may be extended to more than one person, and that is exactly what you want. You want to be an owner alongside the classroom teacher. Other systems might call this level instructor or other highest powerful position. Try to discover a workaround if this joint level isn't present.

So whether a learning experience is going to be a face-to-face experience in the classroom and the library learning commons, a blended learning experience, or totally online, create a web page for that experience that creates a partnership, as explained below.

For a website in our favorite Google Sites, or one you like better, work out a joint ownership arrangement with the classroom teacher. In this example from a Google Site, both Carol and David are owners and thus have full power to build, change, add, and delete.



In the following example, Carol's ability to change anything on the site has been dramatically reduced to just editing.



And, finally, David has reduced Carol to just a viewer with no power at all to edit or change.

Most content-management systems have such levels, but the result determines the kind of role and relationship possessed by the participants. In the first example, both partners have parity and can cocreate a learning experience; that is exactly what you want since the software now has coteaching as the basic assumption of the virtual space.

At first, this level of partnership may seem strange to a teacher or even to a tech director, but the advantages to participating adults soon become just a natural strategy of accomplishing learning experiences. It is a matter of trust.

If the software, such as Google Classroom, does not have such levels on the main site, then there is a simple workaround: put a link in the software to another site that is collaborative. Thus a collaborative Google Site's URL is placed in the Google Classroom, and students are directed to that participatory site. It is a simple but powerful change. Furthermore, users of the various content-management systems can keep requesting that double ownership power be a part of the software. It is reported that Google is already considering such a change to their Classroom software.

In order to see how this actually happens, we have included a real learning experience designed to be cotaught. The following example of a cotaught learning experience was created by three students at San Jose State School of Information: Gloria Maciejewski, teacher librarian, San Francisco Unified, California; Lea Porter, teacher librarian, West Fork Elementary, West Fork, Arkansas; and Maureen Sullivan, librarian, Fairmount Elementary, in San Francisco. They created this unit for fifth graders, but it could easily be used with a combination of grade levels grade five and above.

The first thing the trio did was download the Knowledge Building Center template from Google:

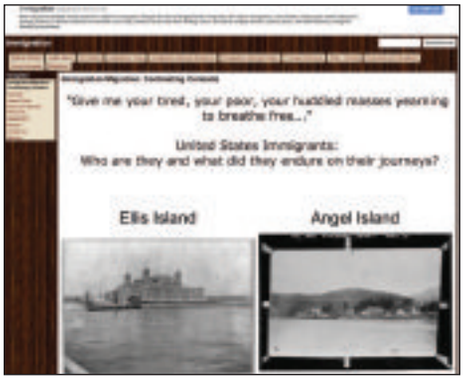
http://goo.gl/uldftV

This template is free and can be used by anyone for a lesson or unit of instruction.

Then the trio created their site on the popular topic of immigration; it can be used as a face-to-face unit, a blended learning experience, or even a totally online experience with just a bit of tweaking.

This unit is a template on Google, so you as a reader can pull it down, rename it, and use it or change it in any way you wish. Just click the blue "Use This Template" tab in the upper right, rename it, and it is yours. Since it is a Google site, you will need a Google account to download it. Here is the opening page of this site:

http://goo.gl/RBL2gr



There are a few important things to notice about this site. Take a peek at:

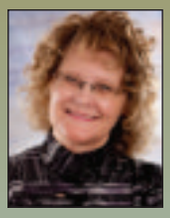
The front page, designed to be a hook for students who might just respond with a spark of interest.

The lesson plan page, which gives the particulars, but notice that it has been designed so that both partners coteach from beginning through the assessment.

The culminating experience, which is very different. During a normal learning experience, students would create a product and make presentations. Not this one. They treat all they have learned along the way as background knowledge. Then they take the major poem, and in a Book2Cloud experience (Google that if you'd like more information), curate and construct around each phrase of the poem and then spend time putting it all together.

The Big Think. After the experience is over, the adults and the students reflect on what they have learned about immigration and how they learned it. And they try to figure out how they could be better learners the next time a project like this happens with their teacher and teacher librarian.

Our conclusion and "So What?" If the structure of a learning experience makes true collaboration and coteaching the expectation and "natural," we think that one major tweak can be a major step forward: two or more heads think about what will work in this collaboration. It brings the library learning commons and the teacher librarian and the teacher together. It is so simple, but worth the try, try again, and try again experiment.




"Play can expand the ability to think, ask questions, and find answers. It is uplifting, inhabiting a space between fantasy and reality, sense and nonsense" (Power, 2011).

Play in the Library

Primordial Learning

SHERRY R. CROW AND JENNIFER ROBINS

Peer reviewed. Accepted for publication, June 1, 2012

When asked about their favorite part of school, many children answer without hesitation, "Recess!" followed closely by "Lunch!"

Or at least they used to, when virtually all children had recess in school. But the once ubiquitous school recess has changed over the last couple of decades, pushed aside in an attempt to give more classroom time to instruction in order to bolster high-stakes test scores. In many schools, the time to fit in testing and test-related activities is gained by reducing or eliminating instruction in the arts, non-tested subjects such as history and geography, and of course, recess (Henley, McBride, Milligan, & Nichols, 2007; Manzo, 2008; Phillips, 2004).

But perhaps the recent excuse of eliminating recess for more instruction time to prepare for testing is just that—an excuse. Many have viewed play, at recess or elsewhere, as "antithetical to the most stable pillars of learning in the twentieth century" (Thomas & Brown, 2011, p. 96). Criticism includes the observation that play is often frivolous. Without application it can amount to no more than daydreaming (Power, 2011). Students at play can annoy and disturb others who are trying to be productive. Play, at best, is a way to "get the wiggles out" and at worst, a waste of time. However, as views on learning evolve, so do those regarding play. Learning how to learn has become as important as—or more important than—learning content, because what is deemed important to know changes, and the rate of change is accelerating. Knowledge and the tools of discovery evolve daily. Thus, if the issue for learning becomes how to best prepare the mind to learn, play emerges as primordial to this purpose (Claxton, 2002; Wells & Claxton, 2002).

Perhaps the single best place in school for learning through play is the library. By incorporating play, the activities of the library can be directed at increasing the capacity of students to learn, because it is the place in a school where teachers and students come to explore, collaborate, experiment, demonstrate learning, and engage with the changing world (Loertscher, Koechlin, & Zwaan, 2008; Thomas & Brown, 2011). It is a space that houses the tools needed for knowledge building, including construction materials, information resources, and technology. Play is a way for children to make sense of the world they will inherit. When information becomes something to play with, they have a way to cope with the vast amount available. When teachers and teacher librarians care more about experience, play, and questions than about efficiency, outcomes, and answers, the library becomes a playground for the mind.

ABOUT PLAY

Play can expand the ability to think, ask questions, and find answers. It is uplifting, inhabiting a space between fantasy and reality, sense and nonsense (Power, 2011). It is always autonomous and never too easy or too hard. Play is a route to developing creativity and it incorporates cognitive companions like wit, humor, and laughter (Bergen, 2009; Power, 2011). During play, negative consequences are minimal and short lived, and failure is viewed as an ingredient for subsequent success. Play is its own reward, because while work tires, play energizes (Anderson as cited in Bergen, 2009).

There are many kinds of play, but two types of play have perhaps the best potential to foster student learning within a library setting. *Rule-bound games* involve organized, structured, rule-bound play. In the past they were limited to board games and sports, but much has changed in the computer age where video games are the vogue. However, the defining traits of a game have stayed the same. In a rule-bound game, participation is voluntary, and there are one or more goals, rules, and

a feedback system (McGonigal, 2011). The other type of play with potential in a library setting is *free play* where rules can be made up on the fly. Free play includes playfulness, daydreaming, drama, and comedic turns. This type of play is not technology dependent, but rather relies extensively on improvisation. It involves the emotional state of playfulness, which has been linked to a number of cognitive benefits. Playfulness "is dynamic, interactive, enigmatic, lighthearted, humorous, imaginative, open-minded, and transformative" (Power, 2011, p. 298). Both well designed rule-bound games and free play can provide the right amount of intellectual, continuous challenge to be suitable for a library environment. Both offer "a tension between the rules of the game and the freedom to act within those rules" (Thomas & Brown, 2011, p. 18). They both also require cognitive stretching that is engaging and pleasurable (Pink, 2009; Prensky, 2006).

SELF-DETERMINATION, MOTIVATION, AND PLAY

Play of all kinds motivates learning because it engages passions. Interests discovered during childhood play, when nurtured and cultivated by the significant adults in their lives, can lead children to further investigate those interests for prolonged periods of time, developing them into passions that can last into adulthood, even becoming the basis for their careers (Crow, 2009).

Self-determination theory (SDT) is an approach to understanding motivation that explores the design of environments that "optimize people's development, performance, and well-being" (Ryan & Deci, 2000, p.68). SDT identifies three components whose combination leads to motivation: competence, autonomy, and relatedness (Deci & Ryan, 1985). Competence refers to self-efficacy. Autonomy refers to control, which does not mean being independent, but rather having the ability to choose. Relatedness adds a social dimension, encompassing approbation and belonging. Self-determination theory offers an explanation for why play is inherently motivating.

A study of fifth grade students was conducted in the fall of 2008 to explore the question, "What are the experiences in the lives of upper elementary school children that foster an intrinsic motivation to seek information?" A survey designed for the study (Crow, 2009) was given to students in order to identify those who possessed a highly developed inner drive for information seeking. Through analysis of interviews and student drawings, the identified students were found to possess a particular affinity for play, along with the qualities of creativity and lighthearted competitiveness. These students found pleasure and satisfaction in both looking for information and manifesting it through creative means such as writing, drawing, photography, graphic arts, and drama (Crow, 2011). The fifth grade study illustrates the relationship between the intrinsically motivating aspect of play and information seeking in the library and virtual information environments.

In a child's world, adults are the primary directors, the ones who usually determine not only the child's day-to-day activities, but also how he or she should behave, think, and feel. While the control over their lives varies from child to child, children experience more freedom and choice during their play than at any other time. Children view play as an expression of themselves, a time of autonomy when they can originate their own actions (Ryan, Kuhl, & Deci, 1997). One student in the fifth grade study relayed, "Sometimes I like to play teacher at my grandma's, cause I have my own office at her house" and another, "We pretend we're like animals. I usually pretend I'm a dog. . . .and my friend acted like a wolf." Students in the study described play activities they valued and indicated a need to protect their play. "Fifth grade is really fun most of the time, [but] sometimes we have no recess, and when I forget to turn my homework in, it's not fun anymore, and then I lose my recess." When adults attempt to control play, the sense of autonomy is lost. "It seems that when heteronymous forces attempt to direct intrinsic motivation, the organism no longer wants to play" (Ryan, Kuhl, & Deci, 1997, p. 711).

Developmental theorists contend that play is a way for individuals to advance cognitive development, and hence their intellectual competence. Piaget (1959, as referenced by Mischel, 1971) proposed that play allows children to practice newly-acquired skills in a relaxed and comfortable environment. Students in the fifth grade study proclaimed their competence in play activities such as drawing fairies, playing Trivial Pursuit, or creating websites. The children's comments suggested that they developed a sense of competence within their own niches through play, whether it be in technological, artistic, cognitive, or physical realms: "Well, I'm really good with computers and technology and stuff and then I'll just find this place and I'll start – and then I'll – it just takes you step by step. . . ." They enjoy the challenge of online games. "I have like Zoo, . . .the endangered species [game] where you have to. . .cure the animal's problem, and then they heal, and then you go on to different levels."

Learning to socialize and cooperate with others is connected to the need for relatedness and is an important function of play. Parten (1932) listed cooperative play as a major stage of play occurring in middle childhood. She contended that students engage in this type of play in order to develop group identity and skills of cooperation. All of the students in the fifth grade study described experiences of play with friends and family, going to great lengths to describe their social play activities, including sleepovers, hanging out with friends to search the Internet and play video games, and an extreme sports club (Crow, 2009).

A sense of humor was a predominant characteristic of the fifth graders, and "because they are funny" was an important consideration in picking their friends, books, favorite teachers, or movies (Crow, 2011). Whenever humor is found in an otherwise serious situation, playfulness overrides other emotions (Bergen, 2009; Panksepp as cited in Power, 2011) as it increases connectedness.

continued on pg. 40 ➤

continued from pg. 37 ➤

THE LEARNING COMMONS

Just as the library is perhaps the single best place in the school for learning through play, the best type of library environment for fostering play is the learning commons. The learning commons is a hybrid library environment, capitalizing on both virtual and physical library spaces.

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>
> And best of all, as a space traditionally and naturally designed to facilitate people working together, a school's library provides the natural dynamics for developing a Learning Commons. (Ontario School Library Association, 2010)

Because students have both support and opportunity in the learning commons, they are empowered to build on tacit and explicit knowledge, skills and abilities, and interests and passions (Loertscher, Koechlin, & Zwaan, 2008). The learning commons environment naturally supports the self-determination theory components of autonomy, competence, and relatedness (Deci & Ryan, 1985), thereby fostering students' intrinsic motivation to learn.

PLAY IN THE LIBRARY/ LEARNING COMMONS

Abundant resources in a structured environment create a space that fosters imagination, and imagination is unleashed through play (Thomas & Brown, 2011). Play thrives in an environment where there is lack of threat and a tolerance of mistakes (Power, 2011). The learning commons can be that place if it focuses on questions as well as answers, and the act of seeking is recognized as a source of satisfaction and pleasure. In this space, students determine what they want to learn (autonomy), take the time they need to achieve mastery (competence), and make connections to others who share their interests (relatedness).

While a good educator can make activities playful simply by incorporating the characteristics of play into instruction and educational environments, inquiry-based learning, storytelling activities, and questing particularly foster play in the library/ learning commons.

INQUIRY-BASED LEARNING

Inquiry is an extremely powerful technique for learning because it produces stockpiles of experiences. Things that result in dead ends for one particular question may wind up being unexpectedly useful later on – even, perhaps, for completely different questions. (Thomas & Brown, 2011, p. 83)

Inquiry learning has been widely recognized as a school library activity (e.g., Callison & Preddy, 2006; Kuhlthau, 2001, Kuhlthau, Maniotes, & Caspari, 2007; Robins, 2005). Inquiry-based learning "takes advantage of information-rich environments by promoting a student's natural inquisitiveness" (Robins, 2005, p. 9). The inquiry approach encourages students to ask questions, investigate, explore, search, and study. It can be used as a strategy for individuals, or it can be implemented as a collaborative strategy (Kuhlthau, Maniotes, & Caspari, 2007), thus accommodating students' needs for autonomy or relatedness. As part of a collaborative process, when ideas are expressed, others can provide both feedback and challenges that further enhance understanding, expanding the inquiry spiral. "With just a small shift, from answering questions to asking them, inquiry emerges as a tool for harnessing not only the passion of students, but also the stockpile of tacit knowledge that comes from a lifetime of experience doing the things that become second nature to them" (Thomas & Brown, 2011, p. 85). This type of inquiry is productive for revealing inner resources, because questions arise from imagination. The more questions students ask during play, the better they become at delving into their imaginations (Thomas & Brown, 2011).

By incorporating learning activities such as problem-based learning (Barrows & Tamblyn, 1980), a type of discovery learning (Bruner, 1967), library instruction fosters inquiry. In problem-based learning, students explore specific problems by using their skills, knowledge, and inquiry strategies to discover what they want to know. In discovery learning, students are allowed to manipulate objects, experiment, and discover new information within their own structures and based on their own curiosity. The goal behind these approaches is that students will remember what they discover on their own better than what others ask them to learn. These playful types of learning activities put the focus on students rather than on curriculum, on questioning and exploring rather than on regurgitating facts. Self-questioning within the inquiry experience supports autonomy, a key component in building students' intrinsic motivation to seek information (Deci & Ryan, 1985), fostering their desire to know.

How does inquiry learning look in a library or learning commons environment? Picture walking into the center of a room with books lining the walls, interspersed with kiosks and carrels containing various music, art, and technology-related gadgets and tools. Three students are working at a large table spread with paper. To the side are the racks hung with paintings that are drying. The students are working on a collage that is mural size. When asked, one of the boys explains that they are creating a mural of the Civil War and that he is painting a train for his section of the mural. He says he can work on anything as long as he can explain how it relates to the Civil War (rule-bound play). "When I was deciding on what I would do for the mural, I was looking at pictures from back then and

I noticed they did not have cars, so I wondered how they traveled around. I looked at a bunch of pictures from the American Memories website (Library of Congress, 2012) and saw that people traveled a lot by train. The library book I checked out says that trains back then ran on steam, so this train I made has a steam engine. Steam engines are cool. I asked if I could make one in science class, and the teacher said that could be my science project this year." This is an example of a student set free in a context with limited structure within an environment of abundant resources.

STORIES AND STORYTELLING

Reading and listening to stories is a form of free play, and the sharing of stories in both the traditional story hour format and integrated into instruction can have a profound effect on student learning. Haven, in his meta-analysis of the research, outlines eight effects that storytelling has on the brain development of listeners: increased comprehension, logical thinking, creating meaning from narrative, motivation to pay attention, building a sense of community (relatedness), language mastery (competence), writing, and memory (2007, p. 89-90).

During storytelling, teachers and teacher librarians can model playfulness with role play fantasies and discussions of "what if" scenarios. They model the use of humor in social situations, particularly in diffusing tensions when conflict arises. When learners see the elders take risks and act silly, it encourages them to participate. "Switching roles" from receiver to teller, as well as adding a technological element, increases student engagement, as they play at creating and producing their own stories (Ohler, 2008). Many of the students in the fifth grade study shared projects that involved telling their own stories through writing, photography, drama, and art, several through technological means (Crow, 2011).

Traditionally, knowledge is told publicly by the teacher and received privately by the learner (Thomas & Brown, 2011). Now technology provides the means for everyone to tell publicly and, because time can be shifted in the medium, everyone can be heard. The library facilitates the process, teaches about the process, and promotes the process. It offers both physical and virtual environments for sharing knowledge, and the act of sharing creates connections between players involved in similar tasks or with similar interests, whether they are teachers or learners. Through this participation, a sense of belonging is created which forms an identity as members of the learning environment and promotes relatedness, a component of intrinsic motivation (Deci & Ryan, 1985). Play cultivates citizenship, because everyone learns how to learn from others and to see others as knowledge resources (Thomas & Brown, 2011).

Teacher librarians, as is true for all educators, can incorporate playful storytelling into even the most mundane lessons. Picture again walking through the doors of the learning commons. Over to the left one hears shouting and laughing. The teacher librarian is apparently the cause of it all. In front of her are 6th grade students sitting at computer terminals, and the teacher librarian is rapping about how to use the Student Research Center, an EBSCOhost database. By simply putting on a headband with "antennae," she has turned into an alien on a journey to find information about our planet. It was when she started dancing along with her rap that the laughter and shouting erupted. The students have quickly gotten into the rhythm and are now rapping the lyrics along with her. As the session goes along, occasional students sing out with new verses as they discover information on their own. Apparently, using the research databases has become a performance as well as an adventure.

QUESTING

Questing, or information seeking engagement, is particularly stimulating in an environment like the learning commons that has many resources, many avenues for solving problems, and many solutions that can be invented or found. Holmes (2007) compares information seeking to a hero journeying on a quest. Learning to navigate today's information universe calls for more than entering a search term. Technology has produced a number of tools that decrease the cognitive effort involved in searching. Instead, navigation has emerged as the predominant activity in a knowledge quest. Navigation is a form of evaluating, not just to determine the authority and credibility of information, but to determine what the seeker personally believes to be the best answer based on the resources at hand and constraints of time, attention, and interest (Thomas & Brown, 2011). The aspect of being driven by personal interest gives navigation its playfulness, whether it is rule-bound or free play. It requires seekers to draw on tacit knowledge to make associations between search results, determining which align best with the quest. The direction of the quest arises as a hunch, intuition that flows from convergent thinking such as judging the fit and usefulness of the information (Power, 2011). The ability to determine direction in the questing process fosters autonomy, and the challenge and resultant accomplishment produces a sense of competence, both key elements in building intrinsic motivation (Deci & Ryan, 1985) for information seeking. Back in the learning commons, two older girls pause and bend down over a table. One of them has an iPod Touch and is taking a picture of a Quick Response (QR) Code taped to the table leg. The girls explain they are on a scavenger hunt in the library and are using the QR codes to find clues. They show how they keep track of their progress with an app on the iPod. They are working on creating a display of 20th Century French painting and must retrieve representations of several aspects of life. So far, using the clues in the QR Codes and resources in the learning commons, they have found paintings of people at the beach, people using transportation, and people dining at home. The next thing on the list is to find a painting of people dining out. The girls explain that they are working on becoming curators for the learning commons' Art and History Virtual Museum. Such questing activities engage

students in active and playful problem solving, stimulating interest and motivation for information seeking.

Questing is a natural part of many library and learning commons activities. As seekers, students need the guidance of teacher librarians to practice clear thinking, discrimination, and accurate expression (Prensky, 2006), as well as their expertise in making abundant resources available and accessible. Returning to the information resources example, the teacher librarian is still standing before the students at the computer terminals. She explains she will 'think aloud' while she navigates through her search results. She explains that finding a search term is often the easy part, because the computer did most of the work; however,it might bring back lots of results. That is where the real fun begins. No one but the searcher can decide if a resource is right or not. The teacher librarian explains that she sometimes feels like a navigator on an ocean, sailing on the currents that she believes best fit her needs. Some results are selected, many are rejected, and the judge of this is the searcher and no one else. Thinking out loud, she explains how she selects one because she remembers the author. She selects another, because it has several words in the description that fit with what she has been thinking about the topic. She rejects a lot of the articles, because they are on a related topic, but not one she was interested in. Sometimes she enters a new term which she thinks will help the computer bring back better results. She explains that she then skims the results, not reading them, and that she can make the decisions really fast. When this happens, she feels more like the pilot of plane than a sailor, zooming through the results to arrive safe and sound at her information destination.

CONCLUSION

The pressure that school personnel experience while trying to meet the expectations of a testing society has too often resulted in teaching strategies which restrict student creativity, problem solving, and deep thinking. Though these strategies "may (or may not) succeed in raising test scores, they are also likely to sabotage a key goal of education—creating a flexible population of life-long learners who can adjust to the changing needs of society and the workplace" (Sheldon & Biddle, 1998, p. 164).

Creating an educational system that will cultivate life-long learners calls for a novel approach. Reaching into the roots of human evolution, play—the historic medium of learning—emerges as a good fit in a world in constant flux. It is a way that humans come to terms with complexity, work over their heads, and embrace the process because of the pleasure it provides. Play allows autonomy yet promotes collaboration, has few negative consequences, and opens a path to tacit knowledge, creating information seeking habits of mind.

Play theory and motivation theory combine to explain how a contemporary school library transitions into a learning commons which challenges students to tap their creativity, use playful approaches to activities, and produce innovative solutions. They are bounded environments with vast resources. They have materials that stimulate imagination and adults who guide and empower learners. They motivate through building competence, allowing autonomy, and fostering relatedness. The learning commons provides an environment for activities that develop student intelligence. Through playful instructional design, learning commons promote inquiry and information seeking through which students' inner resources are revealed and developed. In these ways and more, the learning commons is a playground for the mind where students discover and develop a love of learning that can last a lifetime.

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PLAY IN THE LEARNING COMMONS: A SCENARIO

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The learning commons is a hybrid library environment, capitalizing on both virtual and physical library spaces, a place that is a particularly suited to foster learning through play.

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> A Learning Commons is a vibrant, whole-school approach, presenting exciting opportunities for collaboration among teachers, teacher-librarians and students. Within a Learning Commons, new relationships are formed between learners, new technologies are realized and utilized, and both students and educators prepare for the future as they learn new ways to learn.
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Because students have both support and opportunity in the learn-

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ing commons, they are empowered to build on tacit and explicit knowledge, skills and abilities, and interests and passions (Loertscher, Koechlin, & Zwaan, 2008). What follows is a first person tour of the learning commons, illustrating the central role of learning through play in a K-8 school. This fictional learning commons provides a scenario of types of learning that involve play. Many of the activities are familiar, but there are changes in the behavior of the teachers and the teacher librarian. The students are doing what they do best, enjoying themselves.

Creating an educational system that will cultivate life-long learners calls for a novel approach. Reaching into the roots of human evolution, play—the historic medium of learning—emerges as a good fit in a world in constant flux.

THE SCENARIO

Walking through the doors of the learning commons, I look over to the left where the shouting and laughing is loudest. The teacher-librarian is apparently the cause of it all. In front of her are 6th grade students sitting computer terminals, and she is rapping about how to use the Student Research Center, an EBSCOhost database. It was when she started dancing along with her rap that the laughter and shouting erupted. The students have quickly gotten into the rhythm and are now rapping the lyrics along with her.

I wonder how anyone can study in this environment, so I scan the room and see an area at the back that is under a canopy. The canopy seems to be made from a parachute. It is raised about six feet off the ground and covers a circle around fifteen feet in diameter. Under the canopy there is a carpeted floor, upholstered chairs, and coffee tables with reading lamps. A girl who looks to be around 10 years old is draped over a chair. The table next to her overflows with books. I walk over to the area and see that the girl is intently reading fairy tales. She doesn't seem to notice me and is undisturbed by the sound.

As I turn around and walk back toward the entrance, two older girls walk in front of me. They pause and bend down over a table. I see one of them has an iPod Touch and is taking a picture of a Quick Response [QR] Code taped to the table leg. When I ask what they are doing, the girls explain they are on a scavenger hunt in the library and are using the QR codes to find clues. They show me how they keep track of their progress with an app on the iPod. They are working on creating a display of 20th Century French painting, and have to retrieve representations of several aspects of life. So far, using the clues in the QR Codes and library resources, they have found paintings of people at the beach, people using transportation, and dining at home. The next thing on the list is to find a painting of people dining out. The girls explain that they are working on becoming curators for the learning commons' Art and History Virtual Museum.

As the girls walk away, I recall that this area of the learning commons had sand on the floor when I walked in and there is no sand now. Standing in front of a tall cupboard against the wall on my left, there are four younger students. A boy has a broom and is sweeping up the last remnants of the sand while a girl pours it into a jar. A second girl is stacking blue plastic measuring containers of various sizes on a set of shelves on the wall. Another boy stands nearby with a cardboard folder in his hand and a pencil. Seeing me, he comes over and asks me to check the figures he has written down. The group wants to be the first to solve the problem of how much sand it would take to cover the Principal's desk. I ask them if it wouldn't be cheating if I helped. The boy said they can use any and all of the resources in the learning commons, and that other people can be resources too. So I took a minute to check their findings. They might just win.

I hear arguing over on my right and turn to watch a group of older students looking at a chart displayed on a smart board. They are all standing and moving continually, occasionally pointing to the chart and occasionally to what appears to be chess pieces on the table in their midst. One boy is standing to the side at the tall laptop table that controls the display. I hear him say, "But that doesn't fit in any of the categories. We need another row if we want that information." Several murmur disagreement, but another student takes up the argument and mentions a character from a television series, and everyone laughs. Then the discussion turns to whether the chart will work to gather the information they need, and different statistics are mentioned. It sounds a bit like they are discussing fantasy football, but they seem to be using criteria related to companies on the stock market. I don't know what the chess pieces are for. The discussion is over my head.

That's when I notice a flash of light to my immediate right, where the circulation desk is. On the desk is a computer monitor and on the display are two cartoon animals taking shelter from a storm. They are Creatures$_{tm}$ an artificial life form that lives in a computer. These creatures are up to whatever it is that creatures do when no one is training or interacting with them. They make an ideal pet for the learning commons – no fuss and no mess.

I wonder if there is a teacher accompanying the students at the smart board and

look around the room for the adults. I see a group of younger students sitting at tables about midway down on the right. They all have laptops, and there are two teachers standing nearby. So I wander down to see what they are doing. It turns out that each student is working on a different, curriculum related game. One student is playing Immune Receptors from the Nobel Prize website. Another is working through a game about the Revolutionary War. A third is working on a multiplication game with rockets and asteroids. The teachers are standing nearby a high laptop tables. I overhear one teacher explain to the other, "It is easy to find curriculum related games. All I do is type in my lesson topic and the word 'game' in the search bar. There are games on just about every topic. They come from all over the world. Fortunately most of them are in English. It is amazing that there are so many games available. I particularly like the ones from Australia."

I look for more of the laptop tables and see one with a single student standing in front of it. I walk over to her to ask what she is doing. She explains that she is entering a book review on the learning commons virtual site. She used Amazon to find a description of the book. She pastes that in first. She might have to shorten it though, because she can only enter 75 words. Then she writes a sentence or two on what she thinks of the book personally, what she likes about it, and what other books are similar. She shows me the site and I see there are entries for books, games, movies, comics, music, and even magazine articles. Some of the reviews have comments. All have the option to rate whether or not the review was useful. Most of the reviews are about entertainment products and fiction books, but I spot a review of the game SuperStuck, created by the Institute for the Future. The game is about the extinction of humans and calls on game players to solve global problems.

Hearing voices behind me, I turn around. In the center of the room three students are working on at a large table spread with paper. To the side are the racks I mistook for monkey bars when I first came in the learning commons. Now, hanging from the rungs, are paintings that are drying. The students are working on a collage that is mural size. I approach one of the boys and ask what the topic of the collage is. He tells me that it is a mural of the Civil War. I see he is painting a train, so I ask him what that has to do with the Civil War. He said he could work on anything as long as he could explain how it was related to the Civil War.

"I was looking at pictures from back then and I noticed they did not have cars, so I wondered how they traveled around. I looked that up and saw that people traveled a lot by train. The trains back then ran on steam, so this train I made has a steam engine. Steam engines are cool. I asked if I could make one in science class, but the teacher said we couldn't afford the safety gauges we'd need. I asked him if I could make a gauge and he said I could try. He said that could be my science project this year."

That's inquiry set free.

In the back corner I see two teachers and two students sitting on chairs with green and grey checkered upholstery. They've drawn the chairs close together. One of the students has a smart phone in his hand and he is showing the other students and the teachers something on the phone. As I walk closer, I can see it is an app of some kind with the picture of a planet displayed. They all move their heads still closer together to see the small screen. I walk over and stand behind them, craning my neck too. I see the app is displaying molecules, not planets. One of the teachers gets out his phone and the student takes it and fiddles with it. The teacher nods, and takes his phone back. The second student takes out a different phone and they continue their downloading.

Returning back to the front of the room, I listen in on the teacher-librarian who is still standing before the students at the computer terminals. She explains she will 'think aloud' while she navigates through her search results. She explains that finding a search term is often the easy part because the computer did most of the work, but that it might bring back lots of results. That is where the real fun begins. No one but the searcher can decide if a resource is right or not. She explained that she sometimes felt like a navigator on an ocean, sailing on the currents that she believes best fit her need. Some results are selected, many are rejected, and the judge of this is the searcher and no one else. Thinking out loud she describes how she selects one because she remembers the author. She selects another because it has several words in the description that fit with what she has been thinking about the topic. She rejects a lot of the articles because they are on a related topic, but not one she was interested in. Sometimes she enters a new term she finds that she thinks will help the computer bring back better results. She explained that she was skimming the results, not reading them and that she can make the decisions really fast. When this happens, she feels more like the pilot of plane than a navigator, zooming through the results to arrive safe and sound at her information destination.

As I leave the room, I realize this learning commons is much more than a place where resources are found. It is where teachers, teacher-librarians, and students are supported in a way that empowers them to build on their knowledge, abilities, and passions; and where, through play they build and share their tacit and explicit knowledge. Technology lends itself to this creativity, but technology is not enough. The learning commons stimulates playfulness through the way its members interact. The decor and displays help because they are enticing and efficient spaces to work or lounge. They have abundant physical materials for construction like paper, paint, glue, markers, and scissors; and there are lots of books and magazines to spark ideas and imagination in addition to the vast treasury of digital resources at hand.

Makerspaces in the School Library Learning Commons and the uTEC Maker Model

David V. Loertscher, Leslie Preddy, and Bill Derry

When news in 2012 of the major new space for teens at the Chicago Public Library caused a sensation, and the ALA webinar series on Makerspaces had a thousand attendees, we all knew that this was an exciting new frontier in librarianship, a new step in the evolution of libraries.

Now, in 2013, the interest continues and is expanding to universities and school libraries. This article considers the foundational ideas of Makerspaces but, even more importantly, a model of the principles of what the development of a Maker looks and acts like that we call the uTEC (Using, Tinkering, Experimenting, and Creating) Maker Model.

WHAT IS A MAKERSPACE?

For a project we were doing as a trio of authors, representing various fields of librarianship (academic, public, and school), we developed the definition of a Makerspace as follows:

A Makerspace is an evolutionary step in library facilities' design and programming. It is a destination for thinking, learning, doing, creating, producing, and sharing; a space that takes advantage of multiple learning styles. It is a place to reinvent old ideas with new conceptual frameworks, utilize advancements in thinking and doing, and investigate and construct a hybrid of fine arts, sciences, crafts, industrial technologies, foods, inventions, textiles, hobbies, service learning, digital media, upcycling, STEM/STEAM, and DIY (do it yourself) and DIT (do it together) concepts. In this space, which can be physical and/or virtual, the intersection of formal and informal learning can include designing, playing, tinkering, collaborating, inquiring, mentoring, experimenting, problem solving, and inventing. Through actively engaging in the Makerspace, patrons take command of their own learning, with the potential for demonstrating entrepreneurial behavior. Through the development of a Makerspace, the library can expand and extend connections to community and learning organizations, businesses, families, and mentors throughout the world. These connections can provide teachers, partnerships, sponsors, donors, and volunteers. Every library Makerspace is unique and always in transition. A Makerspace has the potential to transform a patron from a consumer to a creator.

WHAT IS A MAKER?

Considering the idea of a Makerspace, the person who is creative and constructive either as an individual or as a group in- or outside of a Makerspace can be included in the definition of a Maker. Consider young people whose passion for something leads them toward the invention or creation of something unique. They seem to be developing dispositions that prod their own efforts to think outside of the box and make or create. They can be old or young, rich or poor, or in any cultural environment. They are the common folk with an uncommon epiphany. They are the crazies, the idea folks—those who are unhappy with a current way of doing something and decide to invent their own approach to a problem. They take matters into their own hands. Their ideas may be considered radical, or they may be typed as dreamers and sometimes "problems" for not conforming. Perhaps you remember the early advertising slogan at Apple, their Think Different Campaign, as follows:

Here's to the crazy ones. The misfits. The rebels. The trouble makers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules, and they have no respect for the status quo. You can quote them, disagree with them, glorify, or vilify them. But the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world are the ones who do.

TRADITIONAL MAKING IN THE SCHOOL LIBRARY

When encountering the idea of Makers and Makerspaces, it might be easy to assume that for some, the Making has been going on in school libraries ever since their creation. Perhaps your library exhibited the creations of children or teens; perhaps students created posters or models or dioramas of something they were studying. Perhaps they were creating video presentations or writing major research papers as products for assignments. Perhaps there was a community event to showcase student research projects. So Making has always been a part of any vibrant library program; it is just now blossoming into a major movement utilizing much more technology, tools, and advanced resources in a variety of ways unlike ever before. It is a more focused, dedicated, and intentional effort blending creativity, inquiry, and kinesthetics. Sometimes Making happens in other parts of the school under other creative classroom teachers or departments. Perhaps it is being started at the public library, or maybe a project workroom in a local mu-

seum, or somewhere in a group workshop in the community, but it is there if you look for it and extend your recognition of who, what, why, and how it is happening. It is moving up Bloom's Taxonomy to the highest level. This has been our experience as we have discovered the rising interest and studied the movement. After attending a Maker Faire in New York City recently, we sat down and designed a model and a QuickMOOC that might help others interested in the Maker movement get started. Here is the result.

THE UTEC MAKER MODEL

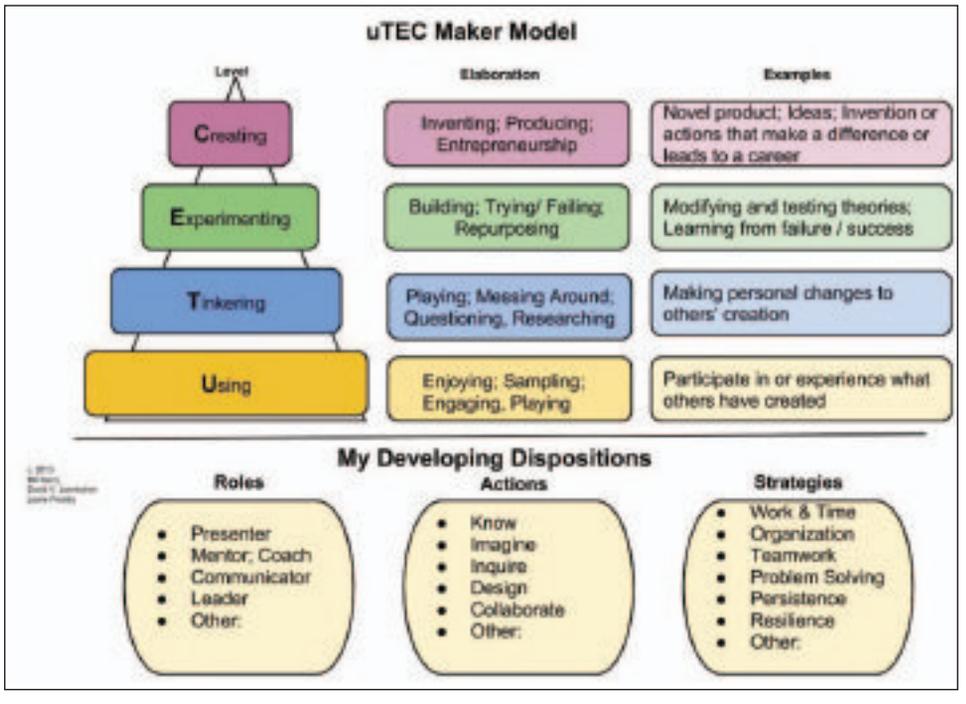
The uTEC Maker Model visualizes the developmental stages of creativity from individuals and groups as they develop from passively using a system or process to the ultimate phase of creativity and invention. As illustrated in the model below, there are four levels of expertise. (You can see an enlarged original at http://tinyurl.com/mf-8w3lv.)

A Makerspace participant begins at the Using level. A User enjoys engaging in an activity to sample something new. Here individuals or groups use a tool, device, or program in the way—and for the purpose—the inventor intended. The User follows through an experience, re-creating something others have already created. Examples include learning how to, then playing the computer game, playing the musical score, or using a software program pretty much the way it was designed to be used. It is following the step-by-step instructions already developed by another to create a foodcraft, DIY, fine art, or fashion. We recognize high levels of skill and perhaps even addictive behaviors on the part of these consumers, but they are still just at the consuming level. Teens might be completely absorbed and totally obsessed for endless hours by the levels of play in World of Warcraft. A pianist may practice hundreds of hours trying to master a Liszt concerto. A student knows every trick in the manual for producing an acceptable term paper using Microsoft Word. In each of these cases, the User makes little attempt to alter the game, the score, or the software but may become very skilled and adept with a particular of variety of tools and resources.

At the Tinkering level, the user begins to fiddle with or retry things that the original creator did not intend or build into the invention or instructional pattern. The Tinkerer is at the formative stages of questioning the how and why and has gained enough confidence through his Using-level experiences to begin making personal changes to others' creations. The gamer learns to trick the game into performing different results. This might require altering some code just to see what happens. The decorator might modify the decorations intended on the cupcakes. Often, the User is bored with the usual procedures or results and so fiddles around to produce a different result. Our musician plays with the composer's original score, making his own changes to the arrangement. And our report writer tricks Word into doing something unusual.

At the Experimenting level, the individual or group begins to seriously abandon what has been created by others, working beyond curiosity and fiddling to a purposeful design of something new. The Experimenter begins to contribute to a topic's knowledge base. We recognize that a passion for a goal is beginning to emerge, and as the ideas begin to flow, trial and error are enacted as hour after hour slips by unnoticed. Hard work and dedication to a project take over—it is the transition stage to the next level. The Experimenter learns from failures as well as successes. He modifies to test pre-existing theories, sometimes repurposing what is known about the world into new understandings. Our gamer, convinced that a new and better game can replace past experiences, starts to learn the skills necessary to program a new experience. He envisions an app that plays as a better game than World of Warcraft. Our musician, tired of performing the works of others, takes the knowledge of musical theory and begins serious work on composition: I like this idea; not that. Does this work? What if . . . ? No, not right yet. Tired of Word, our person decides that there has to be a better experience of document creation: What if? Suppose that . . . Can we design this? Here we find experimenters keeping notebooks and Google Docs of newly forming ideas blended with what has been tried already, by themselves and others. It all becomes not only a passion but also an organized process of experiences and experimentation.

At the top, or Creating level, success, independent thinking, and action occur. There is a result. It is unique, perhaps innovative. There is a novel product or design, something to share, perhaps publish



or market. The Creator makes a difference in the world with his inventive actions. We begin to think about impact, benefit, entrepreneurial possibilities, and, in the world of perpetual beta: Can I create an even better version? As Einstein said, this is the level where "imagination is more important than knowledge." Our gamer is now beyond the prototype and into production; our musician is publishing a new work and encouraging others to perform it. And, with this new style, he is off to his composition career. For our software developer, what avenues will he choose for dissemination? Open source? Commercial sales? And will he do versions or constant improvements as other commercial companies do?

Those watching this entire process happen begin to recognize that a series of dispositions is developing. We have, in the model, recognized many under the topics of roles, actions, and strategies. But it is important to recognize that the growth of creative thinking and independence is difficult to thoroughly define in a manner that fits all because we are unique, our learning paths distinct, and success for the individual varies greatly. We realize that our lists are not exhaustive, and so we encourage users of the model to create other dispositions worthy of attention.

Readers of Malcolm Gladwell's book *David and Goliath* will track through those stories of people who rise above great challenges and find success. Perhaps we can staircase all the dispositions into three levels that seem to be exhibited in the current networked and flat world.

Personal Expertise. At each level of the model, individuals are developing skills and dispositions that contribute to success. It is a never-ending development of what they know, can do, and can contribute.

Cooperative Group Work: When working together on a project or task, individual contributions have to be significant and actually aid the success of the whole. Each person's thoughts, opinions, and findings are valued by the group. Each individual provides a noteworthy addition to the outcome.

Collaborative Intelligence. Often a specific goal is general in nature and develops as a group tackles an idea. The invention of a new tablet or iPad is a series of ideas, testing, and collaborative work, and what emerges is greater than the sum of the minds that created it.

In all this, there is one cautionary idea, and that is the assumption that age has something to do with the various levels of the model. One merely has to attend a large Maker Faire to understand that children, teens, college students, graduate students, true entrepreneurs, corporations, and everyday individuals of all ages can and are Makers. A few examples might illustrate our point:

"If Students Designed Their Own Schools," Youtube (http://tinyurl.com/c5389ke). Here teens actually create their own curriculum and learn various skills as they solve their unique essential questions.

"My Invention That Made Peace with the Lions," TED talk by Richard Turere (http://tinyurl.com/mqvhvmf). Turere is a thirteen-year-old Maasai boy who developed an invention to help his family and others deal with the threat of lions, and he speaks here at a TED conference. Inspiring!

"Sugata Mitra Builds a School in the Cloud," TED Talk (http://tinyurl.com/cl7wvd7). Mitra begins by discussing the current school system and how it is not really preparing kids for their future anymore. What will their future look like? He shows how giving students time and a compelling question can engage them enough to learn on their own. His environment online sounds a bit like the virtual learning commons and knowledge building center in its collaboration component; he also talks about something like a personal learning environment, but he calls it SOLE (Self Organized Learning Environments).

Association of Science, Technology & Innovation (http://tinyurl.com/m7brzlq). Consider the phenomenal entries they received for their Young Inventors Challenge. The 2013 theme was "Green Inventions: Ideas on Sustainability". Their YouTube channel showcases young minds accepting the challenge to develop a "new composition, device, or process." Their solutions range from an automated waste sorter, portable air filter, smart pillow, and many more fascinating innovations.

FORMAL AND INFORMAL EDUCATION

As teachers and teacher librarians, if we use the uTEC Maker Model as a framework for thinking and internalize the various levels, we will start recognizing it as we work with children and teens.

Recognition is the first element. We recall the story of a colleague whose first-grade child had created an elaborate community on Minecraft for his class project. When he showed it to his teacher, she immediately told him that it would not count since "we don't do computer games" in our class. This was a child well into the Tinkering Level, but the teacher did not recognize the amount of time, creativity, skill, and play that had gone into that project. Whether we understand the technology or fear it, whether we know anything about the content of a passion-driven idea a young person is working on, we all need to investigate the idea a bit before automatically condemning it as a nonstarter. It has been said that children come to school with the excitement of creativity built in, but it tends to get squashed the longer they remain in K–12 education.

For adults, the question immediately becomes, "How do I encourage and support creativity in a standards-driven testing environment that does not reward creativity?" If we use rubrics to judge the progress of a learner, and that rubric does not allow for creativity, originality, or even total innovation, am I treating one child differently than another? The product or behavior might well not meet that original rubric. We suggest that an alternative route of recognition always be built into assignments, projects, or inquiry. Consider the effects of the 80/20 rule of Google as it could be applied to schooling. It is reported that Google requires every employee to spend 80 percent of their work hours doing their job on whatever task they have been assigned. But 20 percent of the workweek should be devoted to doing, creating, thinking, making, learning, or hatching new ideas that might be of value in the

overall mission of the company. Perhaps this is the central reason to have a Makerspace in the library learning commons: it is the place where young people can excel at being independent, learning autonomously, and doing unofficial and unassigned learning.

The logical next step is to ask how being a Maker, a creator, a builder, an inventor, or a dreamer can be the foundational element of education. Certainly in the last few years we have seen the rise of a movement against the current top-down, test-driven educational model, and whether the move toward Common Core standards alters that idea will depend on its implementation in a particular school. But whether creativity is being encouraged formally or not, the library learning commons can be a place where the crazy ideas are not only developed and created but also rewarded and recognized. This can be done not only in physical space via exhibits and displays but also in the virtual learning commons, where both individual creativity and Making can be developed, shared, and rewarded. Teacher librarians can support and challenge individuals and groups to participate in national and international contests and challenges; they can hold contests to build Minecraft structures and reward creativity in digital storytelling; robots can be displayed and demonstrated; unique art can be exhibited. It is not just the star basketball player who gets recognition—it is the sophomore who creates a $1,500 centrifuge that does as well as a $15,000 model. It is recognizing the team who invents a new system for controlling bullying in the school.

THE DEVELOPMENT OF MAKERSPACES IN THE SCHOOL LIBRARY LEARNING COMMONS

In an attempt to promote the idea of Makers and creativity in the library learning commons, we have created a couple of resources that might expand on the idea and provide assistance in getting started.

The first is a new book, *School Library Makerspaces* (Libraries Unlimited, 2013) by school librarian and former Indiana teacher of the year finalist Leslie Preddy. This book provides a foundational understanding and overview of the school library Makerspace. It describes what it is, how to get one started, and programming ideas. Included is a framework for developing a Makerspace customized to the school library's community and patron interests and needs. The librarian Makerspace coordinator learns about facility, finances, connecting to learning standards, safety, mentors, communication, guiding instruction, programming, equipment, supplies, digital badges, and safety. Also included are robust lists of supporting resources: books, magazines, blogs, websites, and videos. Projects focus on the community, DIY and DITmovement, foodcrafting, fashion and e-textilesfine arts, hobbies and crafts modernized, STEM, teamwork, repurposing books and periodicals, and upcycling. Invaluable annotated lists of Maker communities, resources, local events, contests, activity ideas, and inspiration resources are included.

The second is an online professional development experience you can take either as an individual or with a group. It is available in a participatory format, a QuickMOOC titled "Makerspaces in Schools and Libraries: An Introduction," collaboratively developed by Bill Derry, David V. Loertscher, and Leslie Preddy. This and other QuickMOOCs cost a whopping $10 and are communities where learners design their own pathway and stay as long as they want to participate and contribute. You can purchase your entrance at http://lmcsource.com. More information about other QuickMOOCs can be found at http://quickmooc.com.

CHALLENGES AND OPPORTUNITIES

Much progress has been made over the years through creativity and innovation in the United States and other nations. We are the developers of Facebook, iPhones, iPads, airliners, medical treatments, Twitter, and other amazing technologies that deal with huge problems and make life more pleasant and productive. Now that the world is flattening, a new race is on to remain in the forefront of invention, innovation, and problem solving. Makerspaces seem to be popular because they bring out the best in all of us—evidence that we can all contribute. We can contribute to a better world and grow through the creative genius associated with problem solving.

Teacher librarians are claiming a role in this effort, as are public libraries and other community organizations. It could be a fad, but it is unlikely to fade when so many find such exhilaration in the act of thinking, making, creating, and building. At the present time, teacher librarians can embrace the opportunities provided in this informal learning environment by creating space and tools for it and encouraging this idea, whether it is embedded in the curriculum or intellectual enrichment.

When parent night comes around, when Maker Faires happen, when challenges to education continue to emerge, we urge teacher librarians everywhere to add this dimension to their library learning commons design. We think the result will give a major boost to the best of teaching and learning happening in the school. It need not cost a great deal of money, but it can, depending on the vision of the library Makerspace. It may be difficult at first, but you will find Makers—hobbyists, craftsmen, artists, and inventors—everywhere who will help. Let the results and the enthusiasm and the recognition of what Makers do and produce guide you as you recognize and reward the various levels of the uTEC model in your school.

Bill Derry is the Assistant Director for Innovation and User Experience at the Wesport (CT) Public Library. He and his library have become leaders in the Makerspace movement in libraries.

Leslie Preddy is a school library media specialist at Perry Meridian Middle, Indianapolis, Indiana. A popular speaker and presenter, her recent publications include *School Library Makerspaces: Grades 6–12* (October 2013, Libraries Unlimited).

Makers, Self-Directed Learners, and the Library Learning Commons

David V. Loertscher

Every day, in every school, we encounter learners with a huge variation in what they know, what they are able to do, and their ability to learn. It has always been so, but the diversity of learners, their language backgrounds, and their encounters with the world of information and technology makes for quite a different and complex challenge.

In the United States, we are faced with changing standards and tests that challenge us to spit out from the system a product as uniform as Twinkies or the number-one choice on any fast food restaurant's list. Since the measuring stick is changing but the pressure on teachers to produce is going up, one wonders what is going to happen when the news of massive failure on the new tests spreads across the country and through the media.

Concurrently, voices are getting louder and louder that advocate the idea of the world of creativity, making, inventing, thinking outside the box, becoming an entrepreneur. Many people are talking about the self-directed learner versus the cookie-cutter regurgitater. These people advocate for a diversity of outcomes as the essential direction in order to hold first-world positions, opportunity, and affluence.

Teacher librarians are in a position to not only recognize the various pressures on teachers, testing, technology, and the exponential growth of information and networking but also can, through their library learning commons program, do more than just try to hold on, hoping that the current craze will subside if we just ignore it.

We continue to encounter brave professionals who first recognize leadership opportunities and take a "both and" approach, rather than an "either or" stance. There is one sure way of understanding this maker movement, and that is to experience it, for instance, at a maker fair. The inspiration for the uTEC Maker Model in this issue and presented below came from just such a visit by Bill Derry, Leslie Preddy, and myself. The New York Makerfaire in the fall of 2013 had hundreds of booths and probably 100,000 visitors looking,interacting, talking, and marveling over young people, college students, adults, entrepreneurs, volunteer organizations, and professional organizations demonstrating what they had invented. The infectious environment as one walks from one amazing idea to the next is stimulating yet overwhelming the longer you stay.

The uTEC Maker Model pictured here and also in the centerfold of *Teacher Librarian* charts a journey from using to creating and takes note of the dispositions that are developing along the path. The model has two purposes: (1) to help adults recognize behaviors they may only usually see in spurts and (2) to provide a visual representation for creators or budding creators to help them recognize that they are on the same path as the greatest inventors and makers in world history. Why the need for a visual representation? In education, teachers bent on covering, delivering, and pushing mastery often see any deviation from a prescribed set of assignments as an aberration than creative expression. Such behaviors are often punished and squelched.

Following along the uTEC model with us will help to recognize and elevate creativity rather than judging alternative thinking and behavior as negative,

U FOR USING

❏ Enjoy, sample, engage, play, participate in, or experience what others have created

We are all users and enjoy the creations of others, from games to microwaves to cell phones, to art and music and the automobiles we drive. We love new models and often want to be the first to own them, but we trust the creative approach of the inventor and use the item as intended.

T FOR TINKER

❏ Play, mess around, question, research, make changes to others' creations

We often become curious or dissatisfied with an invention and start experimenting with its purpose or the way it works, or we arrange the music or change the game. We might repurpose an item to use it in a different way than the inventor intended.

E FOR EXPERIMENTING

❏ Build, try/fail, repurpose, modify and test theories, learn from failure/success

At this level, we get serious about tinkering and begin experimenting with an idea, invention, musical sound, or video technique as we wonder what would happen if . . . This requires much trial and error, record keeping, thinking, and rethinking.

C FOR CREATING

❏ Invent, produce, entrepreneurship, novel products, ideas, inventions

The ideas have now come into focus, and a product or item

continued on pg. 38 ➤

Using

Tinkering

Enjoying; Sampling; Engaging, Playing

Participate in or experience what others have created

Playing, Messing Around; Questioning, Researching

Making Personal changes to others' creation

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Bill Derry
David V. Loertscher
Leslie Preddy

Strategies: Work & Time - Or

uTEC Maker Model

Experimenting

lding; Trying/ Failing;
urposing

difying and testing theories;
rning from failure / success

Creating

Inventing;
Producing;
Entrepreneurship

Novel product;
Ideas; Inventions

My Developing Dispositions

ganization - Teamwork - Problem Solving - Persistence - Resilience

Actions: Know - Imagine - Inquire - Design - Collaborate

Roles: Presenter - Mentor - Coach - Communicator - Leader

continued from pg. 35

appears as a prototype ready to push out into the world of ideas, production, and demonstration.

MY DEVELOPING DISPOSITIONS

Strategies
- ❑ Work and time
- ❑ Organization
- ❑ Teamwork
- ❑ Problem solving
- ❑ Persistence
- ❑ Resilience

Actions
- ❑ Know
- ❑ Imagine
- ❑ Inquire
- ❑ Design
- ❑ Collaborate

Roles
- ❑ Presenter
- ❑ Mentor
- ❑ Coach
- ❑ Communicator
- ❑ Leader

Along our path to becoming a creator, either knowingly or unknowingly, we have been required to build new skills and abilities, and upon reflection, we are surprised about what we now know and are able to do. We experience pride in our work and taste excellence, but we might also encounter new questions that makes us start all over again.

As adults, if we recognize that curiosity and play are leading to tinkering, repurposing, trial and error, or serious experimentation, then we make it known to both individuals and groups that this behavior is not only acceptable but welcome. The action may not fit into what we are doing with the children or teens at the moment, but we are flexible enough to allow it to occur. It can be disrupting, annoying, or even a direct challenge, but as mentors, we learn to deal with the unexpected. What others might perceive as off script, off task, confusion, or conflict, the mentor sees as growth potential and encourages the behaviors to achieve a larger goal and perspective.

For the learner, curiosity and invention become a natural part of learning. It is not a matter of rebellion or malicious intent—it is a matter for serious pursuit of the greater good, self-fulfillment, and a sense of accomplishment. I begin to understand the meaning of personal expertise, cooperative group work, and collaborative intelligence. Creation becomes a part of life and living, my way of making a difference.

In a larger sense, curiosity, critical thinking, creativity, problem solving, and work-arounds become a normal and natural part of education. The learner has the ability to knuckle down and get work done in an intended way but is often focused on new ways to accomplish a task more efficiently, and productivity increases.

Examples abound everywhere. We discover how to use a Google document for collaborative writing, commenting, and thinking. Learners start using one technology tool to create a presentation and end up using another to build a simulation of how something works. We start off expecting the acquisition of a prescribed body of facts but end up with deep understanding, reflection, and application to a current problem.

For the teacher librarian torn between two worlds of direct instruction versus constructivism, the library learning commons is the place to foster both environments. We make room for both formal and informal learning, and we do so in both our physical learning commons and in the virtual learning commons.

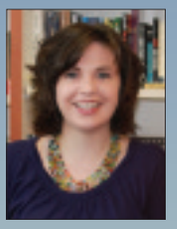
For those trapped in scheduled classes, perhaps "making" takes over as the "curriculum" of the library learning commons. Such a notion concentrates on building the self-directed learner—the explorer of the world of print and multimedia; the inquirer, whether an individual or group; the tinkerer/experimenter; and creator. It becomes a matter of mentoring rather than another top-down teaching plan. Such an idea is probably foreign to most, but perhaps it is something to brainstorm our way through and develop a possible proof-of-concept experiment. The expectation for the library learning commons behavior is that I go there to explore, think, create, do, participate in, perform, and come into command of my own learning. Perhaps such a place makes the learning commons central to my education, to my life and career. And I can do all this participatory development both in the physical and the virtual world simultaneously. Does this turn the learning commons into a giant learning laboratory? What an idea! Actually, it has been a part of the dream of what a school library is really for—an idea dating back to the 1960 standards for school libraries—but is often masked by other priorities. Is it a return to our roots but in the new world of exploding information and technology?

The idea of maker and making challenges each of us to rethink our roles as teacher librarians. For those pushing toward the learning commons concept, it challenges our thinking and planning. It adds another dimension to the capture of that diverse learner, a way to build not only essential skills and understanding but also to push beyond that in a variety of ways rather than a set framework. It also reminds us once more about the crazy ones:

Here's to the crazy ones. The misfits. The rebels. The troublemakers. The round pegs in the square holes. The ones who see things differently. They're not fond of rules. And they have no respect for the status quo. You can quote them, disagree with them, glorify or vilify them. About the only thing you can't do is ignore them. Because they change things. They push the human race forward. And while some may see them as the crazy ones, we see genius. Because the people who are crazy enough to think they can change the world, are the ones who do.—Apple Computer

We all have had a teacher who liberated our thinking and released in us qualities that we did not recognize in ourselves. How did they do it? And, more importantly, how can we pass it on? It is a path worth pursuing. Is making in your future?

Generation Linked



"How often do students *ask* teachers for homework?"

MICHELLE COOK AND CYNTHIA CASSIDY

INTRODUCTION

"Generation Linked" – a fitting description for the modern generation. Their phones, computers, tablets, and video games are linked. They live a large percentage of their lives in a virtual world. They are chatting, posting pictures, setting their schedules, playing games, shopping, and even creating and working together to maintain entire imagined societies – all in a virtual world. These digital natives are never out of touch. And whether they realize it or not, their constant cyber chatting is a distinct form of collaboration.

TO THINE OWN SELF BE TRUE

Two frequent visitors to cyberspace are media specialist Cynthia Cassidy and language arts teacher Michelle Cook, both from the Mount Olive Middle School in Budd Lake, New Jersey. Cassidy and Cook know their strengths, but they also admit their vulnerabilities. They recognize that their areas of expertise balance each other's limitations, and this relationship provides the foundation for successful collaboration. Cynthia is the media specialist and librarian, whose forte is integrating technology into the curriculum. Michelle, as a language arts specialist, brings content-area knowledge and an understanding of her particular students to the partnership. So when the two decided to work together on a new unit using Understanding by Design principles, the obvious decision was to design a project that was interdisciplinary and technology-rich.

A History Channel show inspired the topic of the award-winning "Who Owns History?" project.

COLLABORATING IN THE CLOUD

A late night e-mail was the tinder, a History Channel exclusive was the spark, and two creative educators were the fuel. The fire was lit, and their "progressive collaboration" advanced through e-mail, voice and Skype messages, and in the cloud on Google doc. Without ever meeting formally during a common planning period, Cynthia and Michelle constructed a truly interdisciplinary unit that effortlessly integrated technology and research. Pressed for time, the two educators took the lead from their students and became "linked." Partnering in cyberspace allowed Cook and Cassidy freedom to plan on their individual schedules.

The History Channel exclusive that gave life to the project featured a biography of the very passionate and charismatic Dr. Zahi Hawass, Egypt's Secretary General of the Supreme Council of Antiquities. The story focused on Dr. Hawass' mission to return Egypt's lost and stolen treasures. As Michelle watched, she remembered an e-mail request from Cynthia that simply stat-

SCAN was a Web 2.0 tool used in the project.

ed, "Come up with a topic!" While viewing the documentary, Michelle wondered: If Dr. Hawass has been fighting for Egypt's antiquities for years, who is he fighting against? With that question, the ISTE SIGMS Technology Innovation award-winning project, "Who Owns History?" took form.

Writing collaboratively in the cloud, Cynthia and Michelle crafted a scenario incorporating voices for four unique perspectives: Isaac Digg, an American Archeologist; Layla Hassan, an Egyptian Citizen; Thomas Campbell, the Director of the Metropolitan Museum of Art; and of course, Dr. Zahi Hawass. The project's essential question was: "Who Owns History?" And what better way to approach such a multidimensional question than by using an interactive Web 2.0 tool that asks students to examine various points of view?

TWO SIDES TO EVERY STORY – AT LEAST

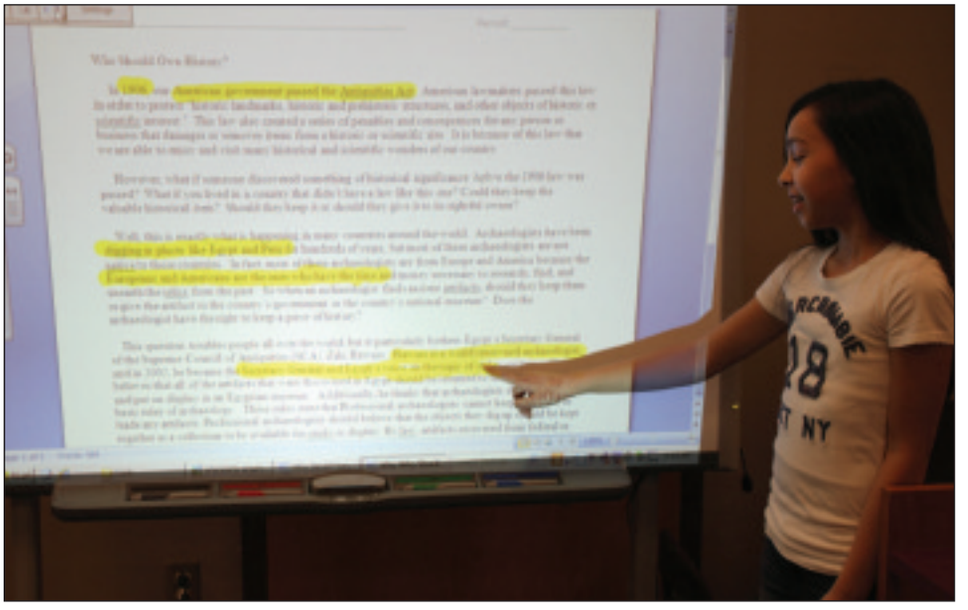
The SCAN tool, offered by TregoED (www.tregoed.org/teachers/about-scan.html) provided the perfect foundation for the unit, because it is flexible, student-centered, and asks students to incorporate a multitude of skills. It also helps that SCAN mirrors many of the same formats as social networking sites such as Facebook. This familiarity triggers comfort in most students and generates excitement. Another advantage is that the SCAN tool allows users to give voice to varying perspectives, thus teaching students that there are always at least two sides to every story.

EXCITEMENT PROVOKES EVOLUTION AND EXTENSION

After determining that the SCAN tool would be the platform for their unit of study, Cynthia and Michelle kept the fire burning by adding a few final elements to the project. Drawing upon their expertise, they considered various essential skills that they could incorporate, Cynthia located non-fiction articles of varying reading levels and videos that students would use for their research. With the help of former colleague Sandy Wozniak, now Director of Curriculum and Technology Products at TregoED, Cassidy and Cook were able to explore and utilize a number of Web 2.0 tools to help organize and deliver the project. Once organized, Cassidy transferred the links into an easily accessible folder on Livebinder.com. However, when Cook balked at the lengthy URL generated by Livebinder, referencing her students' remedial typing skills, Cassidy quickly generated a solution through tinyurl.com. Michelle used her expertise in language arts to develop practical and student-friendly rubrics and graphic organizers to help focus students on the essential elements of point of view, voice, and persuasive language. Michelle also constructed mini-lessons using laptop stations that would allow students to practice active reading strategies and use their persuasive writing techniques. With the Livebinder organized, mini-lessons and resources invented, and the SCAN scenario carefully crafted, Cassidy and Cook were excited to introduce the unit to the 130 students on Cook's team.

COLLABORATION IN REAL TIME

Cassidy and Cook felt they had thought of everything, but after successfully introduc-


Cook and Cassidy used Understanding by Design principles in the project.

ing the project to two classes, Michelle expressed trepidation about whether her next class would enjoy the same success. To ensure that Michelle's special needs students would have additional support to master the required non-fiction reading, the two jumped into action. While Cassidy instructed a middle school audience of nearly 30 students, Michelle hastily located a 5W's graphic organizer that Cynthia was then able to transform into a SMART board document. The seamless adjustment was critical in helping students master the content and was a great compliment to the unit.

BUT DID THEY LEARN?

The impact of this project was astounding. Typically, on traditional projects, approximately 85% of Michelle's students complete all of the assigned work, some reluctantly. For this unit, however, the classes achieved a surprising 99% total completion rate. Cynthia and Michelle attribute a variety of reasons for this. But specifically, they believe that, unlike an oral class discussion that may be monopolized by a minority of students, the online tool using screen names and avatars elicited full participation. In fact, many students went beyond the requirements, writing far more comments than mandated. Overall, Michelle found that even her most reluctant pupils and learning-disabled students, such as those with autism and dysgraphia, were active contributors during the SCAN sessions.

Cynthia and Michelle attribute this increase in participation to a different attitude toward learning, which students voiced in their self-reflections. Using SCAN, each student knew his or her voice was important and would be read and considered by every other student. The SCAN tool also gave students the ability to work at their own pace without apprehension of peer pressure. In addition, the supplemental materials acted as high-interest tools that differentiated background materials, so students with diverse reading levels could read information with ease. This multi-modal approach to learning allowed progress monitoring that was immediate and constant, so students practiced learning independence, which also increased their motivation.

Students worked collaboratively and individually.

Additionally, because the SCAN tool provides a "teacher's view" that gave us a full transcript of student discussion, we

were able to use a rubric on "voice" to quickly assess the quality of student work. This transcript gave us concrete evidence of the scope and quality of participation of all students during the discussion. The built-in teacher's view also allowed us to monitor the ongoing discussion in real time for netiquette and content, ensuring that all students were on-task at all times.

The students' written work demonstrated how they achieved the language arts learning objectives while practicing 21st century skills. Specifically, the graphic organizers and final essays constructed by the students proved that they understood the various points of view, analyzed all of the issues, and were able to construct valid arguments that were substantiated by textual support. In fact, when Michelle assessed the final essays—using the New Jersey State Holistic Scoring Rubric—the class average proficiency rating ranked at an 8.9, which is above the state's average. Further, when these students completed the Mount Olive School District's required writing assessment, they scored a full percentage point above the 6th grade class average, which is exceptional considering Michelle has the only mainstreamed learning-disabled students on the grade level.

Success can also be measured by the attitudes of the students. During the unit, Michelle and Cynthia overheard students commenting that they "love SCAN" and "can't wait to come back tomorrow to do this again." Students were fully engaged and had to be prodded to log off the computers at the end of the class period. As they were gently nudged out the door, many still debated their perspectives. Some students even asked if they could access the activity from home, because they were afraid they would miss something if they didn't read all the comments. How often do students *ask* teachers for homework? However, the most telling comment of all was made by a small group of students who wondered, "Why isn't Mrs. Cook making us do any language arts?" Students were so engrossed in the activity that they didn't even realize they were practicing and applying their reading and writing skills.

BRINGING IT TOGETHER

Employing active reading strategies, determining important ideas, writing with voice, applying research, using persuasive writing, and providing textual evidence while having fun in a virtual world? Who would have thought that any one unit could accomplish so much in so little time? With a little tinder, a spark, some fuel, and progressive collaboration, teachers and library professionals can rekindle their cooperative spirits and get "linked."

RESOURCES

SCAN: http://www.tregoed.org/teachers/new-to-scan.html

LiveBinder: http://livebinders.com/play/play_or_edit/63928 or http://tinyurl.com/62vsuda

Registered users can access the complete project details and resources on the TregoED site:
http://www.tregoed.org/dashboard/teacher-tips.html

TregoEd is offering a limited time (expires June 30) discount of school subscriptions. For just $350, a school can have unlimited teacher accounts/building. To get the discount, use coupon code "schoolsub2011."

The project meets the following standards:

ISTE.NETS for Students: 1-6

American Association of School Librarians Standards for the 21st Century Learner: 1.1.1, 1.1.7-1.1.9, 1.3.2, 1.3.4, 1.3.5, 1.4.2, 2.1.1, 2.1.3, 2.1.5-6, 3.1.6, 4.3.1, 4.3.4.

Common Core English/Language Arts Standards:

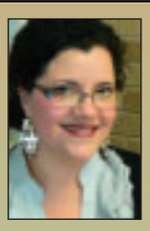
Writing 6-12: Gr.6.1, 6.2, 6.4, 6.6, 6.9

Reading 6-12:Gr. 6.2, 6.6, 6.7

Reading and Writing for Informational Text 6-12: Gr.6.6

Speaking and Listening Skills: Gr.6.1, 6.2, 6.3, 6.6

New Jersey Core Curriculum Contents Standards 21st-Century Life and Careers: 9.1.8.A.1-4, 9.1.8.B1-2, 9.1.8.D.1, 9.1.8.D.3-4.

"The movement toward online learning provides school librarians with new ways to collaborate in order to infuse information literacy within the K–12 curriculum."

Transforming Collaboration

Student Learning—Anytime, Anywhere

STEPHANIE A. JONES AND LUCY SANTOS GREEN

Peer reviewed. Accepted for publication, December 2012

ABSTRACT

Collaborative partnerships have long been the brass ring of school librarianship. In many instances, face-to-face collaboration is linked to the physical schedule of the librarian or classroom teacher rather than the curricular needs of students. Using free and open-source Web 2.0 technologies to develop online learning, school librarians can harness the power of virtual collaboration to impact student learning anytime, anywhere. Although librarians value collaboration, the virtual option has not been widely considered or understood. In today's school library program, is virtual collaboration a valid approach? The authors propose that school librarians participate in virtual collaboration with teachers through the design, development, and employment of online learning units.

Collaboration between school librarians and classroom teachers to integrate information-literacy skills instruction into the curriculum has long been a goal of the school library profession. In practice, establishing such collaborative partnerships has been difficult to achieve for a variety of reasons, including scheduling, lack of support staff, and an emphasis on standardized testing (Canter, Voytecki, Zambone, & Jones, 2011). In many instances, face-to-face collaboration is linked to the physical schedule of the librarian or classroom teacher rather than the curricular needs of students. Eisenberg and Murray (2011) contend that our profession needs to move the sacred cow of collaboration aside and focus instead on "connecting" to assignments and curriculum, "making sure that the information literacy program reaches every student" (p. 10) An innovative approach to promoting such learning connections is through online learning, another way the teacher librarian can reach into the classroom.

THE GROWTH OF K–12 ONLINE LEARNING

The International Association for K–12 Online Learning, iNACOL, defines online learning as "education in which instruction and content are delivered primarily over the Internet [and] does not include printed-based correspondence education, broadcast television or radio, videocassettes, and stand-alone educational software programs that do not have a significant Internet-based instructional component" (International Association for Online Learning, 2011b). Online learning is becoming a common feature in public schools across the globe, especially at the secondary level. It is projected that by 2014, 10% of all courses will be computer based, and by 2019, 50% of these courses will be offered online (International Association for Online Learning, 2011a). Even now, educational technology consultants estimate that over two million American high school students are currently enrolled in online courses (Nagel, 2009).

Today, five states specify a certain number of hours in online learning as part of graduation requirements. Recently, Idaho added a stipulation for the completion of two online courses before high school graduation, although voters turned down the funding mechanism for this initiative in November 2012. Other states are also considering adding these types of online experiences (Kennedy & Archambault, 2012). For example, in Georgia, where we are located, online learning is not required but is strongly encouraged. Additionally, the current economic climate has spurred school districts to use online learning to meet qualified teaching standards for hard-to-fill positions in such areas as science and foreign language.

VIRTUAL COLLABORATION THROUGH ONLINE LEARNING

The movement toward online learning provides school librarians with new ways to collaborate in order to infuse information literacy within the K–12 curriculum. We envision this type of collaboration occurring through the design, development, and deployment of online learning

units (OLUs). OLUs, as defined by California State University's Center for Excellence in Learning and Teaching, are short (four to six week) learning opportunities that often support face-to-face instruction (CELT, 2012). These units incorporate multiple lessons that extend learning through technology-rich experiences not available in face-to-face interactions. Consequently, OLUs do not create *more* work—they simply give students the capacity to demonstrate content mastery through a broader range of media formats (CELT, 2012). Online learning units can be designed to include stand-alone activities, as well as blended learning approaches such as quick tutorial videos (popularized by efforts such as Kahn Academy). Virtual collaboration through OLUs can also help teacher librarians support classroom teachers and students who are engaged in a flipped classroom model.

Collaboration through online learning—or virtual collaboration, as we prefer to call it—addresses many of the difficulties inherent in traditional face-to-face collaborative efforts. One of the most crucial advantages of online learning to a school library program is that it allows the librarian to deliver critical instruction despite lack of face-to-face time during the school day. Learning units delivered online can be tied to the curriculum needs of students and teachers instead of being limited by the physical library or classroom schedule. Once developed, these units can be tapped at the point of need. Even if the librarian is not available, students still access the instruction. There are several other important advantages to virtual collaboration. Instructionally speaking, OLUs incorporate different modalities with ease. A dizzying array of multimedia tools featuring video and audio quickly present content in a myriad of ways.

These online units are repeatable and are not constrained either by the library's physical space or the presence or absence of staff. Those of us who have worked in smaller libraries can testify to the frustration of cutting back on classes for lack of facility space and support staff. Online, students work at their own pace, reviewing materials as many times as necessary. This is especially beneficial to English-language learners and students with special needs, who may require more time to interact with academic material. Online discussions give this student population, in particular, an equitable voice—they are able to take time crafting a response to others in the class. Other disenfranchised groups benefit from online units delivered by the school librarian since many socioeconomically disadvantaged students might not have access to online learning experiences outside of the school system. Thus, the teacher librarian might not be present at the actual time of instruction but, in a collaborative technology, could be present alongside the teacher at other times during the school day or the evening.

Another advantage to developing a library OLU on any topic is that the unit itself becomes a record and advocacy tool to promote the library's role in student learning. In addition, it is an opportunity for the school librarian to model excellence in the integration of technology in instruction. There may be some concern that virtual collaboration would eliminate the need for student presence in the physical library. Our response is that virtual collaboration needs to be part of a successful library program and not its main thrust. OLUs can be delivered in blended modes, containing face-to-face activities that extend the learning experience and invite students and teachers to continue a relationship with the library space. In fact, OLUs may serve as a gateway to promote physical resources and services available in the library. Perfect candidates for such online experiences might be those instructions the teacher librarian seems to have to repeat over and over again in the physical space.

The design of OLUs is a natural progression for school librarians, many of whom have experience in creating media center websites with information portals, webliographies, pathfinders, and webquests. In the past, to deliver online learning, librarians needed access to expensive or complicated course management systems, such as Blackboard or Moodle.

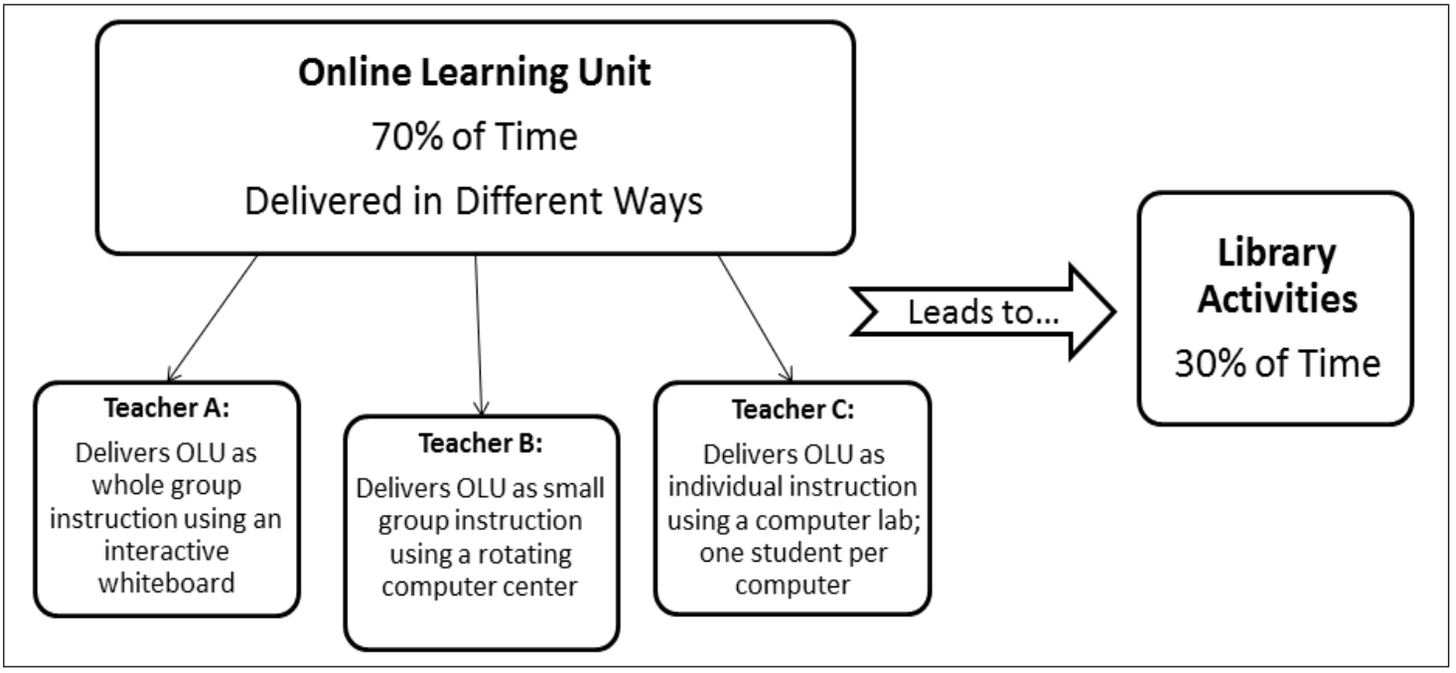


Figure 1. The Split-Time Unit Graph

However, with the explosion and broad variety of free and open-source Web 2.0 technologies, school librarians can now easily develop and deliver secure OLUs addressing information literacy skills. These units, available anytime, anywhere, are then integrated into the curriculum whenever needed, independent of facility and staff scheduling constraints, no html skills required!

APPROACHES TO VIRTUAL COLLABORATION

The Split-Time Unit

In this approach, the school librarian and teacher jointly select a topic that typically requires multiple days of inquiry. The school librarian designs an OLU to prepare students for shortened, more efficient library sessions, splitting the inquiry time between online/class time and library time. This approach might be used when:

- Introducing students to available search tools and online resources
- Helping students select a topic or analyze preselected resources
- Guiding students through the steps of designing an inquiry plan

The Split-Time Unit Scenario

Fourth-grade teachers at Pine Bluff Elementary explore ways to address Common Core reading standards for informational text. According to these standards, students are expected to *compare and contrast a firsthand and secondhand account of the same event or topic* and *describe the differences in focus and the information provided*. Mrs. McCallar, the school librarian, suggests an OLU to be completed in class before coming to the library. She explains that the unit would cover much of the material typically addressed during the first stages of an inquiry project. Using Edmodo, Mrs. McCallar creates four short lessons for this OLU. When it is ready, teachers deploy the unit using different instructional approaches. For an example of this type of unit, see http://viewpure.com/aojE9T8iFtg.

The Skills-Based Unit

In this approach, the school librarian designs an OLU to train students on the use of a technology tool or in order to develop a digital literacy skill. Skills introduced during this unit are foundational and necessary in order for students to create a product or engage in a specific online behavior. This approach might be used when:

- Face-to-face time is dedicated to the academic content
- Students create larger, more complex technology products (e.g., a podcast or video)
- Digital citizenship issues, such as cyber safety, need to be addressed

The Skills-Based Unit Scenario

Mr. Howard, a 7th grade language arts teacher, wants to encourage meaningful student reflection of a class novel. He discusses the possibility of blogging with the school librarian, Mr. Mclean. Together, they identify the prerequisite skills students need in order to successfully complete a blogging project. Mr. Howard prefers to use whole group class time for discussion and reading. As a result, Mr. Mclean designs an OLU students can work through independently. The unit introduces students to the structure of blogs, the concept of a world-wide audience, and general netiquette policies. Mr. Mclean uses Mr. Howard's class blog to host the OLU in order to further model appropriate blogging behavior. For an example of this type of unit, access the following link: http://viewpure.com/rFVSMqCtpd0

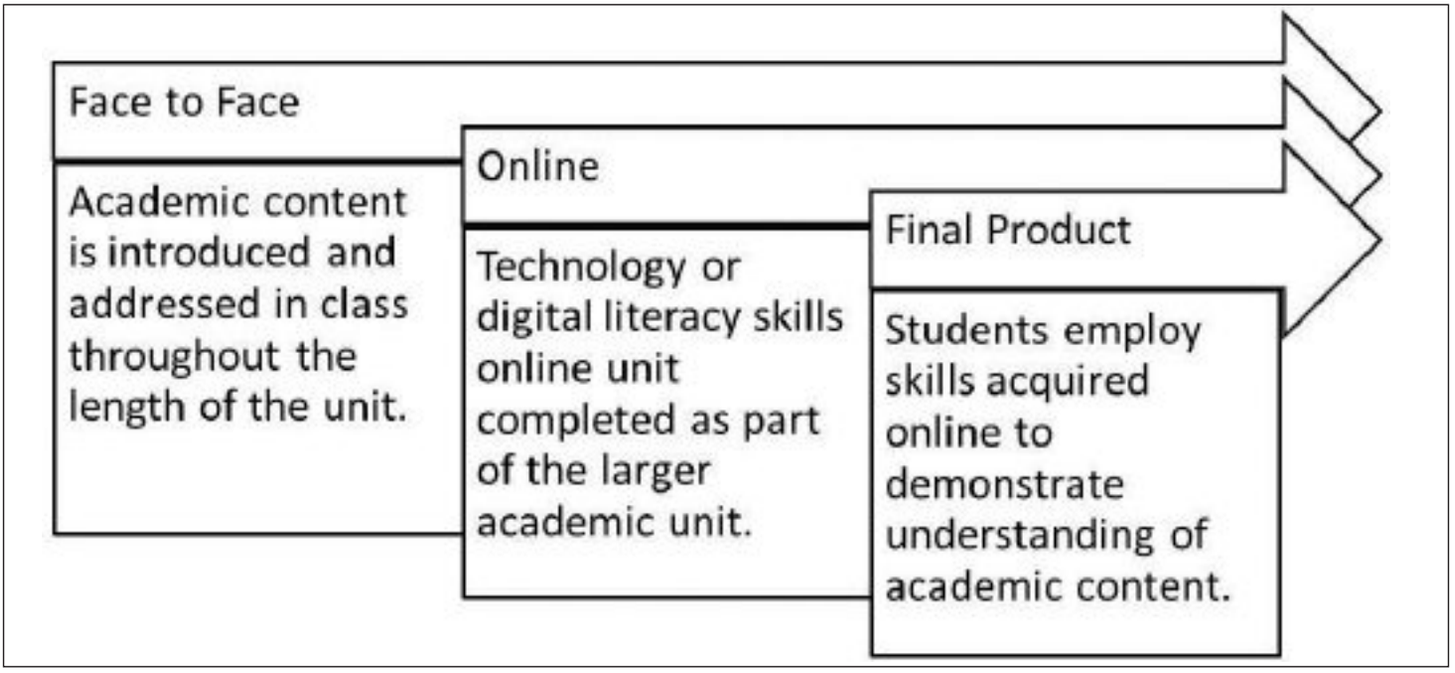


Figure 2. The Skills-Based Unit Graph

The Independent Unit

In this approach, the school librarian designs and delivers a fully online, stand-alone short course. This type of unit can be developed to address information-literacy skills typically taught in the media center. It may also be developed in collaboration with a grade level or department to teach a topic that needs to be consistently addressed across multiple classrooms. This unit differs from the skills-based approach because it is completed independent of any classroom work or schedule. It might be used for:

- Training students on specific twenty-first century skills
- Guiding students through a large project (e.g., portfolio, college and career development)
- Exploring an academic topic in depth

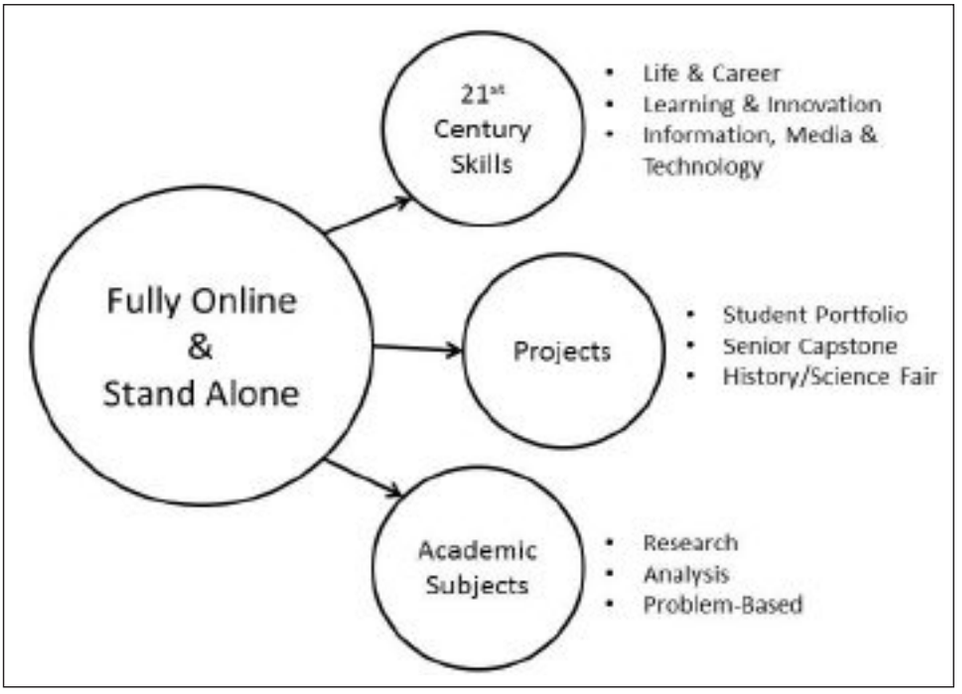


Figure 3. The Independent Unit Graph

The Independent Unit Scenario

Mrs. Henderson, a high school librarian, works closely with the academic departments to help students complete both short- and long-term research projects. Since it is notoriously difficult to schedule all classes for face-to-face information-literacy skill lessons, she has developed a virtual library hub. This hub contains stand-alone OLUs covering such topics as *researching with educational databases* and *citation of sources*. Students can access and complete these courses anytime, anywhere. Developed in Google Site, this unit contains tabs and tutorials that support the use of these resources in different content areas. Teachers are also able to submit requests for other short courses they would like Mrs. Henderson to develop. For an example of this type of unit, see http://viewpure.com/JtLoabhHO68.

The Professional Development Unit

The professional development unit, as the name implies, is designed by a school librarian for the express purpose of delivering training to other teachers or education professionals. These types of OLUs can be developed by one librarian for his or her campus or can be designed by several li-

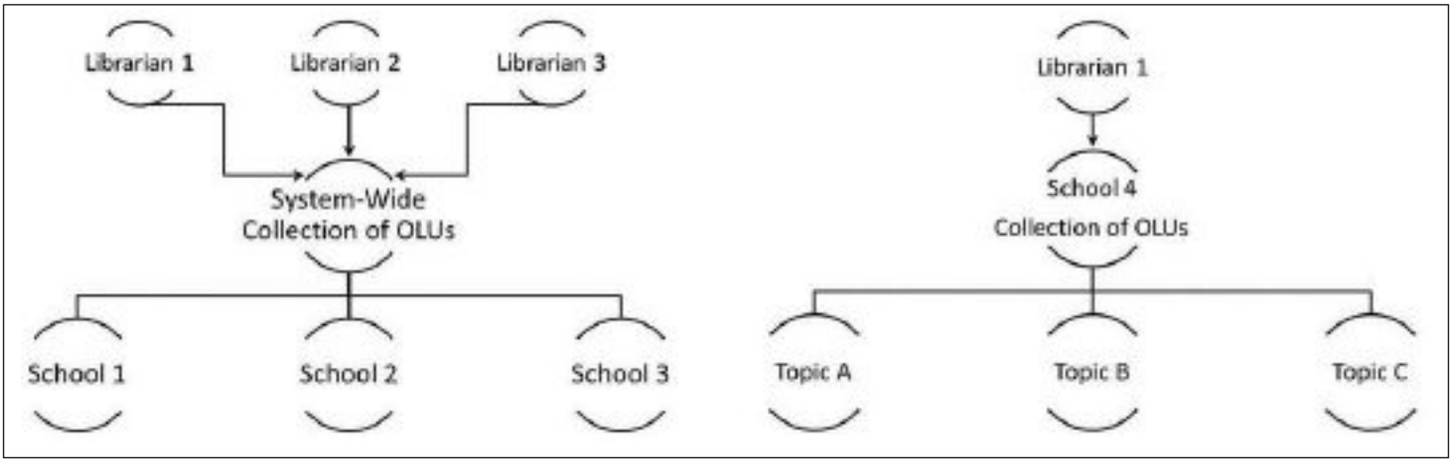


Figure 4. The Professional Development Unit Graph

brarians across one school system and collected into a repository made available to all system employees. This type of unit would be appropriate for training on:

- Inquiry learning and Common Core standards
- Technology tools and resources
- Digital citizenship and policy
- Multiple literacies

An example of such a repository is INFOhio, which provides free short courses with either credit or certificates of participation.

The Professional Development Unit Scenario

Hancock County Schools recently received a large technology grant to expand its wireless network. The possibilities generated by this grant highlighted the need for teacher training on technology integration. At the beginning of the school year, Hancock County's school librarians met to discuss their role in designing and delivering professional development. Together they brainstormed technology integration skills and topics. After an extensive list was created, the librarians decided to work together to develop a collection of OLUs accessible by all Hancock County faculty and staff. Each of the librarians selected topics they were most comfortable teaching. Ms. Turner, one of the librarians, volunteered to develop an OLU on Web 2.0 tools and information literacy. For an example of this type of unit, see http://viewpure.com/9KoLcvWhHC8.

Student-Produced Tutorials

One part of the collaborative process that we should not overlook is the possibility of student-produced tutorials. Professional development units created by school librarians can include short tutorials for teachers and student peers. For example, students may be struggling to access certain useful apps or tools on the iPad or various Android devices. A group of students create a one- or two-minute video tutorial demonstrating how to perform a wide variety of fixes. These videos are then accessible across the school community and updated quickly as technology changes. The closer a school moves toward Bring Your Own Device, the more important such quickie tutorials and demonstrations become.

EXPANDING THE INFLUENCE OF THE TWENTY-FIRST CENTURY SCHOOL LIBRARY

The scenarios discussed above represent just a fraction of the potential we envision for virtual collaboration. The flexibility that is inherent in online learning enables many approaches to integration of OLUs in a K–12 library program. More than at any other time in our profession's history, school librarians are increasingly comfortable with a broad range of technological tools. Therefore, the foundation for school librarians as online course designers and instructors is solid. The twenty-first century school library is poised to expand its influence beyond the physical brick-and-mortar space into a virtual learning environment where information literacy is an ever-present component. We are by no means suggesting that school librarians use an online platform to replace face-to-face collaborative efforts. Instead, we encourage you, the school librarian, to view designing and delivering OLUs as an opportunity to expand your sphere of influence and impact. When faced with barriers of limited time and resources, consider the technological and pedagogical expertise you possess. Use online learning to expand the collaborative approach in your school community by virtually enhancing student learning anytime, anywhere.

RESOURCES TO EXPLORE

School librarians who are interested in virtual collaboration and would like to know more have many resources at their disposal. Free and open-source online tools available include (but are not limited to):

- Diigo
- Edmodo
- Google Sites
- Jing
- Learnist
- MentorMob
- PBWorks
- Pearltrees
- Screencast-o-matic
- Screenshare
- Scribd
- Thinglink

- Twiddla
- Voicethread
- Voki

One of the most prominent and highly regarded organizations at the forefront of the K–12 online learning movement, iNACOL, has multiple resources for those interested in designing online courses. Its website, www.inacol.org, contains numerous links, brochures, frameworks, advocacy materials, and guides for both members and nonmembers. We also recommend *Teaching Online: A Practical Guide* by Susan Ko and Steve Rossen (ISBN: 978-0415997263) and *Designing Online Learning: A Primer for Librarians* edited by Sue W. Alman, Christinger Tomer, and Margaret L. Lincoln (ISBN: 978-1598846379).

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"I believe we're groping toward a wholly different model of education—and making significant progress."

Project Based Learning

A Bridge Just Far Enough

THOM MARKHAM

Imagine a day in the distant future when a student comes home from school (or the community learning center), and the parent asks, "What did you do at school today?" And the child answers, "The teacher tried something new today. She called it a "lecture". It's something they used to do in school at the beginning of the century."

As the world moves forward, so must education—and it is quite possible that eventually lecture and direct instruction will be long forgotten remnants of a prior age. But we're not there yet. Despite the arrival of the digital world, and the fact that nearly 11 percent of the 21st century is gone, educators are still not certain how to organize instruction for young people.

I know that many people would resist the idea that we don't know what we're doing. There's no shortage of curriculum writers, standards experts, and instructional specialists. But as teacher librarians know better than anyone, methods that worked a decade ago now suffer from obsolescence.

I believe we're groping toward a wholly different model of education—and making significant progress. That progress can be seen in the exploding interest in project based learning (PBL). As teacher-librarians move increasingly into new roles as information specialists and learning commons organizers, I believe it will be helpful to understand the best practices and methods for PBL that have emerged over the last five years. These practices can be shared with teaching staffs and become the basis for professional development.

FROM PROJECTS TO PROJECT BASED LEARNING

Understanding PBL begins with knowing that PBL and 'doing projects' are not synonymous. Many teachers still equate PBL with 'hands on' learning or 'activities,' but PBL is a far more evolved method of instruction. In industrial education, knowing and doing were separate domains. Inculcating young minds with more information was the clear priority; applying knowledge was a distant second. This meant that projects were designed as an antidote to lecture or a respite from seat time. Most often, teachers planned projects at the end of the semester as a reward or culminating opportunity for students to finally demonstrate what they had learned during the year. In addition, most projects emphasized activities over assessment, putting projects at odds with the era of accountability ushered in by NCLB in 2000.

PBL overcomes these challenges in two ways. First, PBL integrates knowing and doing. Students learn knowledge and elements of the core curriculum, but also apply what they know to solve authentic problems and produce results that matter. As in the real world, it's often difficult to distinguish between acquiring information and using it. Students focus on a problem or challenge, work in teams to find a solution to the problem, and often exhibit their work to an adult audience at the end of the project. Increasingly, PBL students take advantage of digital tools to produce high quality, collaborative products.

Second, well-executed PBL emphasizes a carefully planned assessment that incorporates formative feedback, detailed

rubrics, and multiple evaluations of content and skills. This system highlights one great advantage of PBL in today's teaching environment: It offers teachers the opportunity to teach, observe, and measure the growth of real world skills. To succeed at PBL, students must practice and demonstrate the exact skills necessary in life, the workplace, and in any environment requiring self-starting, self managing, and skillful individuals. In fact, PBL can be defined as *an extended learning process that uses inquiry and challenge to stimulate the growth and mastery of skills*.

Finally, PBL refocuses education on the student, not the curriculum—a shift mandated by the global world, which rewards intangible assets such as drive, passion, creativity, empathy, and resiliency. These cannot be taught out of a textbook, but must be activated through experience. PBL can offer that kind of necessary experience to young people.

HOW PBL WORKS

The advantages of PBL sound good to educators who deal with too many heads on desks in today's classrooms. PBL offers an extended and active learning challenge that students find satisfying and engaging. In plain terms, PBL gives students a reason to learn. But to get results and assure quality learning requires a careful process and specific tools. The process and the tools can be employed by a single teacher in a classroom; however, PBL is inherently a collaborative process, both for students and teachers. The most powerful projects result from interdisciplinary school teams that meld content from two or more subjects, along with digital tools and resources, into a cohesive investigation into an important topic or concept.

A number of resources are available to describe the PBL process.[1] Slight variations exist among practitioners, but there is general agreement on why and how PBL works. In my own work, I use a project design model that incorporates student voice, coaching, and clear outcomes. Teachers move through a design process for projects based on specific principles backed by specific methods and practices. Taken as a whole, the design principles allow teachers to conceive and implement a coherent problem-solving process that brings out the best work in students and addresses the key standards in the curriculum. These seven principles are:

Identify the Challenge. At the core of PBL lies a challenge that must be meaningful and doable. This means that projects start with a big idea, an authentic issue, or a vital concept. The challenge must then be carefully defined, so that it aligns with the objectives of the course.

Craft the Driving Question. A good PBL teacher drives a project through intention. What is the deep understanding that teachers want students to demonstrate at the end of the project? There is a proven process for turning a challenge into a driving question that captures the intent and depth of the project.

Build the Assessment. The mantra of PBL is *create and deliver*. Students produce a result at the end of the project. The result is assessed against specific criteria established at the beginning of the project and defined in an assessment plan. The key to strong projects is to focus equal attention on content, skills, and personal strengths or habits of mind.

Plan Backwards. PBL is an extended learning experience that relies on process as well as the end products. As the instructional leader, a teacher must coach students through the process. Teaching the content of the project is relatively straightforward. But coaching students in skills such as collaboration and presentation, or helping them reflect on their empathic attitudes toward teammates, is new territory.

Enroll and Engage. A field-tested set of best practices helps teachers engage students in the project from opening day. Starting right is the key to success at the end. This includes incorporating student voice and choice into the project, organizing a project schedule, and having clear benchmarks.

Facilitate the Teams. High-performance PBL relies on teams that demonstrate commitment, purpose, and results, similar to the organizational goals of high performing industries. Coaching teams to better performance is central to successful projects. To do this, I believe education must let go of the notion of "groups" and move to the language of high performance teams.

Keep the End in Mind. The PBL process is a non-linear problem solving process that can be chaotic or divergent. A good PBL teacher knows how to manage the work flow throughout the project and prepare students to present their best work at the end. Many projects fail, because teach-

ers focus all their efforts on preparing for the content assessment, while overlooking the practice and thinking time necessary for the PBL process.

Though projects may end with a public presentation or work that is published and shared, the project is not yet complete. PBL is an ongoing, reflective process that should lead to further questions and investigation. After project activities end, students and teachers debrief the project, reflect on accomplishments, and evaluate the project against criteria. Was the Driving Question answered? Was the investigation sufficient? Were skills mastered? The project debrief improves future projects, as well as teaching students the cycle of quality improvement they will likely encounter in future jobs.

Finally, teaching teams need to evaluate the impact of PBL over time. Using protocols and careful analysis during the school year, teachers should periodically review projects for effectiveness. Are students showing progress on skills? Do projects incorporate critical content necessary for state tests? Most important, are students demonstrating changes in behavior and attitudes toward learning? PBL promises more engaging school work and a shift in the culture of learning in a school—a shift that should be visible in the form of more satisfied, higher performing students.

THE FUTURE OF PBL

I subtitled this article "A Bridge Just Far Enough" for a reason: PBL is still a work in progress and may not be the final word on 21st century education. Although PBL works quite nicely in school environments designed to further student-centered, inquiry-based education, most schools do not practice PBL. This is particularly true of high performing high schools in the U.S., which continue to rely on AP numbers, test scores, four-year college admissions rates, and similar metrics used in the 1990s to measure excellence. As a recent report published by the OECD on world class educational practices indicates, these metrics are insufficient for producing the high level knowledge workers demanded in today's world.[2]

But moving beyond old metrics requires a new framework for teaching and learning. Nearly all of us, especially many readers of this journal, can appreciate that education is emerging as a knowledge-building journey informed by collaboration and a rich digital environment. Inevitably, power has shifted to the learner and peer networks. But I don't believe that labeling ourselves as "constructivists," endorsing "authentic" education, or citing technology is enough. Education in the future will be a blend of knowledge transmission, self-focused study, skills and attitudes mastery, and accountability. To find the right mix will take time, vision, and hard work.

I believe teacher-librarians can make an important contribution to this task in a number of ways. First, I definitely urge teacher-librarians to encourage more PBL at their schools and to support teachers in learning about and using best practices in PBL. PBL shows us a way forward and is quite effective with students.

But second, teacher librarians should be familiar with the gaps in PBL. These are the gaps that need to be filled through training, support, and materials. Interestingly, however, these gaps represent the same challenges that educators face as they design the next version of education. The better teachers can meet these challenges, the more quickly PBL can evolve further and serve as a template for the future. Here are the gaps as I see them:

TEACHER AS COACH

Moving from the "sage on the stage" to the "guide on the side" is a common refrain. But there has been no sustained effort to train teachers in the protocols and methods of successful coaching, as practiced in industry and life management professions. Instructional coaches show teachers how to deliver curriculum, but coaching in a student-centered environment requires a blend of openness, self awareness, communication skills, and knowledge of the human performance field. Teachers and specialists need ex-

plicit help in how to organize and sustain a student-centered classroom and time to reflect on their connections and attitudes about students.

PROBLEM SOLVING AND CRITICAL THINKING

Critical thinking has become a kind of pop refrain. We don't know what it is, but we know we need more of it. I don't have exact answers here, but I do know that a well-constructed PBL project revolves around a problem that can't be solved without critical thinking and analysis. Critical thinking should be inherent in the educational process, not a separate skill isolated from the content of the course. Moreover, critical thinking is not entirely brain-based. It has an emotional component that must be recognized. If teachers are interested in this area, they should be directed to the work of Roland Case in Canada.[3]

SEL AND PBL

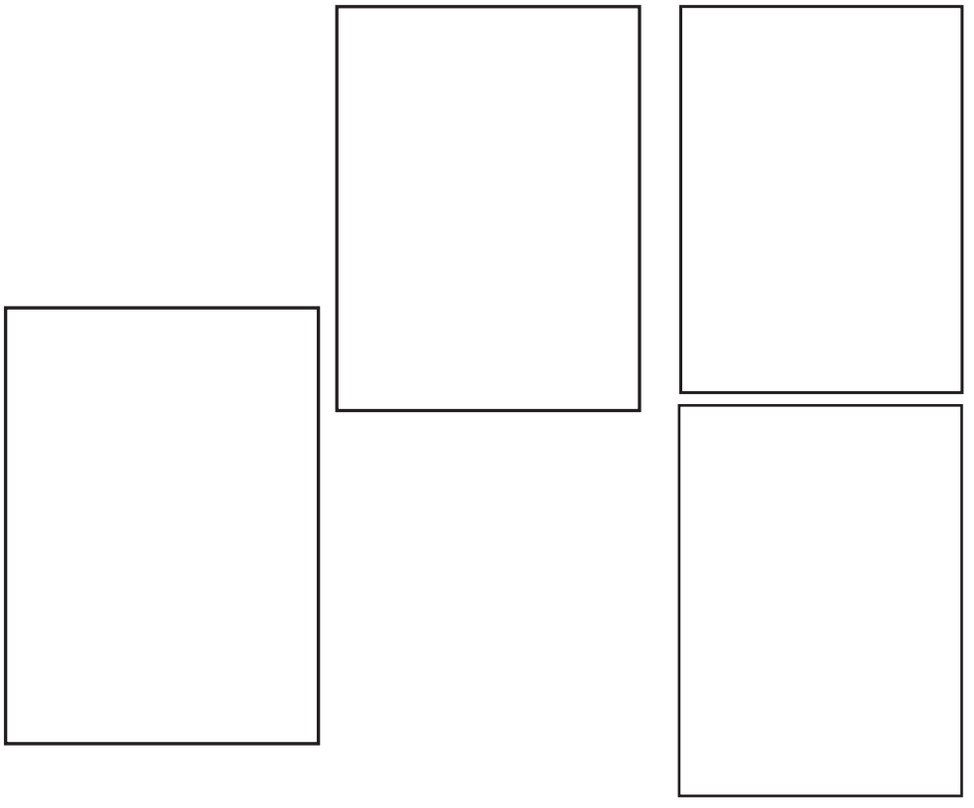
At a time when flexibility, resiliency, and "drive" are recognized as core strengths, it is imperative that social-emotional learning (SEL) be merged with mainstream education. Massive research on youth in the past 20 years confirms that caring relationships, a sense of mastery, and meaningful work make for successful adults. Fortunately, PBL relies on these exact factors to be successful. A first step towards integrating SEL into learning is to redefine the overused word " rigor." Rigor now measures the difficulty of the assigned work; in the future, rigor will be a measure of personal accomplishment and growth.

INCORPORATING PBL INTO TECHNOLOGY

When technology came of age in the 1990s, PBL received a huge boost. Inherently, technology is project based. But the movement had its drawbacks. For one, technology projects were not informed by PBL methods. Witness the number of schools backed by tech firms that have failed. If you are organizing and supporting technology projects at your school, import as many PBL methods as you can. For example, all projects benefit from a driving question to focus the inquiry.

DEFINING AN "EDUCATED CITIZEN"

PBL is a terrific method for teaching problem solving, core concepts, skills, and creative application of knowledge. Also, indications are that students who learn through PBL perform well on standardized tests. But PBL is not designed to convey information. For this reason, teachers may resist PBL, particularly in those disciplines, such as science or history, which rely on conventions, vocabulary, or a deep body of factual information. Beyond the reality



that these facts are often the basis for testing, there is a broader issue: How do we integrate problem solving and acquisition of the central facts of life into a seamless whole? To ask this question in a simpler form: What do you need to *know* in order to *do*? As education moves forward, the model of the "educated citizen" will need to be revised.

FRAMING COLLABORATIVE INTELLIGENCE

The fundamental issue facing educators and everyone else is this: Education is turning into a collective effort. The expansion of networks and social media means that the group mind is evolving, and we will soon find ourselves trying to distinguish what an individual knows versus what the group knows. To see this in action, visit the multi-level, multi-player gaming sites. This movement will dwarf industrial axioms such as "Keep your eyes on your own paper." For PBL, this means that teachers must be quite proficient at facilitating teamwork and channeling group problem solving toward excellence and high performance. If you're looking to help teachers do better projects, you will find this to be their most difficult task.

Very likely, the challenge of moving to a collaborative form of schooling and learning will involve all of us—from teachers to parents to students. In my own practice, I have begun to recommend the use of the "breakthrough" column in assessment rubrics for projects. This is a blank section of the rubric that encourages students to produce work that goes beyond the "A" or mastery level. The blank space encourages today's students to fill in the canvas with their own thoughts, ideas, and experiences—exactly what is needed to take us across the bridge and into the future.

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1. See material and references from the Buck Institute for Education at www.bie.org.

2. OECD (2010). *Lessons from PISA for the United States*. OECD Publishing. Retrieved from *http://dx.doi.org/10.1787/9789264096660-en*.

3. Excellent materials and ideas on critical thinking can be retrieved from The Critical Thinking Consortium at http://www.tc2.ca/wp/profresources/criticaldiscussions/.

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When we put our heads together with classroom teachers, we want one plus one to equal three!

The Big Think: Reflecting, Reacting, and Realizing Improved Learning

CAROL KOECHLIN AND SANDI ZWAAN

The game has ended, and the scores have been tallied. What were the results? Are we satisfied? Would we have liked something better?

What do winning teams do when they are not satisfied with their performances? They pick themselves up, rewind the tapes, review, and observe. The coaches and the players analyze their successes and look for the possible causes of their less than stellar plays. Even winning teams review their play and begin to plan the strategy for the next game, building on the positives and attacking the weaknesses with renewed energy and commitment.

If as classroom teachers, teacher-librarians, and learners we do not take a similar action, if we continue using the same strategies and processes we have always used then we can expect only a repetition of the same outcomes. So how do we accomplish the 'post game' review? We do not have the luxury of 'days off between games'. In education there is a need for a continual stream of assessment of the learning; not just the knowledge and understanding of content, but also the effectiveness of the strategies and processes used to achieve that learning. What we need is a streamlined, easy to apply approach that both teachers and learners can use effectively and efficiently as our units draw to a close and we begin to plan for the next activity. To get better as learners we must apply ongoing metacognitive assessment strategies that appraise what we know and how we learned it and inspire us to take action.

Many of our readers are familiar with The Think Models (Loertscher, Koechlin, & Zwaan, 2007) we created a few years ago to replace the common low-level bird units that plagued school libraries. The models offer a better way to 'play the game' because they provide stages of high think inquiry, information processing, and opportunity to build on the knowledge and expertise of others. During the process learners take on more and more responsibility for their own learning as they utilize the best resources, technologies and strategies to their advantage. The classroom teacher and teacher-librarian's role is to ignite interest, guide and coach learners, and provide ongoing metacognitive assessment throughout the learning experience thus building essential learning to learn skills. To ensure that learners are aware of the content and skills they have gained in the unit, each of the Think Models also wraps up the experience with a Big Think so everyone is cognizant of what they have learned and how they learned it.

Over the last couple of years, as we have coached teacher-librarians and teachers through these models and the design of High Think inquiry, we observed a need to expand our work on the Big Think culmination activity. This deliberate metacognative experience has even more value than we originally thought. It has the potential to change everything!

Why do we give students research projects? What do the students gain? How do we know they have benefited? How do students know if they have gained anything? What do teachers learn from these assignments? Do we have evidence that our inquiry assignments contribute to school improvement? Are we keeping pace with the needs of learners today?

When we asked these questions in workshops and with individual students we were disappointed with the answers we received, consequently we researched, rethought, and expanded our concept of ending formal units of study and research assignments in a big think. The outcome is our book called *The Big Think: 9 metacognitive strategies that make the unit end just the beginning of learning* (Loertscher, Koechlin, & Zwaan, 2009), which develops nine metagcognative strategies that can be used with any ability and grade level and any subject to ensure that everyone—students and teachers—not only gain from the main experience but also are aware of what they now know, how they learned it, and

how they can improve the learning. Like athletic coaches, we want our team to get better and better every "game" we play in our drive toward excellence.

We propose an idea so simple yet so rewarding it really is worth the investment. By engaging in the Big Think, as teacher-librarians we can triple the benefits of our efforts. With these three important 'returns' on our investment we can influence teaching and learning on a school wide basis.

When we put our heads together with classroom teachers, we want one plus one to equal three! Our focus as we watch the rerun of the learning experience as coaches and learners together will be on three main things that happened during our game together: analysis of learning how to learn, how we taught them to learn with our team players, and how our game strategy affects school improvement.

RETURN #1: LEARNING TO LEARN WITH OUR TEAM PLAYERS

Instead of just setting aside individual learning at the traditional end of the unit and moving on to the next topic, the Big Think enables learners to build on each other's expertise and pool their collective knowledge to do some deep thinking and working with this body of new ideas and information. This collaborative knowledge building does not mean that ideas are distilled or meshed together to produce a consensus product. Instead it means that individual knowledge is considered, analyzed, and worked by groups to build a new richer understanding that can only occur once they can see the big picture. When learners are provided this opportunity, content knowledge is broadened and deepened, fresh perspective is gained, and lasting understanding takes hold.

Collaborative knowledge building is a desired outcome of working, playing, and learning today but it does not just happen. Educators need to develop the knowledge and skills that are required to work in participatory and collaborative environments. We must then design opportunities for learners to hone the skills of collective cognition and to work effectively in these environments. Since the Big Think strategies give learners practice with these skills consequently they become better and better at collaborative knowledge building and learning to learn.

In addition to a solid return on content acquired, the multi-layered Big Think is designed to help learners reflect on the processes used during the research process or unit of study and consider what worked, what did not, and why. This information is again pooled and examined for patterns and inconsistencies. Together strategies are developed to tackle problems and build on successes. Learners develop a new found efficacy and a positive mindset. They begin to see the importance of personal effort. They expect to get better because they have a plan (see Figure 1).

Sample Questions During a Content Big Think Activity

So What?

- What are the important ideas we explored?
- What does this tell us about the topic?
- What does this mean?
- What new understandings emerge?

What Next?

- What new questions do we have?
- How can we use what we know?
- What else do we want to explore?

Sample Questions During a Process Big Think Activity (21st century skills)

- *So What?*
- What strategies did we use to learn?
- How did these strategies work for us?
- Which worked well or did not work well and for whom?

What Next?

- How can we use what we learned to do better next time?
- What will we do next?
- Where else can we apply what we now know and can do?

RETURN #2 TEACHING FOR LEARNING: WE REFLECT AS COACHES

Similarly, the adult teacher coaches need to conduct a Big Think at the end of the unit so

The Big Think activity consists of two elements that add up to increased knowledge building and real growth.

they know how to tweak their game plan for next time. Everyone involved in the collaborative venture—classroom teachers, teacher-librarians, teacher technologists, and other specialists need to put their heads together and debrief the effectiveness of the learning experience. They need to examine all the evidence available: planning notes, assessment data, student testimonials, reflections, visual documentation, and student products. They need to ask revealing and probing questions.

Sample Questions During a Coach's Content and Process Big Think Activity

So What?

- What did students learn? How did they learn it? Why is this important?
- What went well? What did not work? Why?
- Were all learners engaged?
- How well did differentiation strategies work?
- Does the assessment data give us a clear picture of student learning?
- Did the timing and chunking of the unit work?
- What learning environment problems did we encounter e.g. space, technologies, resources?
- How was understanding enhanced by the Big think?
- What process problems and successes were uncovered by the learners during their Big Think?

What Next?

- What new questions do we have?
- How can we use what we now know to do better next time?
- What actions should we take?

RETURN #3 SCHOOL IMPROVEMENT

Finally there is the opportunity to triple your investment. Reflective, informed learning, and teaching equals continuous growth—the foundation of sustained school improvement.

Teacher-librarians need to capture data from Big Think activities and include this information in data collection of school-wide achievement. It is an effective way to document value added by school library interventions. When we can demonstrate that two heads are better than one, when classroom teachers invest in working with teacher-librarians, the rewards are irresistible.

Too often learners are left out of the assessment piece. However, when students feel invested, they just might make greater strides toward excellence. When teachers are empowered with a process for improving their teaching and when they are supported and encouraged to adopt a strategic approach to teaching with learning in mind, then confidence and passion are restored. The Big Think creates this participatory culture where everyone is moving along toward a winning season; all are focused and confident that their goals are achievable.

We are at a turning point in education. Finances are limited, timetables and curriculum are overstuffed, and students and teachers are under pressure to perform. We have to achieve more in the same time with fewer resources. We must make every minute count. It really is the time to work smarter and to focus our efforts on strategies that ensure success and progress.

The 21st Century Skills movement has put further demands on education that must be addressed if we are to keep pace with global forces driving the need for a more elastic curriculum that will truly prepare learners for their world.

In our enthusiasm to prepare learners with evolving skills and literacies and equip them for learning in a shifting landscape, we must be careful not to short-change content learning. It is not a matter of either or, but a thoughtful approach to the design of learning that carefully matches needed skills with desired content targets. In a recent article "21st Century Skills: The Challenges Ahead" in *Education Leadership*, authors Andrew Rotherham and Daniel Willingham (2009) state that, "the issue is how to meet the challenges of delivering content and skills in a rich way that genuinely improves outcomes for students" (p. 16).

The Think Models are the perfect teaching tools to assist educators in skillfully aligning 21st Century Skills with desired content in any discipline. The culminating Big Think is the final review or assessment piece that deepens and broadens understanding and develops collective knowledge as well as informing teachers and learners just where they are in terms of mastering skills and content. Teacher-librarians working with classroom teachers and other specialists can lead the way in ensuring both content and skills are valued in a 21st Century curriculum. The Big Think is consequently a vehicle for and a thermometer of whole school improvement. Process drives content and cannot be separated if real, long lasting, learning is to occur.

SO JUST WHAT IS A BIG THINK?

We propose that at the end of every learning experience educators invest a few minutes in a metacognitive exercise that will make learners more mindful of what they have gained in the way of knowledge, skills, and learning strategies. For the purpose of this article we will concentrate on the types of learning activities teacher-librarians most often are engaged in with learners: research and inquiry lessons and units based on content learning, as well as literature-based studies.

At the end of a typical unit, learners usually share their product or present their findings, get a grade, and move on to the next unit of study. Just when our students have enough knowledge about a topic to actually discuss it with some expertise, we slam the door shut on that topic and hope the individual learning will be retained. Occasionally we see evidence of individual self reflection but rarely collective cognition and synthesis of what we now know as a group.

Metacognition is basically the ability to reflect on an experience and reason about what worked and what did not, and why, and then strategize for improvement. Thus metacognition is critical to learning how to learn. Without an opportunity to think about learning, students rarely unpack the importance of new knowledge gained or make connections to bigger ideas and

concepts. They certainly will not grow as learners without opportunity to analyze their strengths and weaknesses and set goals for improvement.

When a unit of study is completed learners are then ready to play the game of learning. Each individual has something special to bring to the field. We design a Big Think experience to capitalize on learning from the main event and ask learners to do some deep thinking about the content in order to build personal and collective

The Big Think Changes Everything
Nine Metacognitive Strategies that Make the Unit End Just the Beginning of Learning

STRATEGY **Teachers and learners think about content and process**	**WHAT?** **The information to knowledge journey**	**WHY?** **Knowledge building and real growth**	**HOW?** **Make connections as a group between what I know and what we discovered. Develop what we now know.**
Active Discussion	Small and large group face to face and/or virtual discussion ignited by a question or scenario	To develop, clarify, interpret, empathize, defend, understand	Informal discussion, formal panel, debate, press conference, blog, wiki, interactive video conferencing, etc.
Create New Questions	Collaborative reflection, analysis, discovery, exploration of opinions and points of view directed by student developed questions	To create a culture of inquiry; to ensure personal relevance, perspective, purpose and direction for thinking, springboards for further actions, research, critical analysis	Use question building assists; question storming, Bloom's Taxonomy, De Bono's Thinking Hats, question matrix, etc.
Higher Order Thinking	Collaborative critical and creative thinking	To raise level of understanding, solve, infer, predict, evaluate, argue, innovate	Stretching, comparing, speculating, predicting, discovering effect and impact, analyzing, synthesizing, evaluating
Interact with an Expert	Confirm, amend, or enhance understandings, explore ideas and interpretations	To exchange ideas, glean new knowledge, gain perspective, add relevance, make real world connections	Interview, consultation, face to face and/or by videoconference, blog, Twitter, Skype, email; Real or virtual field trip, tour
New Problem or Challenge	Stimulate creative collaboration by presenting a new problem or challenge that draws on collective knowledge and expertise	Transfer and apply knowledge, solve problems, develop fluency and flexibility, simulate real life situations, make learning relevant	Introduce an element shift or what if scenario, problems possibilities jigsaw, concept jigsaw, teach or coach
Thoughtful Writing	Construct and articulate deep understanding through a process of collaborative writing	Consider alternate ideas and perspectives, construct meaning, write collaboratively, stimulate curiosity and interdependent thinking	Concept writing, quick write, chart, letter, wish list, zine, wikis and other Web 2.0 tools
Construct Visuals	Active building of knowledge through visual representations	To clarify concepts, build knowledge, convey meaning on sight, accommodate visual learners, enable those with language or learning deficiencies	Charts, graphs, flow charts, timelines, webs, illustrations, cartoons, comic strips, concept mapping software, and other technology applications
ReCreate	Transform information and ideas to a new medium	To present information and ideas via a new medium, build understanding of concepts and events, tap into emotional intelligence, develop empathy	Create a skit, dramatic representation, collage, web, video, game, podcast, and other creative technology applications
Sandbox	Play with ideas and information to create or invent something new	Brain based learning, utilizing all senses, stimulates curiosity, wonder and discovery, ownership and freedom of choice, ignite renewed passion for learning	Creative technology applications, music, drama, visual arts, video, tangible manipulatives

Table 1. Loertscher, D. V., Koechlin, C., & Zwaan, S. *The Big Think: 9 Metacognative Strategies That Make the Unit End Just the Beginning of Learning.*

knowledge. We know from brain-based research that long term memory hinges on making connections and processing information in many different ways. The Big Think strategies apply many principles of brain-based learning and thus contribute to real long lasting learning.

Another foundational goal of the Big Think is for learners to improve skills, develop habits of mind, and gain responsibilities conducive to learning how to learn. Carol Dweck (2006) refers to this needed ability as a growth mindset, in her book the *New Psychology of Success*. Dweck tells us that given a Growth Mindset, necessary resources, opportunity, and the transformative power of effort, we can in fact reach our full potential. We can study and apply the mindset psychology in our efforts to improve outcomes for learners and help them become more self reliant. With greater student and staff involvement in assessment we can demonstrate the value of effort. When we work as teams we can provide opportunities to make the learning experiences in our schools exemplary. We can assist in establishing the habit of personal and professional growth, reflective practice, personal responsibility, and confidence.

Implementing Big Think

During the Big Think it is critical for teachers to still be involved and provide needed guidance and feedback if learners are to get better. The nine metacognative strategies provide learners practice with a variety of learning how to learn skills, but as Rotherham and Willingham (2009) also point out in their article, "Experience means only that you use a skill; practice means that you try to improve by noticing what you are doing wrong and formulating strategies to do better. Practice also requires feedback, usually from someone more skilled than you are" (p. 18). Metacognition and useful feedback becomes part of the culture or game plan of learning in our schools and everyone, teachers and students, get better and better.

We have developed these nine basic strategies to provide the best potential for engagement and high think. The Big Think activities do not need to be time consuming. They can take anywhere from five minutes to a class period or longer in the event that more involved What Next activities are sparked. The point is that the Big Think needs to be designed as part of the lesson or unit because it is just too important to neglect. (Table 1 provides an overview of each strategy).

BACK TO THE GAME PLAN

We call on teacher-librarians to coach their staff and students on the many benefits of Big Think strategies. At the end of a unit keep the thinking flowing and strive for deeper understandings, facilitate transformations of learning, and spark new student innovations and creations. Invest in the design of Big Think activities to help learners become more mindful of what they are learning, how they are learning it, and why; help teachers become reflective practitioners; and contribute to whole school improvement and excellence.

This is the winning formula!

- Collaborate with classroom teachers and other specialists to design and teach research and inquiry units using the Think Models. Culminate with a Big Think of content and processes to further elevate library projects so that the product or presentation is no longer the end; it is just the beginning of real learning!
- Conduct a Big Think with teaching partners.
- Share evidence with the entire school community.
- Reflect, react, and realize improved learning.

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Carol Koechlin and **Sandi Zwaan** have worked as classroom teachers, teacher-librarians, educational consultants, staff development leaders, and instructors for Educational Librarianship courses for York University and University of Toronto. In their quest to provide teachers with strategies to make learning opportunities more meaningful, more reflective, and more successful, they have led staff development sessions for teachers in both Canada and the United States. They continue to contribute to the field of information literacy and school librarianship by coauthoring a number of books and articles for professional journals. Their work has been recognized both nationally and internationally and translated into French, German, Italian, and Chinese. They may be contacted at *koechlin@sympatico.ca* and *sandi.zwaan@sympatico.ca*.

Finland, Collaboration, and Co-teaching

David V. Loertscher and Carol Koechlin

For a decade it seems, Finland's schools have been touted as a model of the best schools in the world and a model that we in the United States should adopt. But, the news we hear about the Finnish system has never been quite satisfying and certainly unsatisfying to teacher librarians because most Finnish public schools don't have libraries or librarians. Recently, a blog post appeared that gives a significant clue about what really goes on.

Tom Walker, an experienced U.S. teacher moved to Finland and got a teaching position. What he discovered instantly was that he was not only teaching many fewer hours per week but co-taught often with various other teachers and specialists in the school. You can read his blog post at: **http://tinyurl.com/m23tkqw**

Many officials in Finland don't care to have this practice known since it seems a much too expensive model to adopt in the U.S.

The Baber Research Project I wrote for the December issue of *Teacher Librarian* makes even more sense when compared to what goes on in a typical Finnish classroom when a classroom teacher and a specialist or even another classroom teacher teach together. And it makes a lot of sense. In the Baber research, I discovered that when a classroom teacher teaches alone, a certain success rate can be expected but when two adults combine their expertise, the percent of students achieving adult expectations skyrockets. From this research, it becomes very clear that the best use of both the classroom teacher's and the teacher librarian's time is to teach together rather than separately. But, it takes some creative juggling to accomplish.

Perhaps a different approach to thinking about this concept might stimulate more conversation in the school. Both the classroom teacher and the teacher librarian have curriculums that they wish to teach across the school year. When illustrated in parallel columns, the result might look like this:

Classroom Teacher's Curriculum	Teacher Librarian's Curriculum
Unit 1	Topic A
Unit 2	Topic B
Unit 3	Topic C
Unit 4	Topic D
Unit 5	Topic E
...	...

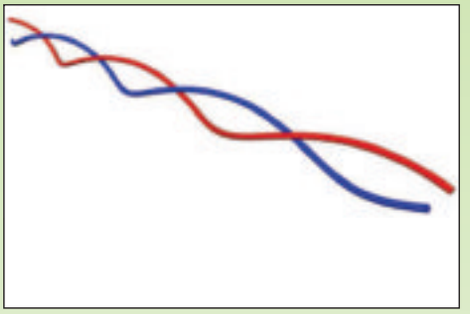
If we picture the two curriculums this way, the very listing itself indicates that each adult has a separate curriculum to teach and by its very nature suggests that each adult begins their work at the beginning of the school year and ends with some kind of total assessment for which each is accountable. The visual suggests: "This is your task - this is mine; you do that - I have to do this; this is my territory - that's yours; my kingdom - your kingdom..."

Such a pattern continues to isolate teacher librarians from the classroom. Some give up on the idea of collaborating, because there is a wall between the two learning environments. However, a closer look reveals that there is much overlap between the two camps. Some teacher librarians try to do parallel work by taking notice of what is going on in the classroom and then taking those themes when library instruction happens.

Let's examine a different picture that would suggest a very different pattern.

In the picture below, there is a twisted pair where two wires intersect but are also separate. It is something like a DNA double helix and shows the two curriculums in our case intersecting even though they are separate wires, treads, or curriculums. It is the natural intersections that matter to teacher librarians.

Examples abound. The classroom teacher has a unit on animals that invites exploration. The teacher librarian wants to teach better research techniques. The classroom teacher wants learners to prepare various positions on a controversial issue. The teacher librarians wants to teach what quality information is.



Teacher librarians and professional organizations have discovered such intersections and done crosswalks of standards that correlate one curriculum with another. So, this is nothing new, but in our observation, teacher librarians often address the intersections as suggestions for parallel teaching rather than co-teaching. Our point, based on the Baber research, is that the intersection of curriculum is the signal to co-teach. If one takes a look at the curriculums of various specialists in the school, such as tech integration specialists or gifted and talented, additional wires twist together providing even more intersections and co-teaching possibilities.

The challenge in various school cultures is how to capture those intersecting opportunities to duplicate the model in Finland. Some months ago, I was very impressed with a visit to Dundalk High School in Baltimore MD where Asst. Principal David Stovenour had developed permanent co-teaching teams, usually a language arts teacher or math teacher with a specialist such as a special ed teacher or ESL teacher. With thirty languages spoken in the school and few to none passing state tests, a reorganization of the school provided an opportunity to hire pairs of teachers who were comfortable co-teaching together all year. These teachers could also

take advantage of a collaborative librarian. Such teaming brought major progress to the academic subjects, test scores, and a change of culture.

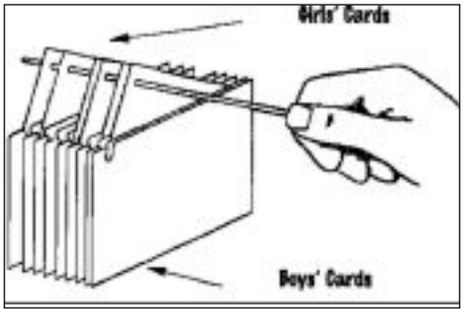
While we might cite other research supporting the notion of co-teaching and the integration of expertise, the results of a twisted pair of integrating information and technology skills into subject disciplines should speak for itself in your school with your teachers, and with other local specialists.

One of the major pieces of a library learning commons program would be what we termed an experimental learning center. This is a physical space and a virtual space dedicated to experimentation in the school where ideas are tested by both adults and learners before they go viral throughout the school. Everyone expects some ideas to flourish; others to fail; the latter chalked up to an essential element of making progress.

Perhaps one more visual might stimulate even more conversation. It is one from the early days of computing and automation and was an ingenious invention for its time. It was called punched card indexing. Its purpose was to use punched cards in a way to link research articles from various magazines by subject. The question is and was: How do we link the twisted pairs of curriculum, as illustrated above, so we can discover when and on what subjects to co-teach?

Using a large cardstock card, the teacher could write on the card the title and a sentence description of a unit such as animals or famous persons or rocks and minerals. On all four sides of the card were punched holes where the teacher could list skills the students would need to help with that unit: For example, wide reading, finding information, citing sources, multimedia production, etc. On the animal card, the teacher might want the students to be able to find information and do wide reading. She would use a paper punch to punch out a slot on the card on every skill she DID NOT WANT, leaving the enclosed hole in the two she did want. You can see the example above.

The librarian would have a similar card with all the skills listed around the card and no slots punched to the outside. Then, to match up the skill: say wide reading on the librarian's card with those on the various teacher card, she would stick a long wire through the deck as pictured below and would lift out all the units in the school where teachers wanted wide reading to happen. This is pictured below.



This was an ingenious invention before we had computers to easily sort through a stack of idea cards so the librarian knew who to approach for coteaching a unit with a wide reading component.

Today, we can do the same tasks easily on a spreadsheet as we create crosswalks between the teacher's curricular topics and the skills we as teacher librarians want to embed in an appropriate topic at an opportune time. It requires a bit more time but the outcome can and should be infinitely better than trying to teach both curriculums separately.

As the various specialists in the school team together to make a difference across the curriculum, everyone needs to recognize that a collaborative stance, like that demonstrated in Finnish classrooms, is worth a try.

What would it take in your school to discover if a different approach might produce results?

How can you test such an idea in your own school or district? It is a challenge worth leading.

Part 4: Showcase

The editors of *Teacher Librarian* constantly search our professionals who have exemplary practices growing and developing in their learning commons, both in the physical and in the virtual worlds of their program. Reading through these articles gives us all a sense of celebration, of creativity, risk-taking, and what excellence really looks like. And, we realize that set in a point of time, each article has an additional story to tell after the date of printing. Perhaps the reader would like to contact these authors for updates of their stories and expansion of their own professional learning networks.

three heads are better than one: the reading coach, the classroom teacher, and the teacher-librarian

christopher lamb, winnie porter, and carol lopez

EDITOR'S NOTE: THE MAJOR DISCOVERY IN THIS ACCOUNT IS THAT THE SPECIALIST AND TEACHER-LIBRARIAN COLLABORATE WITH THE CLASSROOM TEACHER ON A LEARNING UNIT AND THEY DO SO TOGETHER. THIS IS NOT JUST PASSIVE OR FROM SOMEWHERE IN THE BACKGROUND, BUT ACTIVE COLLABORATION. THEIR WORK WITH ESL LEARNERS IS REMARKABLE AND DEMONSTRATES WHAT HAPPENS WHEN ESL YOUNGSTERS SUDDENLY FIND MEANING IN WHAT IS BEING ASKED OF THEM.

Winnie Porter is the teacher-librarian, Christopher Lamb is the Reading First coach, and Carol Lopez is the teacher in this collaboration exercise. Carol has been the 3rd grade Spanish bilingual teacher for 20 years and was excited to introduce the use of technology in her class. Christopher has worked with Carol for 3 years in his capacity as a coach; they have a good working relationship. This was Winnie's first year working as a teacher-librarian. Rowena Tong, the technology teacher, was part of the team and provided technical assistance.

What follows is a report of each participant's perception of the process.

Christopher: This experience was very exciting for us. I was able to collaborate with both a teacher and a teacher-librarian. In my current position as a reading first coach, I work closely with classroom teachers, assisting them in maximizing the effectiveness of their language arts instruction. Thus, this project represented a melding of my current duties and schooling.

As members of the school technology team, Winnie and I have been attending a series of technology workshops this year. We were given the mandate of incorporating the technology presented to us into actual lessons or units of study at our school sites. The third-grade students were preparing to learn how to write summaries of stories they had read. We decided to join forces to enrich this process.

Winnie: We took a traditionally boring assignment that students do periodically without enthusiasm. Introducing the technology turned it into an exciting, fun learning experience.

Christopher: We would focus on summary writing, an area I already assist teachers with as part of my regular duties. We worked together to utilize our technology training to help the students create an audiovisual summary.

Winnie: All three of us have worked as immersion/bilingual classroom teachers in the past, so we are fluent in Spanish. This is an important element to this project as all the kids in Carol's class are English-language learners.

Carol: This was the first year the children were developing their skills writing in English. Because the project took place toward the end of the year, they were able to produce more stories and choose from their favorite. They were also thrilled to be able to see themselves on the computer reading their final published pieces.

Christopher: This work took place in the classroom and school library. All three of the adults involved worked with the students together. The students understood that one of the goals of the project was to record a fluent reading of their summary and practiced over and over again, which is quite atypical. They were very engaged. There wasn't a single behavioral issue that surfaced in any of the sessions we cotaught. I am sure some of the excitement was due to the novelty of the new tools, but this only highlights the importance of intro-

ducing new strategies and tools to promote student engagement. The excitement of the students rubbed off on the teachers!

Winnie: Working with a program in which the kids could record and hear their voice was extremely valuable. English-language learners need to hear their voice. The students realized on their own from the beginning that they needed to improve their oral fluency. After hearing themselves a couple of times, they self-corrected, slowed down, paid attention to punctuation, and improved their articulation. It has always been my experience that students hate to read their writing out loud and have to be forced to do so. In this project, they willingly read their pieces over and over without any teacher coercion.

Carol: The children always read their finished writing to the class through the author's chair, but this format took that one step further. They worked on fluency throughout the year by reading to partners or parents, so being able to see and hear themselves read aloud really showed them what they needed to work on without any teacher having to tell them.

Winnie: For all of us, the project brought back the joy of teaching.

Christopher: Through working together, we were able to ensure that student learning went well beyond the relatively simple task of writing a summary. Students were able to focus on fluency, a factor for all but of particular importance to English-language learners. They were able to utilize newly acquired technical skills. They were able to work together to critique each others' presentations.

This project illustrated for us the potential power of collaboration among the various staff members of a school. Each of us was able to contribute to the project. Because of my work as a literacy coach, I am very familiar with the demands of summary writing. I was able to work with the teacher and class to help them understand the key features and purposes of a summary. Ms. Lopez was familiar with the particular needs and strengths of the students in her class. Winnie is much more familiar with Macs than I am and set up the files for the students to save their work. The three of us, who are Spanish speakers, were then able to offer assistance to the students while they worked.

Carol: This class was such a hard working class and being chosen for this project made us all very proud. They were excited to use the technology, and it made my job easier because they were motivated to produce good writing.

Christopher: I feel very energized by this project and look forward to continuing this type of collaboration next year. We plan to do a presentation to the principal and staff regarding our project, as a means of educating them about the potential role of the library as the "hub" of the school.

Winnie Porter is a teacher-librarian at Paul Revere Elementary School, San Francisco, CA. She may be reached at *peruwinnie@yahoo.com*.

Christopher Lamb was the reading first coach at Paul Revere. He is now a teacher-librarian at two public elementary schools in San Francisco: Alvarado and Dr. Charles Drew. He may be reached at *clambo1212@yahoo.com*.

Carol Lopez is the teacher of the third-grade Spanish-bilingual class at Paul Revere and in September became the Spanish Immersion teacher. She may be reached at 415.695.5974.

I feel very energized by this project and look forward to continuing this type of collaboration next year. We plan to do a presentation to the principal and staff regarding our project, as a means of educating them about the potential role of the library as the "hub" of the school.

As librarians, it is sometimes difficult to gauge in hard numbers the influence our instruction has on student end results

Our Instruction DOES Matter! Data Collected From Students' Works Cited Speaks Volumes

SARA POINIER AND JENNIFER ALEVY

Each year we set goals for our library program, striving to reflect on and steadily improve student achievement.

Last year one of our program goals was to complete a common assessment for one class. After learning about the idea of using students' works cited as a way to reflect on the value of our involvement with classes at the summer 2008 IASL (International Association of School Librarians) Conference, we attempted this data collection method in our high school.

In this endeavor we learned not only about our students' learning but also what an effect our instructional role has on student achievement.

COLLECTING DATA

In fall 2008, we arranged with our health teachers to provide instruction on both library resources and the works cited page document for a class project the students undertake each semester.

Over the course of several semesters we had been steadily increasing our collaboration with the health department in our school after teachers expressed dissatisfaction with the quality and integrity of their students' work. Given librarian instruction about reliable resources, ethical use of resources, and plagiarism teachers had reported improvement in student project quality. To further quantify this success, we planned to collect the students' works cited pages in order to discern their use of reliable information and the accuracy of the works cited format.

Because we wanted to collect comparative data from a group of students who received no librarian instruction, we also enlisted the help of one of our science teachers whose class happened to be conducting library research at the same time. She planned to collect works cited pages from her students, but made no plans for librarian instruction about resources or works cited.

Our Process

After providing each health class with a short introduction to reliable resources and instruction on how to create citations and the works cited page, the students got to work. Several days later, students were expected to turn in a works cited page to both their teacher and to us the teacher-librarians. Using Google Apps (our school district has a subscription) we tabulated our results. We literally counted the number of reliable and unreliable resources on each works cited page. We deemed reliable the following: books from the library, online database articles, and web sites we had recommended to students. Additionally, we rated the works cited on a 0/1/2 scale for the following formatting issues: title, alphabetizing, double spacing, and hanging indentation. Student work received a 0 if they did not complete this aspect correctly, a 1 if they inconsistently demonstrated mastery, and a 2 if they consistently applied this criteria.

The Result: A Tale of Two Classes

The results of this study were telling. The Astronomy class, which came into the library and worked without instruction, used mostly what we would consider unreliable web resources—mainly web sites not affiliated with any reputable expert group

on the topic. Only one library-provided resource, online or in print, was used by any of these students. The works cited pages turned in by this class were more of a collection of URLs than documentation of sources (see all results in Table 1).

Conversely, the health students submitted works cited pages that used 81% of the library recommended resources–a dramatic difference. In addition, the health students turned in works cited pages that showed a decent effort at being correctly formatted (see Table 2 for complete information). Thus, we drew the following conclusions: collaborative planning and instruction by the teacher-librarian leads to both an increase in the use of reliable resources and an improved works cited product as compared to a class that has simply "used the library."

REVISION COUNTS

Not content to see that our health students still had works cited pages riddled with formatting errors, we sought to improve our instruction for the second semester. We revised the handout we gave to students and found a better way to highlight what needed to be accomplished.

What we found after using the new and improved handout and giving a more instructional focus to the works cited page itself was that improvement was made on every measure during second semester from 4% more students correctly using a hanging indent to 26% more students including and appropriately placing a title on their works cited (see Table 3).

As librarians, it is sometimes difficult to gauge in hard numbers the influence our instruction has on student end results, yet collecting and scoring our students' works cited pages demonstrated that our role as collaborative, reflective practitioners makes a difference.

Sara Poinier and **Jennifer Alevy** are teacher-librarians at Horizon High School in Thornton, Colorado. Poinier can be contacted at *sara.poinier@adams12.org* and Jennifer Alevy can be contacted at *jennifer.r.alevy@adams12.org*.

Table 1: Fall Semester Astronomy Class Control Group, Grades 11/12

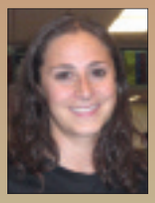
Number of Classes	1
Number of Students	32
Number of Library Database Articles Used	0 (0%)
Number of Library Books Used	1 (3%)
Number of Recommended Web Sites	0 (0%)
Number of Non-Recommended Web Sites Used	28 (97%)
Total number of Library Recommended Resources Used	1 (3% of all resources used)
Average Score: Alphabetize	0 (out of 2)
Average Score: Double Space	0 (out of 2)
Average Score: Hanging Indent	0 (out of 2)
Average Score: Title	1.25 (out of 2)

Table 2: Fall Semester Health Classes, Grades 9-12

Number of Classes	5
Total number students	178
Number of Library Database Articles Used	150 (52%)
Number of Library Books Used	52 (18%)
Number of Recommended Web Sites Used	32 (11%)
Number of Non-recommended Web Sites Used	54 (19%)
Total Number of Library Recommended Resources Used	234 (81% of all resources used)
Average Score: Alphabetize	1.39 (out of 2)
Average Score: Double Space	1.01 (out of 2)
Average Score: Hanging Indent	1.17 (out of 2)
Average Score: Title	1.26 (out of 2)

Table 3: Spring Semester Health Classes, Grades 9-12

Number of Classes	4
Total Number of Students	134
Number of Library Database Articles Used	109 (64%)
Number of Library Books Used	2 (.01%)
Number of Recommended Web Sites Used	29 (17%)
Number of Non-Recommended Sites Used	31(18%)
Total Number of Library Recommended Resources	140 (82% of all resources used)
Average Score: Alphabetize	1.53 (out of 2)
Average Score: Double Space	1.43 (out of 2)
Average Score: Hanging Indent	1.25 (out of 2)
Average Score: Title	1.78 (out of 2)



Our goal is to encourage all students to derive deeper meaning from their learning, through the use of this meta-cognitive strategy.

All the Way to the End Zone

TERRI SNETHEN & ABBY CORNELIUS

When was the last time you were asked by an unassuming student teacher or parent: "So, when are you going to become a real teacher?"

As teacher-librarians, we have faced such questions a few times before, even though we have the difficult duty of teaching a large curriculum to every student, every year. We know to be perceived as "real teachers," we must do the work of "real teachers". However, it is not enough for a traditional classroom teacher to just "cover" the material; they must also assess student learning and use those assessments to guide future instruction. That is our philosophy at the Blue Valley North Library Media Center, located in Overland Park, KS.

If teacher-librarians are responsible for teaching information literacy, we must also assess students' information literacy skills and use these assessments to encourage students to look for deeper meaning in their learning. Several years ago we embarked on a long journey to evaluate our program and our ability to ensure that all of our students leave our school with a *mastery* of the information literacy curriculum.

WHO ARE WE AND WHAT HAVE WE DONE?

Blue Valley North High School is a large suburban school with a population of about 1500 students and 120 staff members. We are one of five high schools in a large district with approximately 23,000 students at 32 schools. High school libraries in our district are staffed with two teacher-librarians and two other library professionals.

We began the evaluation of our library by recording which students were receiving instruction on each information literacy standard. This consisted of a huge Microsoft Excel spreadsheet that listed students by grade level (Figure 1).

After a collaborative unit was completed, we would use class rosters to check off each standard for each student. This was exceedingly tedious however it gave us a very visual way to look at our program. We actually learned some very interesting things about our program, the students who were receiving library instruction, and more important, the students who were not. The rows in the figure indicate students and the columns indicate standards. We noticed very easily that there were students receiving zero information literacy instruction (as designated by the completely white rows). We traced these students back to the courses they were taking and found that students taking mostly Advanced Placement classes were the ones missing out on information literacy instruction. We were also able to discern which content standards we were doing a poor job of teaching (represented in the blank or sparsely populated columns). The blank column seen in the figure represents those standards.

This spreadsheet helped us to focus our program on the areas of weakness we found in the data. Now that we knew what was going well (and not well), we formulated a plan for the next step in the process. We found out what was being taught but not what was actually being mastered by the students.

MAKE YOUR ASSESSMENT COLLABORATIVE

The missing link was assessment of library skills. Very often after a lesson we would never see the finished product or witness the research process. We advertised to our teachers that if we taught a unit or lesson collaboratively, we would also assess the process and the product in a collaborative manner. When we started looking into the assessment of information literacy skills, we knew we had to develop ways of assess-

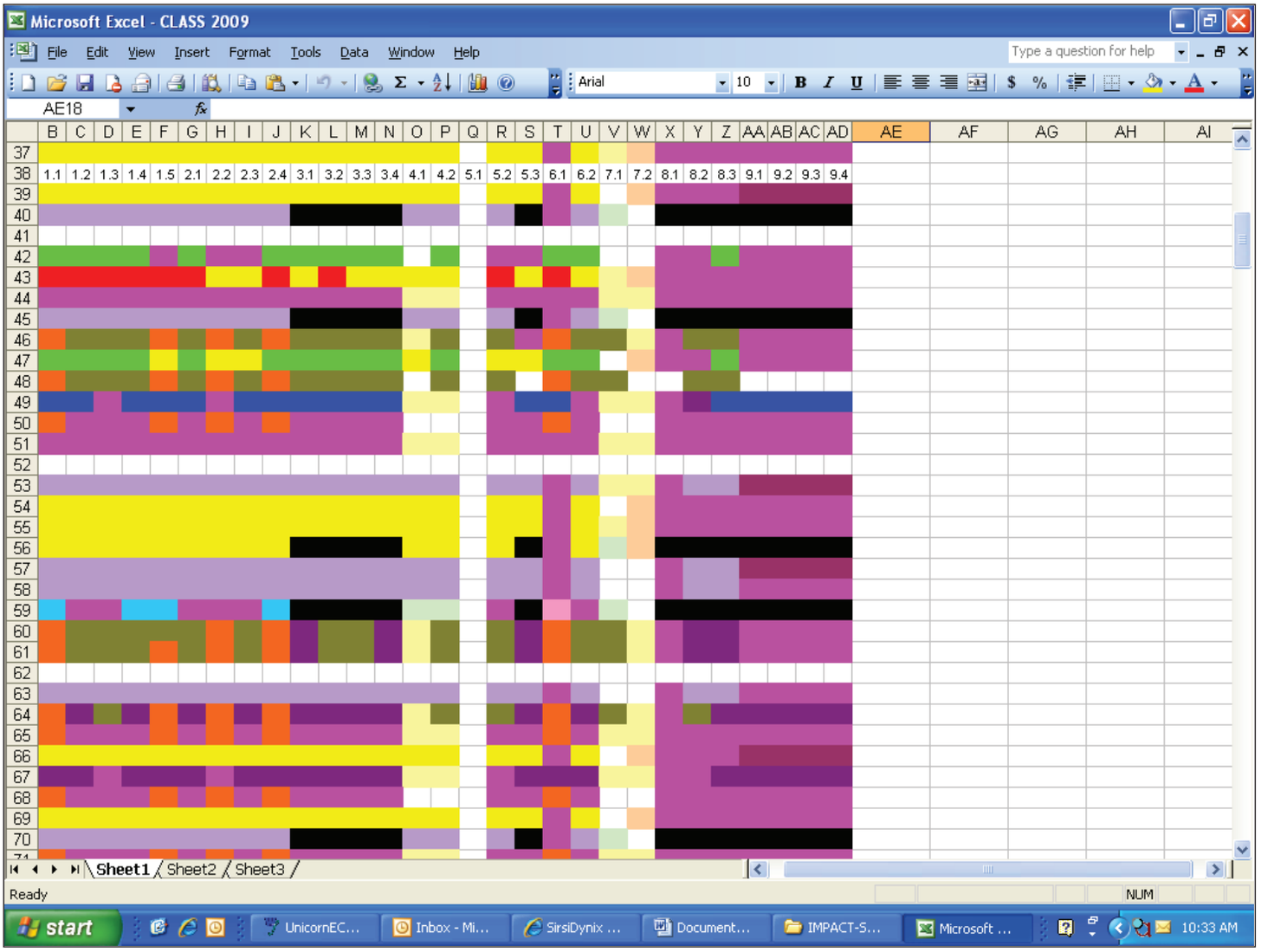


Figure 1. This spreadsheet (with student names removed) is an example of the spreadsheet used to record student contact with literacy standards.

ing the process at each stage. We designed our rubrics and measurement devices at the same time we designed the lessons so we knew exactly what each was designed to assess. Jim Rosenberger, the communication arts teacher said, "The librarians help create rubrics aligned with learning targets for my curriculum also and this allows for assessments that are representative of combined curricular standards. We collaborate for the content of the lessons *and* the assessments."

The gap we noticed for our AP students became one of our main priorities. The students in these classes are all college-bound and needed to be prepared to be efficient, effective, and ethical users of information. We implemented our plan by speaking with the AP teachers and sharing our findings with them. We explained to them that although the AP test is very important, we were doing a disservice to these students by sending them to college without information literacy skills. Some teachers agreed to collaborate with us (based on our troubling evidence) to design, implement, and assess a research project for these students. We adapted the current senior research paper unit to fit the needs of the AP students and collaboratively instructed them on the information literacy skills that would help them efficiently and effectively work through the research process.

We also realized that we assess in many different formats: formal, informal, checking for understanding, tests, culminating activities, and meta-cognition surveys (also known as the Big Think–Loertscher, Koechlin, & Zwaan, 2009). Students in the AP classes that we addressed, who had previously been missing out on the information literacy instruction, had some really interesting Big Think comments about the research process. One student wrote, "My biggest growth during the process of writing this research paper was to become more realistic about my topic. Surprising[ly], my thesis did not stray too much away from my original thesis on my essential questions sheet, but my way of proving it changed drastically when I realized what little support I could find for my four original essential questions."

This student is referring to an activity that we teach as part of the research process. The activity is from a session at the 2007 AASL National Conference presented by Shelor Smith and Wendy Sellors on using stakeholders and a strong persuasive statement to develop essential research questions, sub-questions, and the type of evidence needed to answer the questions.

Many students learned that the topic they chose at the outset of the process was not one that fit with their intentions by the time they gathered evidence for their argument. We graded these essential question activities and provided the students with feedback to help them narrow their topics, find helpful evidence, and revise their thesis statements.

WHAT IS THE FOLLOW UP?

After the essential question activity, students used a note-taking PowerPoint to organize and cite their sources. The PowerPoint slides are created to look like note cards with a space for the information required in a parenthetical citation. Students can use the slide-sorter view in PowerPoint to organize and color-code their notes and then switch back to outline view to insert the evidence into the research paper. After the Big Think, one student noted, "first of all, oh my gosh! The source cards are like magic! Why didn't someone tell me about this earlier?" We thought the same thing after looking at our spreadsheet data!

We also conducted MLA boot camp where students performed many tasks related to the proper citing of sources and we assessed students collaboratively. Another Big Think comment that let us know we had been successful in achieving student mastery was from a student who stated, "I've never had an easier time writing a research paper." Even so, perhaps the most rewarding comment was, "the Internet is not as helpful as the librarians are." The librarian is now an integral part of the research process and students know when researching for any class they can come to the library for help.

With the second year of our plan underway, we no longer record what is being taught to each student, only what is taught and assessed in each lesson. Every month we create a report that includes highlights of the month, our circulation statistics, the number of students visiting the library with a class or on their own, the lessons taught to the classes coming in, the standards addressed by the lessons, and the standards assessed during the lesson. This report is sent to our Associate Principal for Curriculum and Instruction, our Principal, our District Coordinating Teacher for Libraries, and our Executive Director for Curriculum and Instruction. These reports keep the decision makers in the district aware of not only what goes on in our library, but the assessment that occurs here.

After further examination of our monthly reports, we decided to set some goals for improving library usage. We met with a few departments and teachers that we had not previously worked with including the Special Education Department. We decided to collaborate on a project to have students create movies. The students have returned to the library multiple times for video projects. We created the rubric and graded it together. Dana Steinwart, the special education teacher's response was, "When we made our PhotoStory videos, the librarians and I used a rubric to assess the learning targets. This is unique because it allows the students a different format for exhibiting the writing skills they have been taught."

HOW OUR PRACTICE CHANGED

Based on the data we collected, we decided to work with Special Education and AP Communication Arts students. However, we also decided to increase and expand the kind of assessments we use with all students. Therefore, we start the school year by meeting with all freshman students in Communication Arts for a library orientation lesson. During this lesson, students create a quick podcast (using the sound recorder built into all PCs) as an assessment for learning. We ask the students to tell us where they look when they need information, what they do if they cannot find what they need, and a few other facts about themselves. This allows us to get to know the incoming freshmen as well as find out about their learning and information retrieval skills.

Another type of informal assessment we use when students are creating video projects is to have them complete a project plan. Using a PowerPoint presentation, the students devise a plan to complete the project efficiently and effectively. They develop a topic, the audience, the information they need, the search terms they will

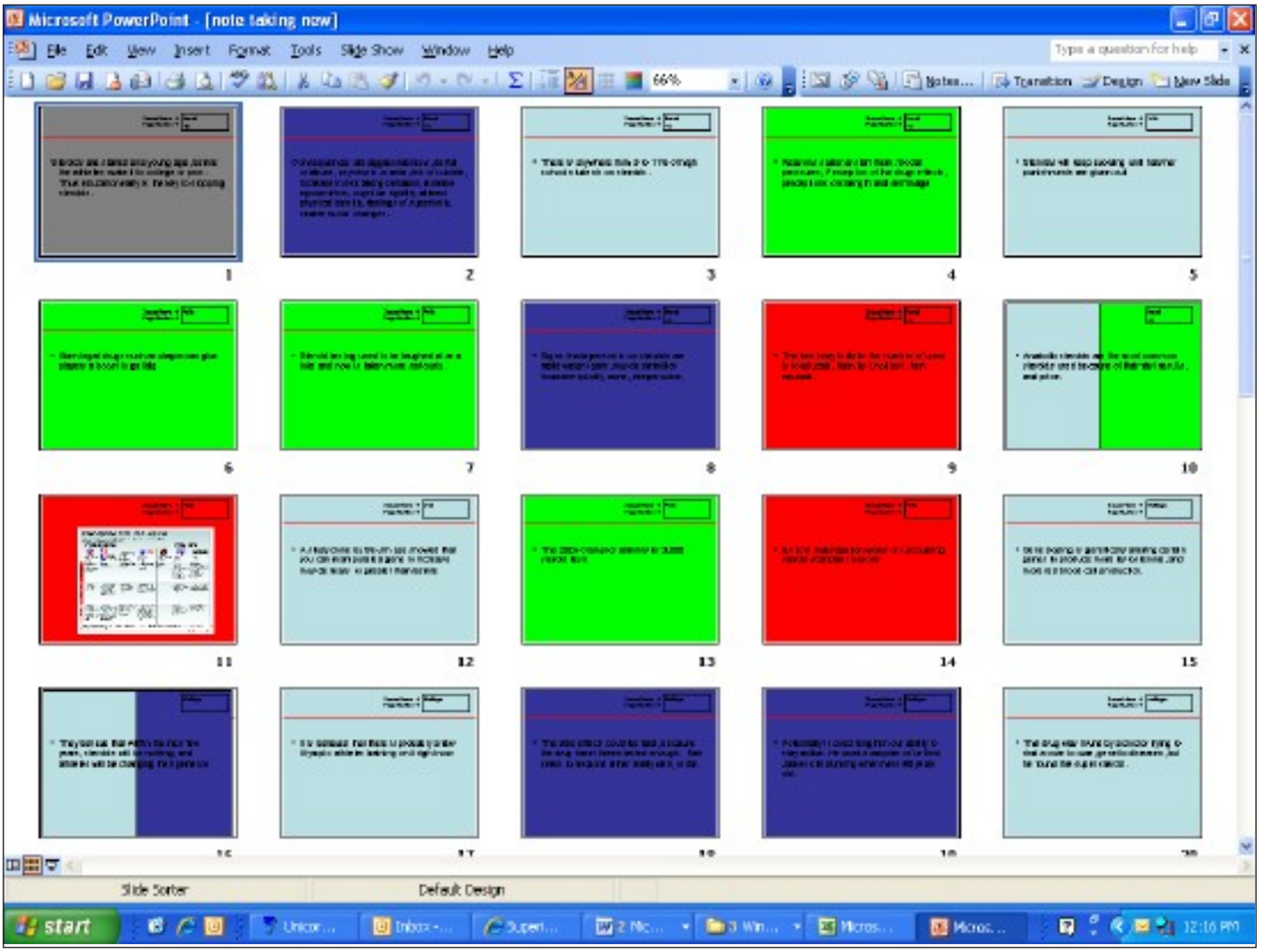


Figure 2. The note taking PowerPoint allows students to paraphrase, organize, and outline information.

use to find the information, the resources they will search, and a timeline of tasks as well as when the tasks will be completed. We evaluate this plan and use it as a tool to guide students into creating a well-researched, effective video.

Regardless of the project, assessment, or unit we are working on with students, the important element is not only the assessment, but the Big Think that occurs for students afterward. It is too easy for teacher-librarians to be content when they finally get that elusive teacher to collaborate with them. It is great to finally work with that teacher, but the work cannot stop there. In order to carry that ball all the way into the end zone, we need to do the work and provide the learning opportunities to students that will help them gain deeper meaning from their learning. The Big Think is really the extra step that will help students accomplish this goal. Our goal is to encourage all students to derive deeper meaning from their learning, through the use of this meta-cognitive strategy. When we achieve this, we are really participating in true collaboration at the highest level.

RESOURCES

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"She had an idea for collaborating to make her class better than she could make it by herself."

Go, Set, Ready:
Collaborative Relationships for 21st Century Learning

KATHY KALDENBERG

Passing through the high school office on a summer day in 2009, I ran into our Biology teacher, who was in to check her mail. We chatted for a few minutes about our vacations and the weather, and then she said the magic words "I have an idea."

She did have an ideas; a great idea for how we could work together and how she could use my expertise in inquiry, resources, and technology to add another dimension to her upcoming Anatomy and Physiology class. She had an idea for collaborating to make her class better than she could make it by herself.

For me, promotion of collaboration is an ongoing effort district wide. I meet regularly with curriculum committees and attend all building staff meetings. I am included in the planning of staff development efforts and have presented frequently to teachers and administrators. I keep up-to-date with the curriculum and upcoming assignments as much as possible and feed resources to teachers via email, flyers, and support materials purchased in anticipation of need. As a result, I am very busy working one-on-one with teachers and students in the classroom. While my calendar is jam-packed, I am always looking for ways to help with courses that are not represented on my calendar and statistical reports. This Biology instructor was the perfect candidate with whom to collaborate. It was time to stop talking about working together and actually do it. She was ready!

My schedule is flexible, so I am able to meet regularly with colleagues and when necessary, immerse myself in the classroom for hands-on help and consultation. This was a winning strategy for this collaborative effort.

The Anatomy and Physiology fall semester class was starting amidst a hot national debate over health care reform. We decided to bring the students into the vortex, linking understanding of the controversy to their own future health care needs. This was an intellectual challenge for us all, given the complexity and divisive nature of the subject, but that certainly made it interesting too!

We started the project by assessing the student's understanding of the issue using an online survey form (via GoogleDocs), one of the tools I model when working with teachers. We also used a wordcloud tool to visualize their key understandings of the issue. A list of videos illustrating the wide variety of opinions on the topic was shared via Diigo, and we watched them together to illustrate the wide range of opinions and emotions.

What did the popular and scholarly print literature have to say? Students selected periodical articles from our EbscoHost databases and examined them for bias, factuality, tone, and intended audience. Their responses were logged on a worksheet that I reviewed and commented on digitally. All of these steps were tracked through the teacher's EduBlog account, which served to collect and document student observations as we struggled, with the rest of the country, to synthesize the vast amount of information and misinformation circulating in all the various media.

While Congress continued to argue over the fate of the legislation, our students ventured beyond the school walls with a set of standardized questions. They recorded video interviews with local citizens and family members, mixing their files into short movies. When these were premiered, a surprising range of opinions became apparent, mirroring the debate we were observing on the nightly news (or on FaceBook).

CREDIT: STEPHEN SCHMIDT OF THE SOLON ECONOMIST.

Students working together with their teacher

At the end of the semester, students knew not only how to identify "fixators and synergists for joint movement," they could also relate personally to the critical issues surrounding the provision of health care in their own communities. While tackling the big issue, they learned how to evaluate web sites for bias and how to recognize popular vs. scholarly publications. According to my colleague, "The activities got them to see the issue as complex and messy and that there were trade-offs to whatever decisions were made. That was the key idea for me. We need kids to see issues like health care reform from the bigger picture so they can be better problem solvers and think beyond themselves" (American Association of School Librarians' Standards for the 21st-Century Learner, 2007, 3.1.5: *Connect learning to community issues.*)

Collaboration with my K-12 colleagues occurs frequently, but the effort to keep relationships active and to continually promote new partnerships is one that requires energy and persistence. Over the years, I have tried everything from the standard "open house" to personalized emails and hand-written notes, but by far the most effective technique for me has been to be in the right place at the right time asking, "How can I help you?" (go) and then nudging firmly for a commitment. "Let's do this!" (set and ready).

EXAMPLES OF RECENT COLLABORATIVE EFFORTS

- Guiding students in the selection of public domain images and appropriate audio accompaniment to create a video using the web 2.0 tool Animoto for a middle school "Academy of Inquiry" class project on the Great Depression. (AASL Standards, 4.1.8: Use creative and artistic formats to express personal learning).
- Reviewing how to locate copyright friendly images and audio in advance of 7th grade Language Arts enhanced podcast booktalk creation (3.1.6: Use information and technology ethically and responsibly).
- Demonstrating and providing hands-on assistance for creating e-portfolios using a variety of web 2.0 tools, such as Prezi and Google Sites for a high school Technical Writing class (AASL Standards, 3.1.4: Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.)
- Demonstrating online subscription databases to 6th grade students researching astronomy topics, following up with tips for effective presentations (3.1.1: Conclude an inquiry-based research process by sharing new understandings and reflecting on the learning.) Teacher feedback indicated "Best year ever for understanding and presentation."
- Setting up accounts and facilitating the creation of video post cards to 4th grade pen pals using Animoto (2.1.4: Use technology and other information tools to analyze and organize information.)
- Demonstrating multimedia resources for 7th grade Language Arts students to incorporate into digital presentations about continental Africa. (4.1.8: Use creative and artistic formats to express personal learning.)
- Demonstrating advanced Google Search techniques and subscription databases for 7th grade Social Studies class writing Colonial Period biographical studies. (1.1.6, Read, view, and listen for information presented in any format (e.g., textual, visual, media, digital) in order to make inferences and gather meaning.)
- Consulting one-on-one with 11th grade Language Arts students writing persuasive essays. (1.1.7: Make sense of information gathered from diverse sources by identifying misconceptions, main and sup-

porting ideas, conflicting information, and point of view or bias.)

• Illustrating effective search techniques for 9th grade debate topics (1.1.7: Make sense of information gathered from diverse sources by identifying misconceptions, main and supporting ideas, conflicting information, and point of view or bias.)

• Guiding the creation of digital trailers for "books that will make you sick sick" for Microbiology. (2.1.6: Use the writing process, media and visual literacy, as well as technology skills to create products that express new understandings.)

All of the above activities required that I be in the classroom, sometimes for several days in a row. Many more "mini-collabs" take place every week. Examples include:

• Facilitating a Skype session between two 1st grade classes to discuss "communities". (3.1.2: Participate and collaborate as members of a social and intellectual network of learners.)

• Setting up a PollEverywhere account so that Biology students can use their cell phones for automatic assessment (3.1.4: Use technology and other information tools to organize and display knowledge and understanding in ways that others can view, use, and assess.)

• Using LibraryThing for booktalking selections for 9th grade Language Arts in preparation for their Independent Reading projects (4.1.6: Organize personal knowledge in a way that can be called upon easily.)

• Helping students illustrate and record their writing using Blabberize, a Web 2.0 tool. (2.1.6: Use the writing process, media and visual literacy, and technology skills to create products that express new understandings.)

During our collaborative experience, the Biology teacher would often ask, "How can we get more teachers to appreciate and use the valuable partnership you have to offer?" We developed two lists that we subsequently shared at a local technology conference and informally with our own staff.

IF YOU ARE A TEACHER:

• Share your lesson plans in advance. The teacher-librarian will probably be able to make immediate connections to book, web, and tech resources.

• Brainstorm. Sometimes it really works well to toss ideas back and forth with a colleague who isn't immersed in the subject matter.

• Read the email messages that the teacher-librarian sends your way. Acknowledge receipt if there is something in the message (for example, a web link) that you might use. Feedback is great.

• Create an email folder to keep messages from the teacher-librarian. You might want to refer back to one in the future.

• Invite the teacher-librarian into the classroom to assist you and your students work one-on-one (to get past the "talking head"). Let students see the teacher-librarian as an indispensable consultant.

• Invite the teacher-librarian to team meetings on a regular basis.

• Share your enthusiasm with your colleagues. Encourage them to take advantage of opportunities to work with the teacher-librarian.

• Use chat to have short, informal check-ins or to ask questions of the teacher-librarian.

• Don't be afraid to ask the teacher-librarian anything!

IF YOU ARE A TEACHER-LIBRARIAN:

• Send links to web sites, blogs, articles, etc. that deal with specific aspects of a curriculum, with suggestions on how you can help.

• Create book lists that support the curriculum and deliver them to the classroom in advance of the lesson.

• Hang out in the teacher's lounge at lunchtime (with laptop and resources at your fingertips).

• Join as many committees as you can, including the ones that deal with fun things, like planning social events.

• Host an open house (or any kind of gathering) and have materials ready to share, with suggestions on how you can be of assistance.

• Keep on top of the new technologies, web resources, and equipment so that

when a teacher asks for help, you can provide immediate assistance.

- If you don't know the answer to a question, find out the answer and follow through immediately.
- Offer yourself as a consultant to the classroom. Be there during research/tech times to provide hands-on assistance. Showing students how to be successful (using a source like Ebsco) is so powerful.
- Do some of the heavy lifting. If it would be useful for classroom links to be coordinated on one page, create that page. If a web site would be helpful, create the web site. (Google Sites is awesome for this!). If students need to be registered for accounts, offer to coordinate that.
- Let other staff know about successful collaborations through staff meetings, blogs, hands-on demonstrations, etc.
- Enlist your Director of Instruction and building principals to advocate for you. Share success stories with them.
- Regularly share data (i.e. statistics on collaboration, database usage, etc.) with the administrative team and the school board.
- Provide assistance to administrators in setting up blogs, web sites, RSS feeds, Twitter. They will spread the word.
- Create screencasts for Frequently Asked Questions.
- Use a service to organize bookmarks by instructor (i.e. create specialized tags for instructors or classes in De.li.ci.ous or Diigo). You will then have a list of tailored resources at the ready.
- Celebrate successes. Be sure to thank your collaborator and make plans for the next project. (A digital greeting card will elicit a smile!)
- Ask to be included on curriculum teams and at team level meetings on a regular basis. Take on committee responsibilities and follow through.
- Make your facility available for classroom presentations and treat the event like a premiere performance.
- Take advantage of free and on-demand professional development (like the Elluminate sessions through TL Virtual Cafe).
- Attend and present at staff meetings. (Bring chocolate).
- Publish your schedule online (i.e. Google calendar) so that teachers can make plans based on your availability.
- Keep your chat on. Use instant messaging services to communicate from "the field".
- Don't be afraid.

Although the Biology teacher and I conferred with each other numerous times during the first part of this school year, her teaching assignments had been adjusted and we didn't find the just-right connection for a full-fledged project. That is fine. We still meet occasionally to trade experiences with new tools or to brainstorm for future collaborations. Our relationship is strong and she promotes my services to her team members and other staff.

In fact, those wonderful words: "I have an idea" are leading to collaboration with the "Social Issues in Biology" instructor this quarter. We started discussing the possibilities early the first semester and decided that after an introductory session, I would spend the last week embedded in his classroom helping students develop their final projects. In his standard-based grading environment, this project will synthesize two major strands for their only score for the entire class. My role will be to help them think through the process, identify appropriate "containers" for their findings and assist with any research or technical questions they may have. (4.1.8:Use creative and artistic formats to express personal learning.)

He's ready and so am I.

REFERENCE

Standards for the 21st Century Learner. (2007). Chicago: American Association of School Librarians.

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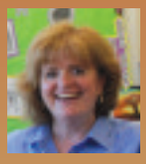


"Such an undertaking requires strong shared leadership and a willingness to cooperate and collaborate on the part of the school staff."

The Creation of the Edgewood Experiential Lab and Learning Commons for the 21st-Century Learner

TAMARA MITCHELL AND FRAN POTVIN-SCHAFER

[Editor's Note: An extended gallery of photos of the Edgewood Experiential Lab and Learning Commons can be found online at https://sites.google.com/site/edgewoodlearningcommons2012/?invite=CJnkyN4K]

But Peg was putting all that behind her now. She wanted big, she wanted better, she wanted best. . . . She wanted to climb the world's tallest mountain. She'd heard the view was quite something. (Oppel, 2004, 2)

In 2006 Edgewood Public School started on the ARC (accommodation review committee) journey as part of a process whereby neighboring secondary schools and K–6 feeder schools carefully examined the teaching and learning in this family of schools (FOS) in the Toronto District School Board (TDSB). Utilization and capacity rates, enrollment trends, and facility and program needs were carefully examined through the lens of future projections, sustainability, and the rigor and relevance necessary for 21st-century learners.

At Edgewood PS, a K–8 school with approximately 380 students, almost half at the intermediate level, we focused on previously implemented changes to support student learning as a response to our underpinning belief in an inclusive learning environment. Past changes included a common school entry, dismissal and recess schedule, minimization of rotary subjects, removal of lockers for the intermediates, and the physical reorganization of classrooms, such as interspersing intermediate classes throughout the building. The infrastructure of our program delivery at the time was mainly dependent on the design and technology program. Students were transported by bus to the local senior school, which was equipped with metal and wood shops and cooking and sewing rooms. Students rotated through the shops during the course of the year. This posed many challenges, as the design and technology program was not aligned with the Ontario Ministry of Education curriculum; it was difficult for teachers to connect with parents from a different school; money and staff were taken from Edgewood's annual allocation to support the design and technology model; there were transportation costs to move students to the host senior school; and, perhaps most importantly, Edgewood's entire infrastructure and schedule was dependent on the senior school. From the daily scheduling of periods to time demands on intermediate staff to cover teachers in the primary grades, the challenges were great. Students would often be absent or arrive late and miss the bus, so they would not attend the senior school for that period. Student misbehavior at the senior school was constantly being dealt with by staff and administrators, and disengagement was a concern. What had been in place for so many years was no longer working. In moving forward with the insights gained, Edgewood was granted a new science and technology lab, complete with power tools.

Library

Our project would be a pilot for our board of education.

What came next was a collection of forces that resulted in a synergy that would set the stage and foster the vision of what would become the Edgewood Experiential Lab (EEL). To separate the components and describe events in a linear fashion would not encapsulate the alignment of the many factors involved. From the visionary FOS superintendent of education to the executive superintendents and architects and their guiding questions, to the TDSB program departments and the creative Edgewood staff, each cog in the wheel played an important role in the actualization of a project that put student learning at the forefront. From the start, collaboration played an instrumental role as we moved from vision and conceptualization to planning and, finally, implementation. Fullan (as cited in Loertscher, Koechlin, & Zwaan, 2011) insightfully points out that "when teachers within a school collaborate, they begin to think not just about 'my classroom' but also about 'our school'." (107)

In preparation for the creation of the new FOS secondary school that would see the joining of the two existing secondary schools, administrative staff in the FOS were educated and exposed to relevant visions of facility and programming needs for the 21st-century learner.

From these inspirations and a great deal of input from the Edgewood staff, we answered the architects' questions in regard to specific activities the students would be engaged in in the new space. From our site-based committee, staff envisioned a facility that supported students in hands-on, cross-curricular learning; embedded technology in the teaching and learning process; fostered various student groups, as well as team planning and teaching; supported students' physical movement and various student learning modalities; and supported how teachers taught even though the existing physical space had always posed restrictions.

> The reality is that the design of learning environments is a complex assignment. While the solutions may be simple or elegant, they can almost never be "simplistic." We need to understand the complexity of the human experience as noted . . . in order to understand what "learning" is about. (Nair & Fielding, 2005, 7)

Through many consultations with the architects, who had tremendous ideas and listened to our staff suggestions, questions, and concerns, we collectively conceptualized a facility that included ample use of glass to ensure student safety and supervision, "messy" areas, and more managerial zones, work spaces, and construction areas. Initially the focus was on the intermediate learner and the creation of a "suite"; however, this contradicted our view of the intermediate learner as a role model and integral member of an inclusive school community. We needed the lab to address the needs of all learners in our building. Ultimately the program needed to drive the facility. Jacobs (as cited in Loertscher et al., 2011) states, "Rather than being victimized by our program structures, we should be creating new types of learning environments for a new time and for various types of teaching and learning. Not to do so is a declaration not to learn." (7)

From this belief we developed a science and technology lab and visual arts studio

Tech Lab

Collaborative Space

situated side by side filled with natural light, with updated and flexible wiring to accommodate technology and science demands and glass walls to ensure clear sight lines. The architects suggested flexible furnishings, including tables that connected in various configurations to physically accommodate the primary and intermediate learner, and castors on chairs to enhance student mobility. These considerations would also afford flexibility for the future, as schools respond to projected decreasing enrollments and reconfigurations.

As we discussed, probed, and hypothesized, it became increasingly important for us to ensure that the retrofitted facility did not become "more of the same" in a prettier space. In order for our vision to come to fruition, we needed to delve deeper and look at the interconnections between facility, staffing, programming, and scheduling.

In the past, our teacher librarian was instrumental in supporting student learning and professional development for staff. The partners in action model was key to our school improvement plan and a vehicle for moving student learning forward.

We had built staff capacity in regard to the development of higher order thinking skills and critical literacy to improve student achievement. The revised Ontario Ministry of Education Science and Technology curriculum also focused more extensively on higher order thinking skills and the big ideas. The vehicle through which we garnered the most success with our school improvement initiatives would be the next step, the natural segue. We knew we must include the library in our vision for the experiential, cross-curricular teaching and learning experience for our community of learners. We could see how this partnership would take our school community, students, and staff to a new level of collaboration and learning.

This was the beginning of our journey to create a facility that would embrace and further deepen pedagogical values (partners in action, team teaching, best practices) already in place at Edgewood and develop a multidisciplinary approach in collaboration with all participants: administration, teachers, support staff, students, and parents.

Such an undertaking requires strong shared leadership and a willingness to cooperate and collaborate on the part of the school staff. From a principal's perspective, when such a transformation is implemented, consistent and shared leadership is the cornerstone for moving forward. Not only does the principal need to have strong convictions, but these beliefs must also be "owned" by all stakeholders, and the process must be supported with appropriate assistance, such as teacher release time, skills training, and explicit demonstration of the alignment of professional development with the school and district's vision of improvement. A climate of trust must be created in order for all stakeholders to take risks, reflect, and continue to grow. A willingness to be flexible and critical and listen to many voices is also instrumental in the fine tuning of every aspect of programming, as perseverance is modeled through every step of the process.

In September 2010, the EEL and library were officially opened for students and staff. At the same time the TDSB library community was all abuzz with the new Ontario School Library Association (OSLA) document *Together for Learning: School Libraries and the Emergence of the Learn-*

Collaborative Space

ing Commons: *A Vision for the 21st Century* (2010). Upon reading the document, we were overwhelmed with excitement at the concept of the learning commons and what an uncanny similarity it had to our vision of the EEL and the library. The eminent OSLA document confirmed that our journey to create a facility and program to entice 21st-century learners and provide a multidisciplinary, differentiated, and engaging approach to learning within and beyond the walls of the school was indeed reflective of current theory. So began the transformation of the Edgewood library to the Edgewood learning commons.

Our journey to this point had been exhilarating and required substantial commitment of time, energy, and foresight, and now we were faced with putting our ideas and convictions to the test. How would the program unfold? How would we move two hundred intermediate students through a technology lab consisting of two drill presses, three scroll saws, and a band saw? How many classes should we move through at one time? A myriad of questions flooded our thoughts, from safety, teacher comfort, integration, and equitable access to our old friend time and how would we find enough of it to get everything done!

A learning commons, as mentioned in *Together for Learning*, "is a vibrant, whole-school approach presenting exciting opportunities for collaboration among teachers, teacher librarians and students. Within a learning commons, new relationships are formed between learners, new technologies are realized and utilized, and both students and educators prepare for the future as they learn new ways to learn" (3). The learning commons approach includes four key components: physical and virtual space, equitable access, learning partnerships, and technology in learning. These would be our guiding principles.

While the gap between theory and reality can be frustrating and potentially overwhelming, the realization of what the process truly entails allows us to take a deep breath and recognize that it takes time, commitment, success, failure, review, revision, and creativity.

Library Fiction Area

At first this pristine, lavish space seemed somewhat daunting; after all, it would be a model for the TDSB, and those are large shoes to fill. How would we do justice to this space and all its incredible tools for learning and properly service our 21st-century learners? As professionals, we would be pushed beyond our comfort zone.

Peg scaled precipices, skated glaciers, and crossed chasms on icicle ladders. (Oppel, 2004, 7)

The fever of excitement in the EEL and learning commons is spreading as it becomes a community where each student and staff member *gradually* sees a place for him- or herself. Sometimes it takes on a life of its own, and we jump on for the ride. Facilitating such a dynamic environment, with staff and students interacting at various levels—with each other, with the space and program—along with an ever-changing schedule, new practices, and a synthesis of ideas from all parties can be likened to harnessing Jell-O! Catching it is impossible; one can only manage to keep it on the path.

Our conceptualization of the physical space takes on a whole new dynamic as students interact with their surroundings. The EEL consists of an art studio, technology lab, science room, and gallery—an original hallway that serves as flexible space for flexible groupings, with café chairs, tables, and wheeled chairs, fifteen laptops in mobile carts, whiteboards for small-group collaboration, and display cases for student work or books. The learning commons sits on the other side of the gallery and houses tables that can be moved to accommodate various groupings and a mobile Smartboard, as well as two carpeted areas with pillows for read-aloud and student enjoyment. A large sliding wooden door closes to create two separate spaces—the carpet area and the table area—which allows for simultaneous classes. The learning commons, while embedded in the EEL program, services students in all grades from kindergarten to grade eight, for media, critical and digital literacy, music, and reading advocacy.

In the afternoon, on a given day during instructional time, a visitor could see grade seven students working collaboratively on planning, creating, and building a wooden arm to withstand a certain mass; grade eight students working on a culminating activity powered by hydraulics or pneumatics cutting wood on the scroll saw in the tech lab (under the eyes of a trained educational assistant and teacher); students in the gallery working on computers or borrowing laptops to take to classrooms; kindergarten students listening to the teacher read a story; and grade three students learning music through interactive websites on the Smartboard. Or in the morning, in the arts

Moveable Wall in Library

studio, the grade four and five teacher and her volunteer could be viewing the digital news reports they created in literacy and drama; a grade seven or eight teacher using the Smartboard in the science room to teach math concepts; the special education teacher sitting with a group to support literacy learning in the classroom; and lastly, the teacher librarian discussing the Blue Spruce nominees with the grade one and two class.

Lunch hours boast various clubs led by various teachers: girls club led by the guidance teacher; robotics by the kindergarten teachers; or the homework club led by two French teachers that entails reading, French, math, religious accommodations, drama, and music. Our grade eight science teacher runs tech lab clinics for students to complete their design challenges. The newsletter club and student council all meet regularly to discuss and write about school initiatives and Edgewood happenings, while the library club helps manage and display the print materials.

It is a menagerie of learners, both student and adult, united in one space! The electric hum of engagement resonates in the mind of the passerby.

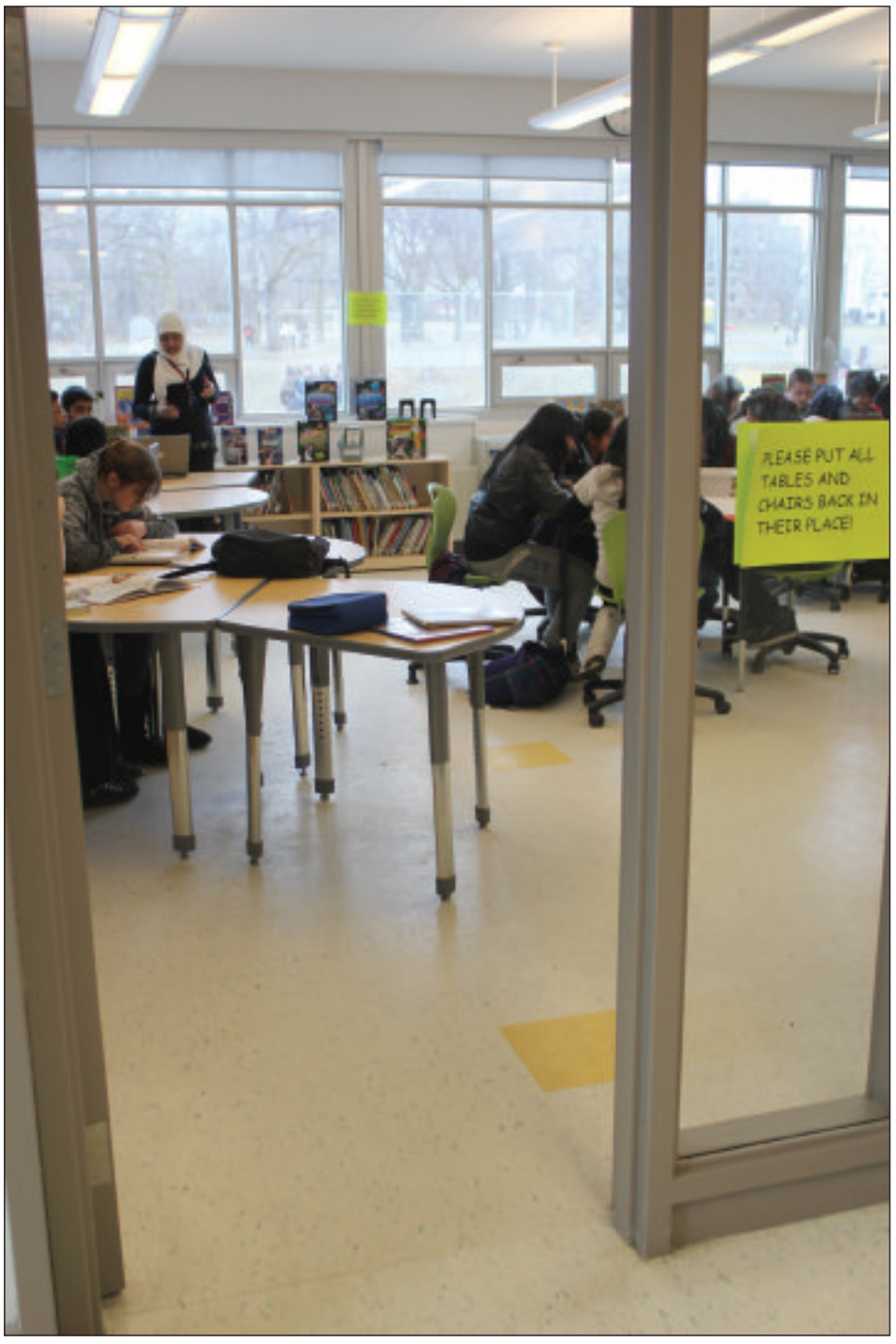
> The new vision of the learning commons sets the library as the hub of activity in the school—a magnet for a range of teaching professionals to connect with students and to extend their own professional learning and practice. (Loertscher et al., 2011, 142)

The authors' words assure us that we are keeping to the path. The new facility required a shift in programming from the traditional, literacy-based partners in action model to a more interdisciplinary approach, which involved science, technology (both power tools and information technology), literacy, and social studies, with the role of the teacher librarian undergoing a metamorphosis to meet the needs of the students, teachers, and school. Once the facility was built, all intermediate teachers, the teacher librarian, and the educational assistant were trained on the power tools, and the teacher librarian and educational assistant, who felt most comfortable taking the lead, would train the students and manage the tech lab. Building capacity in this leadership would, hopefully, come in time. Simultaneously staff throughout the school were being trained on an interactive whiteboard of one kind or another (Smartboard, Mimeo, Mobi) to support instruction and learning.

Slowly, the balloon rose into the air. They floated down through the night, the stars close enough to pluck right out of the sky. (Oppel, 2004, 26)

During the first year of implementation we met in teams—science instructional leader (when time permitted), grade teachers, and the teacher librarian—to plan, implement, and assess units of study and student learning. We tried our best to integrate areas of the curriculum that seemed to fit without being contrived or deliberate, with each teacher bringing to the table her/his area of strength. For example, drama lent a hand in the learning of osmosis; virtual cells were explored; Smartboard activities provided interactive learning through literacy and technology; glow powder helped students explore the spread of disease; and microscopes provided a hands-on approach to cell exploration. The synergy of various teacher strengths provided a richer,

Cafe Chair



Homework Club

more engaging program for students and allowed teachers to support and learn from one another other. In *The New Learning Commons: Where Learners Win! Reinventing School Libraries and Computer Labs*, Loertscher et al. make this critical point:

> The establishment of the learning commons as a collaborative community of learners opens the door for the reinvention of instruction and learning experiences and, consequently, for effective school improvement. In the learning commons we experience many types and layers of collaboration, with everyone working together to analyze and improve teaching and learning for all. (107)

Such collaboration with the teacher librarian also occurred with other grade teams and individual teachers in the primary and junior divisions throughout the year.

Our first-year experiences allowed us to reflect and refine our approach and schedules and to go deeper in many ways. With a certain comfort level in place, we find ourselves in the position to reinvent our practices and further improve student learning. Capacity in the technology lab has been created as the grade eight science teacher trains equipped students on the mighty band saw, while the EEL educational assistant and the teacher librarian guide students working on culminating tasks. Collaboration allows us to grow and change with support and the understanding that we are not alone in engaging students. Just recently, for example, in developing success criteria with the grade seven students regarding a particular activity, the grade seven science teacher and the teacher librarian modeled the process of conferring and clarifying with each other, a key part of what students have to do when working in teams. After the class we were able to reflect on our practices and revise our instructional strategies. Our journey to this point has been full of peaks and valleys, exciting new learning accomplishments, and partnerships at every level. A trust has been built that allows us to focus on the real goal—student achievement—and lays a foundation for meaningful collaboration and risk taking.

> *But Peg was the restless sort. She was pushing nine, and she figured it was high time she made something of her life. After all, she wanted big, she wanted better, she wanted best.* (Oppel, 2004, 30)

So what is next for our community of learners? After sixteen months of having the EEL with the learning commons fully implemented, many results have positively impacted teacher/student learning. The capacity to use technology and incorporate it in meaningful ways to propel student learning has been profound. Interactive whiteboards, laptops on sign-out, and desktops throughout the gallery support students in accessing content, applying and translating skills, and laying the foundation of an inquiry-based learning approach. Student tardiness and absenteeism has decreased considerably, and student testimonials attest to the fact that they embrace the experiential, interconnected approach to learning and are engaged.

Staff members recognize that in order to reach the 21st-century learner we need

Arts Studio

to delve deeper into digital citizenship and virtual spaces and, in particular, build a virtual learning commons as one of our next steps. The EEL and learning commons are accessed by all students in the school at various times for various activities; however, regarding the science and technology portion, the intermediates tend to have more access than the rest of the school. Timetables need to be examined through a critical lens in order to ensure flexibility in scheduling to support equitable access for all students and staff. We will be challenged to further think outside the box to discover creative approaches to include multiple programs and student needs.

The collaboration among staff has increased and extended throughout the building, in addition to our EEL. The former library space was converted into two open-concept grade one and two classrooms where the culture of collaboration is further supported by authentic team-teaching practice. All staff have participated in coteaching three-part mathematics lessons, and students collaborate and observe teachers problem-solving together in class throughout the day.

The successful schools focus on the future, with the goal of teaching students how to think—not simply what to know. (Daggett & McNulty, 2005, 1)

Arts Studio Gr 4 and 5

Gallery

Our goal, then, is to identify strategies that build sustainable student/staff collaboration so that, for example, teamwork, creativity, risk-taking, and common assessment practices will be naturally embedded in the school culture for years to come so that our learning community of staff and students continues to be a dynamic group that explores new paths. Loertscher et al. (2011 As for our student learners, they thrive in the new space. It provides room for them to move and take charge of their learning. They "love the cool new lab" and the hands-on activities, and even the most restless and unmotivated students' interest can be captured, particularly in the lab. They think designing, creating, and building helps them become better thinkers and problem solvers. Often when the clean-up signal is announced, their jaws drop and they say, " Really? We have to go?" "These forty-minute periods are not long enough!" Or "Wow those double periods really fly by!" On those days, when the time escapes *all* the learners in the room and the bell rings, it can be difficult to get students to stop—the best evidence of student engagement! Students tell us they think the tech lab affords them experiences and opportunities that will help them pursue their goals: One grade eight student, thrilled about his hydraulic neck-pain solution, wants to be an engineer and is grateful to have access to this kind of learning early on; another student, taking automotive mechanics in grade nine, is always enthusiastic to find out what she'll be doing next in the EEL.

Offering these differentiated, multidisciplinary approaches to learning will provide pathways for all students to explore, grow, and learn and will help develop an understanding and respect for each other's strengths and interests, which will transfer to the world beyond the walls of Edgewood. Being immersed in this environment in elementary school can only allow for broader, and perhaps clearer, choices for high school and postsecondary endeavors for our 21st-century learners.

After all, she wanted big, she wanted better, she wanted best. And she'd already set her sights on something new. (Oppel, 2004, 30–31)

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Tamara Mitchell completed her M Ed at the Ontario Institute for Studies in Education, University of Toronto and has been an educator for 19 years. She has taught various grades throughout the elementary panel, including special education and Reading Recovery. She is currently the principal at Edgewood PS in the Toronto District School Board.

Hypertext Novel Studies

"This is a wiki, and the underlying concept is that someone else will likely come along and edit your page at some point."

MARC CROMPTON

The past couple of years has been a time of growing partnerships as I have been developing my role as the teacher librarian of the Senior Library at St. George's School in Vancouver.

I've enjoyed observing classes as they come into the library to do their typically traditional assignments. I will talk to the teachers involved at any chance I get and offer my thoughts, and we will often develop new ways of addressing the curriculum through collaboratively planned and taught assignments. It was through this kind of relationship that Michael Atkinson, a teaching colleague who introduced me to Cory Doctorow's writing, came to me for ideas for some sort of project around his popular young adult novel *Little Brother* (2008). He needed to develop some context and engage the students in a "required" text. Atkinson had brought speakers into his class to talk about Internet security and surveillance technology, but as much as these speakers engaged the students in a discussion that helped explain many of the concepts in the book, the effect was not as lasting as he would have liked.

The project takes *Little Brother*, publishes it in a Wikispaces (Tangient LLC, 2005) environment, and has students build context for the novel by hyperlinking and writing Wikipedia-style pages around words, terms, or phrases of their choice. The idea for this project came from at least two different places. Dr. David Loertscher, a professor of mine at SJSU, talks about the concept of Book 2 Cloud (Loertscher, 2011), where teachers break classic texts into smaller chunks so their students can explore meaning through the curation of images, sounds, or words. Students then use this shared resource to analyze and discuss the text to come to a deeper shared understanding. I also watched a video discussion with Doctorow (O'Reilly Media, 2013) where he talked about the assumption that readers today are never far away from a Google search bar. Given the instant access to answers, he says that authors no longer need to spend time ensuring that every concept and bit of context is explained within the text of the novel. But what happens in a book where there are many technologies that may not be common knowledge? What happens when the reader misses cultural references?

The instructions for the assignment are presented on the front page of the wiki (above) and were finessed as issues came up and questions were asked

This edition of *Little Brother* invites you to build context around the story by building Wikipedia-like entries to any concepts, words, or passages that you think are worth knowing more about. You are asked, as you read the book, to link anything that interests you to a new page, where you will build a page that explores that topic. This is an opportunity for you to learn more about each of these topics and to create a resource for others to learn more about the book as they read. This is a wiki, which means that each entry can be edited by anyone, and you are encouraged to build and improve on each other's ideas. There are discussion tabs on every page where you can discuss what is important to put into each of the entries. All we ask is that you are respectful

of each other and that you carefully consider the work of those before you before you edit their work.

Please take a moment to either click on the Creative Commons link at the bottom of the page or read the Creative Commons License link that Mr. Doctorow has included in this edition. It is important to understand that you are allowing others to share and modify your work in the same spirit that Mr. Doctorow has allowed us to work with his text.

The original wiki was created for English classes at St. George's School in Vancouver. Recognize that there are some instructions below that pertain only to wiki contributors who are enrolled in these classes and are related to documenting their work in order to obtain course credit. Participation and contributions from folks both in- and outside of these courses is not only encouraged but also highly desired.

THE PROCESS

Locate an idea that interests you in the text. Click "edit," and highlight the first instance of that idea in the text of the online novel. Click on the link button, and select "add link" to create the link. You will be taken to a new page. You need to add some text to this page and save the text for the page to be created. Go back to the chapter where you created the link and save that page so others can access the page and add their links.

Create a tag for the page that would indicate the broader topic that your page might fit into. Look at other tags to see what tags are currently being used. These tags will help us organize the potentially hundreds of pages that we create.

Edit your page to add content that explains your topic in as much detail as you can. This is a wiki, and the underlying concept is that someone else will likely come along and edit your page at some point. Students in the English courses, you will want to take a screen shot of the page that you have created to document the work that you have done.

Spend time exploring the pages that others have created. Add to them if you see ways you can further improve the entries. Start or engage in discussions around each entry if you have something to add but don't feel that editing the page is warranted.

WIKI CONTRIBUTION EXPECTATIONS

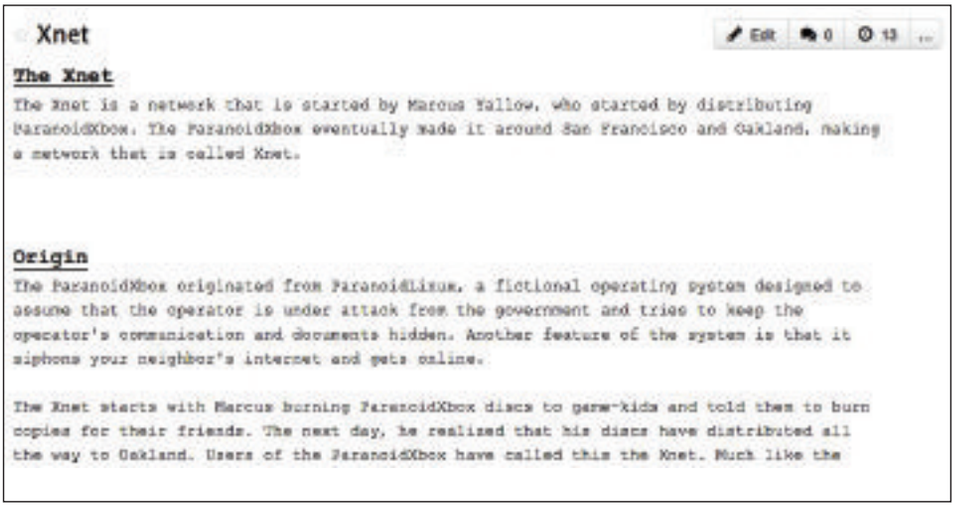
Each article is original writing. While the inclusion of quotes is acceptable, they should only be used to illustrate something that is being discussed in the article. Direct copying and pasting as a replacement for contributing your own ideas in your own words is considered plagiarism.

The goal of each article is to explain the concept that it hyperlinks to. Its secondary goal is to explain how that concept is used in the context of *Little Brother*.

The format of each article will follow the Wikipedia Manual of Style in that it will contain a lead section, a body, and a works cited list in MLA format. Any questions about other aspects of style will be referred to the Wikipedia Manual of Style.

An example is provided below of one student's work explaining one of the key technologies in the story, the Xnet. He explains how the story's protagonist creates a network using the capabilities of the Xbox game machine and then talks about the importance of the Xnet to the story and how the fictional network could be possible in a real-world application. The student has been able to delve into the story, find an aspect that interests him, and explore it at a fairly deep level. He has connected the fictional world of *Little Brother* to the gaming world that he has some experience with and has considered how a technology that is marketed primarily as a gaming platform could be hacked for other purposes.

The students seemed to enjoy the project and the concept that this edition could become a living document that would, like Wikipedia, continue to evolve over time. While time ran out on this project, I do see that it is essential for the students to read one another's articles and contribute to them via corrections, extensions of content, or discussions. I can also see this approach working with other texts, provided



that the works used were in the public domain or were released under a similar Creative Commons license. I would also suggest that one should get permission from the author regardless of the license. Doctorow's response was very much a "yes, of course" that almost felt like I didn't need to ask, but I do think that extending the courtesy to authors is important so they are aware of what you are proposing to do, especially if the modified work is to be openly accessible.

I have produced a video walk-through of the site that demonstrates how it came together (Crompton, 2013b). While I intend to open up the site on the Internet, I have some remaining issues to address in terms of student privacy before I can do that. I hope to have that completed in the near future, and it is possible that the site is open at the time of publication. Finally, I would love an opportunity to get feedback on this project, as I anticipate continuing work. If you would like to join the discussion, please comment at my parallel blog post (Crompton, 2013a).

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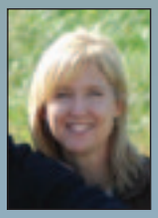

"We believe that in order to create lifelong readers, we need to develop a sense of story in each child."

Planning and Creating a Library Learning Commons

SHANNON C. HYMAN

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The Scene: Three fourth-grade students wearing lime green wristbands (Figure 1) and carrying armfuls of books approach the library learning commons (LLC) via the main concourse of the school. A wall of windows and ceiling-high showcases displaying seasonal selections welcomes them, along with school-theme-related text spelled out in giant, colorful letters (Figure 2). The students pause in the cozy entry alcove next to the wide open doors to sign in on a laptop using a programmed Google form that gathers data to track use and open access (Figure 3). Kindergarten students follow them inside chattering with excitement about the books they are hoping to find and the exercise gliders that await them (Figure 4). As soon as they pass through the doors, their voices lower as the older students remind them that in this space, we all speak and move gently to respect the work and activities of others. Immersing themselves in the bounty of books found throughout the space, the children plop on the floor in the spacious aisles; drape themselves over cushy, colorful "dots"; cozy up in vibrant barrel chairs; or jump on the gliders and get into the "reading flow" (Figure 5). Books are plentiful and accessible, in easy-to-reach face-out bins (Figure 6—who can resist a beautiful cover?) and on the shelves with built-in dividers (Figure 7—no more rogue bookends to battle—hooray!).

Figure 5

Figure 1

Figure 3

Figure 6

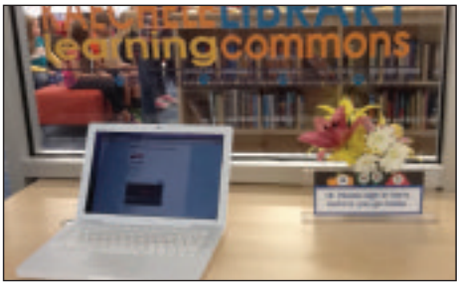

Figure 2

Figure 4

Figure 7

"When you teach, you change the very order of things—from what is, to what is possible."—Leigh Standley DiBernardo

After years of preparation and research by a team of central office personnel, the school board, and brilliant architects, it was decided that 2013 would be the year we would open our district's newest LEED-certified elementary school, with the capacity to instruct 680 students. In March 2013 I was hired as the planning librarian to join our principal and school secretary in the onsite team charged with preparing our district's newest elementary school to open in the fall. Together, the Kaechele project planning team stepped up to the challenge of taking existing learning communities with preconceived ideas about learning spaces and experiences and reshaping them into a new culture of learners who see the library with a fresh perspective. My first day of work was snowy, overwhelming, and absolutely thrilling! Who wouldn't love the chance to develop a library learning commons literally from the ground up (Figure 8)? We jumped right in.

Figure 8

Planning a center of teaching and learning means restructuring existing notions about libraries as storage spaces and constructing a vision of the space as a scaffold to support both formal and informal learning experiences simultaneously. Initially, it requires setting priorities and making intentional decisions. As a planning team, our priorities are driven and shaped by the AASL *Standards for the 21st-Century Learner in Action* (2009) and our school's inaugural initiatives, which include the precepts that learning is cooperative, empowering, active, and meaningful (Figure 9). Our planning team knows intuitively that in order to maintain the integrity of this vision and create a culture of readers, we must tend to the space, the furnishings, the collection, and most of all the people. We make every decision based on three distinct priorities—people, flexibility, and durability—knowing that the core of our learning community requires a learning commons. Our LLC is not a storage place for books and equipment with limited accessibility. Students are greeted with a series of posters that remind them that in this space we think deeply, speak gently, read widely, and work hard (Figure 10). The LLC is an openly accessed, participatory environment that supports relevant inquiry, reading, creativity, collaboration, the exchange of ideas, and the pursuit of personal and aesthetic growth.

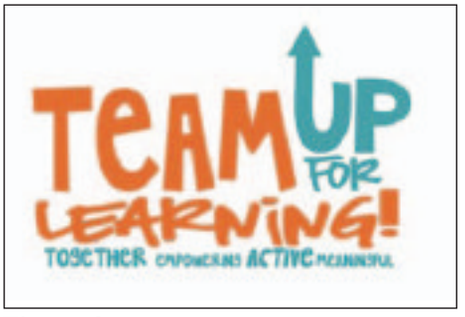

Figure 9

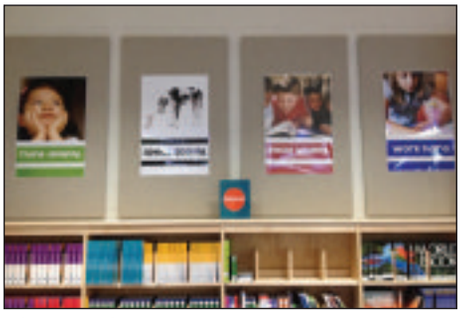

Figure 10

Our LLC is a curious balance of two worlds: cozy, restful spaces for overly stimulated minds and roomy areas that activate wonder, the exchange of ideas, and exploration (Figure 11). This juxtaposition of spaces requires an intentional placement of sound-absorbing materials, moveable furniture that is comfy and useful, and a beautiful color palette visible in all features of the space, from the fabric to the carpet, from the signage to the art (Figure 12). Shelving is equipped with sturdy, quiet castors, as are all equipment, whiteboards, and tables, which also have foldable tabletops to provide the capability to nest together for compact storage (Figure 13). Chairs are made of attractive, sturdy materials that are stackable and resistant to tipping (Figure 14). Story time cushions we call "dots" (Figure 15) and computer task chairs, a.k.a our "library minions" (Figure 16), are manufactured to encourage activity and strengthen students' core muscles. Reading areas are as varied as our patrons and are defined by point of need and purpose. For example, there are cardio cross-training gliders with desk platforms that are engineered for our students and designed to work silently. Square ottomans covered in attractive marine fabric (how's that for durability?) can be configured in a multitude of patterns and arrangements for silent reading or discussion circles (Figure 17). Stylish, colorful, and cozy barrel chairs complete the fleet of vehicles for transporting learners to their personal "reading flow" (Figure 18).

Figure 11

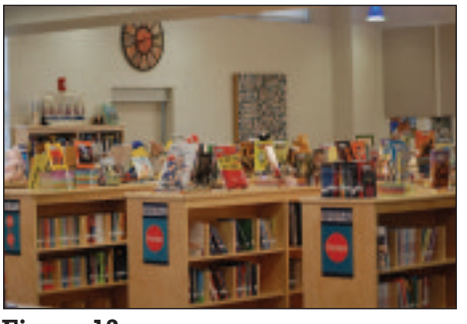

Figure 12

Figure 13

Figure 14

Figure 15

Figure 16

Figure 17

Figure 18

"The fire of literacy is created by the emotional sparks between a child,

a book, and the person reading. It isn't achieved by the book alone,

nor by the child alone, nor by the adult who's reading aloud—

it's the relationship winding between all three,

bringing them together in easy harmony." (Fox 2001)

We believe that in order to create lifelong readers, we need to develop a sense of story in each child. To ignite a passion for reading, there must be access to a wide range of materials and formats. Children must see books as a friend and be surrounded by and immersed in print at home and at school. To hear the melodic cadence of the stories, teachers and parents must freely and consistently give the gift of reading aloud. Initiatives to support reading aloud include a celebration of Dot Day based on ***The Dot*** by Peter Reynolds; Read for the Record Day, when our entire school read ***Otis*** by Loren Long; a fourth-grade read-aloud anchored by ***The One and Only Ivan***, written by Katherine Applegate; and a fifth-grade all-read of R. J. Palaccio's ***Wonder*** at Kaechele Elementary School), we curate a collection that reflects the needs of our learning community's diverse interests and levels and supports the content of our curriculum. Virtual and physical collection decisions are made through a partnership with students and staff. Their recommendations transfer the ownership of the collection and distribute resource decision making to the learning community (Figure 19). When possible, reinforced specialty bindings are selected to stand up to extreme use and high circulation. Loosening circulation policies, crowd-sourcing ideas and resources, and utilizing digital tools create an accessible learning commons that extends outside the walls of the physical space (see LLC website https://sites.google.com/site/kaechelelibrary/). Equipment is selected based on each piece's versatility, such as a Bose Bluetooth speaker that can be paired with any device to produce supreme sound without the tether of power or speaker cords. Our school is also wired with the Front Row Amplification System in every instructional space, including the LLC. This system lets students throughout the space hear equitably and without undue effort, leaving them more ready mentally and able to learn (Figure 20).

Figure 19

Figure 20

This notion of a space that encourages our youngest learners to wonder and explore with relevant tools is possible when you encourage students and staff to lean into the tension that is the unknown. But what does that look like in an elementary school? Maybe it looks like the group of first graders who wandered into LLC with a question they had after reading Eric Carle's ***The Very Hungry Caterpillar***. They said, "So is *that* why butterflies get all those colors in their wings . . . because they eat all that junk?" Together we jumped right into a few of our digital resources to look for the answer. When they found the answer, I helped them write it using their words. I said, "Wow! I didn't know that!" They giggled and decided they would practice how they wanted to tell their classmates, each taking a part they found that was especially interesting to them. "What if they want to know where you found they answer?" I asked. Their reply became their citation, and they were on their way to sharing their results with their class. In less than fifteen minutes, these six-year-olds

embraced the research process not because that was today's lesson plan but because it was what they needed when they had a burning question. Authentic inquiry is always engaging and self-motivating. A flexible schedule makes this kind of point-of-need research possible (Figure 21). In our LLC, students and staff feel safe to take risks, wonder, and grow as learners. Failures along the way are seen as essential to discerning truth that in turn fuels persistence. Authentic learning experiences also lend themselves to opportunities for teachers and students to become mentors and models for each other, as they are eager to share their new learning and contribute to the community.

Figure 21

Work spaces also change daily depending on the needs of the learning community. Tables on lockable casters can be quickly configured to handle entire class instruction, as well as small collaborative experiences. Tabletops on work stations can be easily flipped, then nested and stored. The portable bookshelves can be moved to align with fixed shelving, opening up the entire back half of the library to facilitate such activities as a grade-level Skype session with students in Texas (Figure 22), a gigantic book fair the size of a small Barnes and Noble store (Figure 23), a large community meeting, or a large staff development area (Figure 24). Coffee tables are outfitted with holes for chargers to access electricity and allow charging of various devices so students and staff can create a productive, connected work space (Figure 25). We are opening the way for makerspaces and literacy centers by collecting materials that ignite creativity and construction and by embracing the mess that accompanies these learning experiences (Figure 26).

Figure 22

Figure23

Figure 24

Figure 25

Storage and collaborative spaces are also factors in planning a successful, organized, connected LLC. Office space doubles as collaborative planning space, where a standing-height table and nifty stools welcome planning teams and allow room for

Figure 26

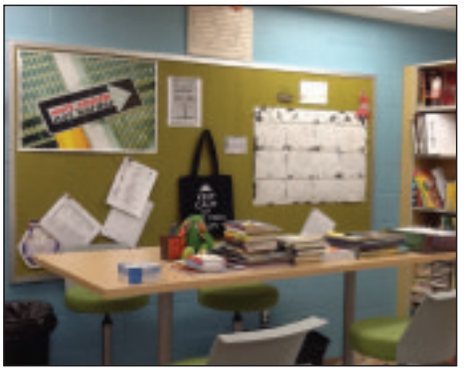

Figure 27

Figure 28

cross-content collaboration (Figure 27). Storage areas contain adjustable shelving, lightweight stackable bins, flat-file storage for various sizes of visual materials, and customized cabinets. As a result, the storage locations are efficient, making use of every available space (Figure 28).

We know that the space itself is simply part of a greater story, a story in which learning is participatory and contagious, spreading to all corners of the school and beyond. In turn, the world is also invited into the space to participate in the exchange of ideas and learning experiences. A fully functioning, state-of-the-art production studio is available for a daily student-led live newscast, student media projects, and filming learning experiences and events as they occur (Figure 29). Bringing the outside in was also a consideration in the design of the space, from our beautiful

courtyard (Figure 30) and the large picture windows (Figure 31) to our connectivity with strategically placed Ethernet and electrical and audiovisual ports. All of these elements not only allow us to step outside our four walls to integrate environmental connections, but these elements also make it possible for us to connect to the world through webcasts, Skyping, blogs, a satellite dish, educational digital cable channels, and more. Carefully selected tools and furnishings provide young inquirers comfort and control in the conundrum of information, resulting in more thoughtful responses *to* information rather than simply offering access to *more* information.

Major inquiry learning experiences are driven by our content standards of learning, where students, teachers, and I work side by side to develop essential questions, investigate and evaluate relevant sources, and create new knowledge to share with each other, and the world. Regardless of the topic, the genesis of all research is with solid, researchable, authentic questions. Students must be presented with concrete models and be taught the art of creating questions that are worth answering. Collaborative planning ensures that the students' inquiry will be undergirded with skills, resources, and tools to facilitate deeper, more meaningful research. Research about animals quickly narrows down to specific traits that animals must have to survive and wondering how our lives would change if we also had those traits. Mini-lessons about the ethical use of information are infused as students gather ideas and facts, so citation becomes a part of the process rather than an afterthought. Process is valued, and students are encouraged to reach out to new resources when they find themselves at a dead end. A framework for searching is facilitated though a crowd-sourced research toolbox that is always available with safe, reliable search engines, as well as recommended appropriate sites. Students are challenged to think of new ways to share their knowledge, and tools are provided to allow them to reach audiences far beyond the classroom. Newly acquired content is shared virtually using augmented reality apps and iPads, as well as face to face through Skyping and blogging. Older students work together to discover engaging ways to share content with younger students utilizing handheld USB uploadable camcorders and editing software.

How do we sustain this level of quality and motivate our students once the original startup funds are gone? The answer to this question is relationships. Connecting with the learning community provides buy-in by crucial stakeholders and program support when needed. My library assistant is not only efficient and wise, she also shares my passion for empowering children to grow and become lifelong learners and readers. While she expertly manages the clerical side of our program, it is her commitment to the needs of our students and staff that truly makes our library learning commons team special and successful. Because of her dedication to teamwork and her uncanny ability to anticipate every need, we are able to provide more instruction, open access, and better personal service (Figure 32). Our local bookstores, public libraries, and cinemas save promotional material for us (Figure 33) and partner with us to create literacy events (Figure 34). Our parents work tirelessly to assist us in covering and shelving books. Our principal values our impact and contribution and considers how the LLC can support and lead instruction. Partnering with our reading coach, we were able to select high-quality mentor texts to support our Empowering Writers program. Our teaching staff connects with us weekly through grade-level minutes and face-to-face collaborative meetings, and they play an essential role in building a collection that reflects the needs of our learners. Our central office support staff provides amazing service, from our acquisitions team to technical support to catalogers. This support frees my assistant and me to go about the messy but wildly fun business of building our program and raising multiliterate students.

Reflecting back on the past ten months, I recognize the massive amount of growth our LLC has experienced. I also recognize how much I have grown as a school librarian. Before stepping up to the challenge of opening this school library, I was a middle school librarian, and prior to that I was a classroom teacher. With each change I developed resourcefulness as I shifted my thinking to a different age level and student population. Twitter and Pinterest have become my go-to destinations for professional development, as well as a professional learning community made up of the rock stars of education and information literacy. I have worked hard at and loved both of these seasons in my life, but it is the position I am in right now that has changed me the most by elevating me into a solid decision maker, a design enthusi-

Figure 29

Figure 30

Figure 31

Figure 32

Figure 33

Figure 34

ast, a curriculum developer, a visionary, and a leader. It takes a very inspired person to lead and make such a space become the center of teaching and learning in the school (Figure 35).

Figure 35

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Shannon Hyman has taught and administered in public and private schools for the last twenty-four years while working in almost every content area with students ranging in age from pre-school through middle school. After completing her master's degree through Longwood University, she worked as a middle school librarian at Byrd Middle School, and is currently working as an elementary librarian at Kaechele Elementary School in Henrico County, Virginia. Her library programs have been honored locally and nationally, and her most recent publications include, "Creating Virtual Spaces" in *Knowledge Quest*, the Journal of the American Association of School Librarians. Shannon believes she finds her most innovative and engaging ideas in the lives and imaginations of her amazing students.

Exciting Times

A Transformation of Media Centers, Media Specialists, and Learning

A District's Philosophy

"While we all understand our desire to personalize our coffee order, our ring tones, and our social media presence, it is a big transition to personalize our core learning experience."

JOANNE SOBOLIK, ELIZABETH RUSSELL, HOLLI KLATT, DEBBIE THOMPSON, KIM JONES, STEPHANIE WIECZOREK

Editor's Note: The authors have posted two videos on YouTube which provide additional information. The videos are: Library Media in the 21st Century: Physical Spaces & Student Projects, which *addresses the transformation of the physical spaces and* Library Media in the 21st Century: Technology and Outreach, *which addresses how their own roles are being transformed.*

When many of us were in elementary school, we loved going to the library. We'd check out a couple of books, read them, and then repeat the process the following week.

Sometimes our teacher would bring our class in so we could sit in front of a computer, and we'd write a paper, print it, and turn it in. We really had no idea what our librarian did—we just knew we loved going to the library. Years later, our roles as media specialists incorporate broader influence and responsibility. We are also technology coaches, guiding people as they integrate technology into their learning and teaching. Our role is complex and essential to our learners.

The Kettle Moraine School District, located in southeast Wisconsin, has a media specialist in each of the four elementary schools, middle school, and high school. Even though the district is under financial pressure and in a cycle of declining enrollment, administration has seen the value of retaining library media specialists and developing their role. Director of technology Bob Boyd described the philosophy behind this approach:

> *At the Kettle Moraine School District, Learning without Boundaries is our district vision and the focus for our district technology team. As part of an ongoing master facility planning process, school sites and building infrastructure that are in critical need of change have been identified to better support the academic priorities established by the district's vision and the school board's charge to transform the educational delivery system to better and more efficiently meet the needs of all students. This need has resulted in changes to our library media programs and the process by which we support technology in our schools. District and school administrators are committed to this work and provide critical support to technology and library/media staff in pursuit of these goals.*

The result of the changes in our media centers, both in physical and digital form, is a structure that supports innovation throughout the district. We have embraced a philosophy that encourages our learners to personalize their learning. The changes we have made make this philosophy a reality.

Personalized learning is a model that is attracting national attention. While we all understand our desire to personalize our coffee order, our ring tones, and our social media presence, it is a big transition to personalize our core learning experience. The Kettle Moraine School District seeks to transform learning by creating an environment where the learner is a cocreator in the experience and the role of educator is that of facilitator and coach. Rather than working in a one-size-fits-all paradigm, each student uses his or her own passions and interests to create a unique learning experience. Teachers support each learner's needs using individual interests as a springboard for skill development.

PHYSICAL AND DIGITAL CURATION

Visitors who come to the media centers at Kettle Moraine will see a variety of environments. Some media centers, like Dousman Elementary, highlight how the physical space reflects changes in how users learn in media centers. There is comfortable seating, curved shelves, and an emphasis on collaborative spaces. Kettle Moraine High School shows a media center in transition. While there has been a welcomed addition of comfortable seating, more open spaces, and an emphasis on collaboration, there is still an old-school library feeling with wooden furniture, rows of book shelves, and industrial lighting. Visitors to the me-

dia centers of our other schools may see traditional furniture, flooring, and lighting, but those visitors still recognize a different philosophy of learning prevalent in the media centers: a focus on students' needs, personalized learning, and collaboration. As we make these changes, our collections are being weeded, updated, and rearranged to suit the needs of the people, both learners and educators, using them.

To enable student independence in locating materials, many labels and visuals are added to the space. While each elementary media center in our district is organized mainly by Easy/Fiction and Nonfiction, we are disassembling the Reference as an isolated section. High-interest books are being relocated within the nonfiction section to be accessed more easily and foster interest for circulation. Outdated print dictionary/encyclopedia sets are being eliminated as we advocate for students to access ready reference information online.

Providing open and flexible spaces to support collaboration and productivity is a key to organizing the print collection. Items that are not easily moved to allow for multipurpose use of the space are being reconsidered. Where possible, we have perimeter shelving to allow for flexible floor space and modular shelving with dual purposes for seating and books. Some of the shelving allows students to browse for books in bins arranged by reading level, category, series, and author. We employ a variety of shelving to simplify navigation for a wide age range and reading ability.

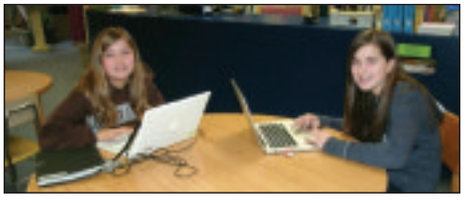
Our libraries aim to foster student reading interests and natural curiosities by having them directly involved in selecting their books. At Wales Elementary School, students are independently selecting books and using the self-checkout system. While teachers supervise the students during this process, the media specialists focus on helping learners develop more complex skills.

The greatest changes in our media centers reflect global improvements in learning and communication. We are as much a digital presence as a physical space. Students can read or download books and research through the media centers whenever they have access to the Internet. Our websites have become essential branches of our programs, a transition made by most media centers and libraries. We are developing our virtual collections, providing access to e-books, audiobooks, and digital databases. This shift to digital resources makes our roles as educators an essential part of our district. We teach our users, both students and adults, how to locate, evaluate, and incorporate information into projects that demonstrate new connections and learning. We guide them in developing their own digital products to demonstrate new understanding and creativity. Finally, we locate and provide digital tools for teachers to incorporate into students' learning experiences. Teachers and students continue to come into our media centers to locate print resources, which they read for research or for pleasure, but they are just as likely now to use a device with an Internet connection for the same purpose.

TRANSFORMATION IN PROGRESS

Dousman Elementary

Dousman Elementary was built in 1978, and the architects had the foresight to build an open, centrally located media center. In 2011, the media center was functioning under its original design as a book warehouse. It had also become the home to two desktop labs that used half of the square footage. It was time for a makeover.



Kettle Moraine Middle School Media Center: Students accessing digital resources and collaborating online

We began with a guiding vision before we ever talked about budget. We wanted a space that was not designed around the physical book but the learner. Our big ideas included flexibility, space for collaborative learning, and transitioning to mobile devices that would be housed in the classrooms. We had the good fortune to have Mary Walgren, department chair of interior design at Milwaukee Area Technical College and district parent, work with us to create our design.

The library remodeling project happened over two years. We weeded the collection, so we were buying only the necessary shelving, which was our biggest expense. We worked with all of our stakeholders to gain support. Dousman's principal championed the project and worked out funding and logistical issues of remodeling time lines. The project was funded through a $40,000 fundraising campaign by our PTO and a $10,000 grant from Coca-Cola.

The makeover has transformed how students and staff use the media center. With the reclaimed space from removing the desktop labs, we can accommodate

three classes at one time. Groups of students can collaborate and independently move furniture around. A former office was transformed into a flexible learning space. It is a pleasure to work in the new media center, but moving the technology into the classrooms has meant that the library media specialist is just as likely to be teaching with teachers in classrooms and not tied to the media center.

Dousman Elementary Library Media Center (photo by Mary Walgren)

Round sofas have been a favorite reading spot for students.

Kettle Moraine High School

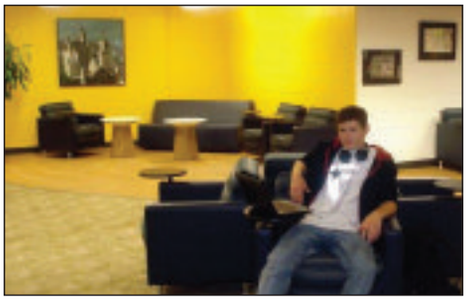
Kettle Moraine High School was originally built in 1965. As the building expanded over the decades to accommodate 1,450 students, the media center was converted into an open room. Each expansion fit the needs of the time. Wiring and desktop banks were added in the early 2000s, until the media center housed eighty desktops for students to use. We decided to open the space, modernize the appearance, and swap the desktops for laptops. Mary Walgren again volunteered to plan a new space. Through a combination of Ms. Walgren's efforts and the support of Mr. Jeff Walter, the school's principal, we were able to make significant changes to the physical media center that made it more appealing to our users.

We purchased comfortable chairs, lighter furniture, and modern flooring. Our focus was creating a space that suited the needs of high school learners. The furniture—adult-sized, comfortable, and easy to move—was arranged to create learning spaces to accommodate a variety of learners. Using laptops gave everyone flexibility because they were no longer tethered to a desktop.

In the future we hope to add glassed-in rooms to provide visual privacy for individuals or small groups, move the circulation desk to the center of the media center, and add a student-led technology help desk. We'll also replace the remaining heavy wooden furniture with lighter, comfortable, flexible seating. Finally, we'll continue to focus on providing high-quality digital resources and services to all of our users. The result will be a transformation from a traditional library to a student-centered learning space.

Middle School, Cushing, Magee, Wales

The scope of the changes that will happen are, as is the case in all districts, dependent upon funding. The other four schools at Kettle Moraine are planning similar physical changes to their media centers as funding becomes available. With the support of our administration and parent groups, many of the schools have been making small changes by rearranging the space, reconsidering how the collection is organized, purchasing flexible furniture, and updating equipment. Due to our district support, we are excited to see changes become reality for all library media centers in the future.



Kettle Moraine High School: Comfortable seating, collaborative spaces

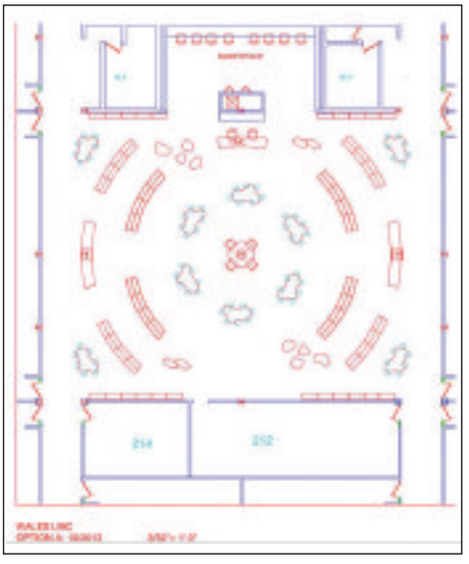
Comfortable chairs, student-centered work-space

While all schools in the district plan for future space updates, we have already transformed our roles. The strength of our library media specialist team is a common approach to update methods and resources to meet the ever-changing needs in education. These changes to our physical spaces reflect the needs of our students and schools. Learners come into our media centers expecting to both research and collaborate. They talk with one another and search both the print collections and the digital collections—relying more on digital resources than print—they are collaborating.

Students collaborating in the Magee Library Media Center, favorite spot to read at Magee

CHANGING ROLES: COLLABORATION, PROFESSIONAL DEVELOPMENT, TRANSFORMING INITIATIVES, PERSONAL RELATIONSHIPS

While the Kettle Moraine library media



Fixed shelving units in center space. New layout will allow flexible space usage by placing shelving in a circular, more perimeter design.

Third grade students collaborating with Google Docs using Acer Netbooks in the LMC

specialist team has always embraced coteaching and technology coaching, we are more determined than ever on making this collaboration our primary focus. We are leading the research, collaboration, and digital learning processes, guiding learners and educators through the digital maze of information that is now a part of learning. We use our unique skills and understanding of information to take up the charge from the school board to transform education in our district. Incorporating Google Apps for Education (GAFE) has helped make this transformation happen. We are in our second year as a GAFE; we media specialists are Google-certified trainers or are working toward this certification, making us the leaders in using these tools to transform learning. One of our goals is to become a Google-certified school district. Media specialists provide learning opportunities for our staff so they, too, can master GAFE. We offer multiple personalized opportunities for teachers to meet their individual technology goals, including sessions before and after school, Saturday workshops, and our annual Summer Technology Academy.

Teachers in attendance at the Saturday Google Sites Workshop

We facilitate student learning by helping to create and facilitate personalized learning environments. Learning is relevant to students when they are able to take ownership of their own learning. As media specialists, we are working with teachers to create personalized learning experiences by curating and sharing resources with both teachers and learners as they construct and express knowledge. For example, the middle and high school media specialists are incorporating digital citizenship curriculum from Common Sense Media (commonsensemedia.org) for all their students. The lessons will be used by teachers to guide students through a wide range of topics that are essential for ethical, safe use of digital information.

Students collaborating in Kettle Moraine High School Media Center

While all media specialists in the district support Response to Intervention (RtI) in some capacity, the media specialist at Cushing Elementary has created a personalized learning environment for the learners with whom she works. Learners first need to understand how they learn best. They also set goals based on scores from MAP (Measures of Academic Progress) testing. Once they have this understanding, they have a choice of how and what information they acquire and have a voice in how they express what they know and understand. Through the six-week inter-

Students collaborating on projects during Cushing Elementary's RtI time

vention cycle, the learners decide what they will learn about, and they design a project to showcase their learning. They then publish these projects in their digital portfolios, using Google sites, to share with their peers and teachers.

Another way we personalize learning and creativity in our media centers is through Makerspace technology tools. In some of our media centers this looks like a recording studio for an in-house television broadcast with a multimedia area with a green screen. We also hope to support physical projects, such as Rainbow Loom, 3D Pen, Legos, Snap Circuits/Electronics, and puzzles, in addition to computer projects like Tynker programming, photo imagery, digital portfolio, multimedia, and apps.

CONSIDERATIONS

Changing the role of the media specialist is an essential step in transforming a school media center into a learning commons. Knowing that remodeling a media center is a massive undertaking, we have suggestions for districts and schools that are making the similar changes in their philosophy and space:

- Create a group of school representatives to gather perspectives from a variety of stakeholders (i.e., administration, parents, teachers, reading specialist, and students).
- Define the collection; keep materials that are essential to best practices. Reconsider materials and simplify sections to be easily maintained (Easy, Easy Reader, Fiction, Non Fiction, Magazines/Periodicals, etc.).
- Curriculum and standards are the driving force behind instruction; technology is just the tool.
- Use social media and personal connections to share the process with your community.

Together, Kettle Moraine's administration and its team of innovative library media specialists have made the commitment to ensure that the district's vision of Learning without Boundaries is implemented with a focus on its technology goals: effective teaching and learning practices, student achievement and support systems, and leadership. In pursuit of these goals, the district's administration and library media specialists have begun the process of creating physical spaces in their library media centers and digital resource spaces that reflect the needs of today's digital students, emphasizing learning and communication that supports the greater global community.

These new physical and digital learning spaces foster personalized learning environments for students, allowing students to take more ownership of their learning. As a result of the new physical and digital learning spaces, collaboration between library media specialists and teachers has significantly improved. The increased collaboration has not only benefited the students but also teachers, by enhancing their individual professional development needs.

Although there is still more work to be done, the transformation will continue to be a powerful ingredient in creating digital citizens who will be ready for the continually changing global society that we live in. The possibilities are endless when school district administrators and library media specialists work together. The Kettle Moraine School District has planted that seed, hoping more districts will follow suit. As a result, students will be better prepared for what awaits them in this challenging yet exciting world.

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teacher librarian
THE JOURNAL FOR SCHOOL LIBRARY PROFESSIONALS

"Today's teens seem constantly plugged in to video games, social network sites, and text messaging."

Engaging Students in the Heritage Christian Schools Learning Commons

PIPPA DAVIES

Twelve years ago I hesitantly responded to a calling for a position as a virtual teacher librarian for Heritage Christian Schools, based in Kelowna, B.C. Heritage Christian Blended Commons serves a physical campus of 300 students, a distance learning school of 1,682 grade K–9 students, and 438 grade 10–12 students, plus BC Online School, our cross-enrolled division of 2,500 students.

Having worked as a public librarian and teacher librarian for the Surrey School district, I was nervous and excited to find myself in this unique distance learning environment. In many respects I felt like a duck out of water, working from home and having to rely on different technologies to connect with my staff and students. There was no "one" library or web portal I could research on virtual libraries in Canada. I felt like the blind leading the blind!

The physical commons started as a small school library, incorporating physical books and other media. Library staff and teachers had created physical resource kits based on BC learning outcomes to send to distance learning patrons all over the school district via Canpar. We needed to come up with an overall hybrid plan and create a three-year long-term goal where physical space would not be an issue. We also began to think of ideas that might lead to building a new culture in our school, where we could share digital citizenship skills in a safe environment.

Our first task was to establish our library work as academic, current, reliable, and valid. We had to start with baby steps. Distance learning has its own culture, and part of that culture meant engaging our teachers and families in a trusting and collaborative relationship. We had to ensure that sharing information with staff members was personal, friendly, Canadian, and from a Christian perspective. Service and discipleship have always been our motto, but recently we added innovation to our work ethic. We enjoyed working one on one with families and students supporting them in bibliographic skills while running virtual classrooms on Blackboard Collaborate and Skype to share research skills, book clubs, and technology training.

With our techie team we established a web-linking database that would contain pertinent links for reliable retrieval of information for all school topics. We started sharing these links with teachers in a newsletter. Content curation became a reliable solution to searching online and sharing efficiently, via Scoop It, Pinterest, and Mentor Mob.

Along with these links, our team added twenty-first-century databases such as BrainPop, Discovery Streaming, Ebscohost, Scholastic Expert Space, Enchanted Learning, the Canadian Reader and for reading and adaptive technologies, RAZ Kids, Reading Eggs, Gizmos, and IXL. Many of these programs enhance accurate, reliable, and academic information retrieval and allowed for learning in multisensory platforms based on correlated BC learning outcomes. As our school grew, so did the need for a twenty-first-century digital learning commons that would encourage collaboration and inquiry-based learning.

PHILOSOPHY OF A LEARNING COMMONS

Enter the philosophy of a learning commons, and the book *The Virtual Learning Commons* (Loertscher, Koechlin, and Rosenfeld 2012). This book was a turning point for our library going from a separate online and physical library into one virtual blended hub. The beauty of this theory was that we could envision a new world based on enhanced communication and information retrieval. We wanted a theory that would meet the needs of our whole school body and provide a safe space for our stu-

dents to explore e-learning from a social perspective.

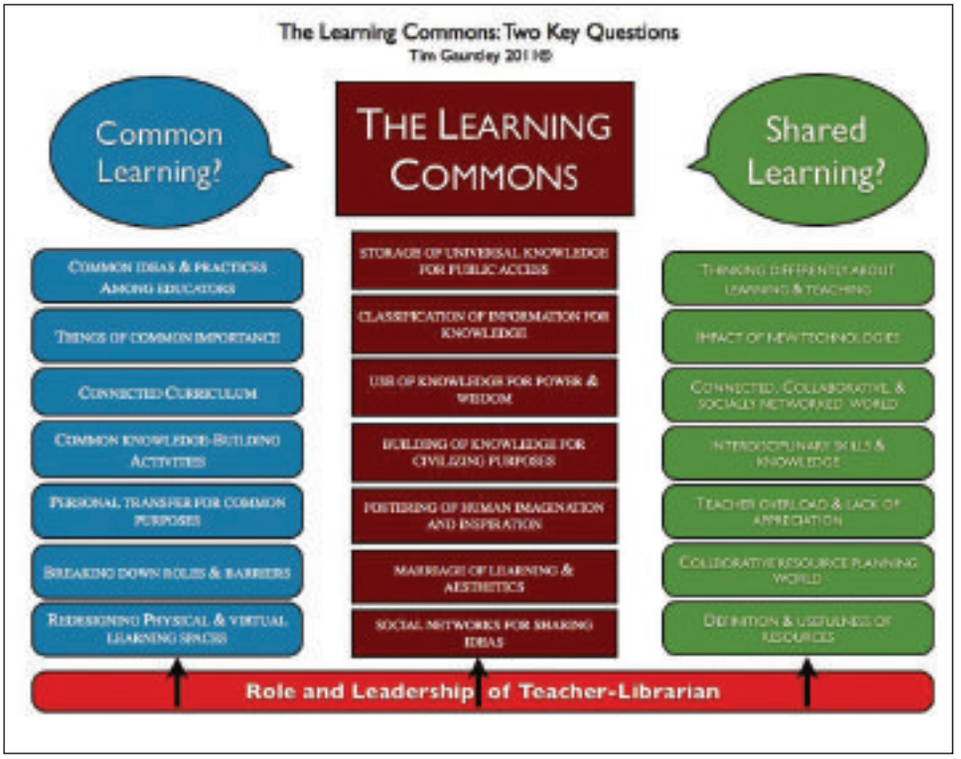
On our team were three principals and six librarians. Thankfully the vision was embraced and supported, and although the changes were time consuming and sometimes overwhelming, our team was united to work toward the vision in both physical and virtual commons. Working from a virtual design space (which included play, comfort, light, different seating patterns, community, multipurpose spaces/rooms, portable technology, and different learning needs), we would move toward a mirror image in the physical commons.

Some of the underlying principles as shared in the following diagram were based on the research done by Loertscher, Koechlin, and Rosenfeld to establish the library as the meeting place for common and shared learning, research, technical expertise, experiential learning, literacy, new multidisciplinary spaces, and the storage of information by a group of teachers, leaders, students, and others bound by a common goal. This goal was to create a new community that was social, democratic, and collaborative. The virtual and physical space would embody an information center, a literacy center, a knowledge-building center, and an experimental learning center.

CELEBRATING THE LEARNING COMMONS AS A SOCIAL MEETING PLACE AND LEADERSHIP TOOL

We had already ventured forth into the world of social media. Having enjoyed blogging on Blogger, Twitter, Google Plus/Hangouts, and Facebook for my own professional development, and having researched the effects of social media and digital literacy locally and in the United States, I knew that our students needed help with developing a digital identity. Cyberbullying was on the increase, and students did not have time to evaluate what they were searching online. The Kaiser Report in 2012 showed the following results from their research among Internet users.

- 69 percent are social networking site users
- 59 percent share photos and videos
- 46 percent creators; 41 percent curators
- 37 percent contribute rankings and ratings
- 33 percent create content tags
- 30 percent share personal creations
- 26 percent post comments on sites and blogs
- 16 percent use Twitter
- 14 percent are bloggers
- 18 percent (of smartphone owners) share their locations; 74 percent get location info and do location sharing



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This new learning space would not be defined in one traditional space but would encompass many spaces where the net generation could use mobile technology to access information. Educause defines this goal as moving beyond the industrial age of learning toward an age of education in the cloud, with teacher as facilitator and classroom engagement based on social constructivist theories. In the book *Hanging Out, Messing Around, and Geeking Out*, author Ito Mizuko shares the stats related to young people's use of digital technology: Today's teens seem constantly plugged in to video games, social network sites, and text messaging. They are doing this because their learning has shifted from individual understanding toward group social interaction and engagement with shared cultural forms.

Our first step was to launch a virtual identity with a Wordpress website and a Ning, a private social network. We established our own networking rules, created a moderation team, and launched our virtual spaces within two years of each other. The hcslearningcommons.org site would house the base from which our families, staff, and students could connect over book clubs, curation, blogs, and media. Our hope was to help our students move beyond consumption toward content creation.

BUILDING CULTURE

Ning was to become a community for all parents and students, but we discovered that our students staked a claim on the Ning and parents preferred our school Facebook site. Students share their media, connect over homework, write blogs and poetry, join book clubs, and collaborate in the chat room. This is their social sandbox, or experimental center, where they can ex-

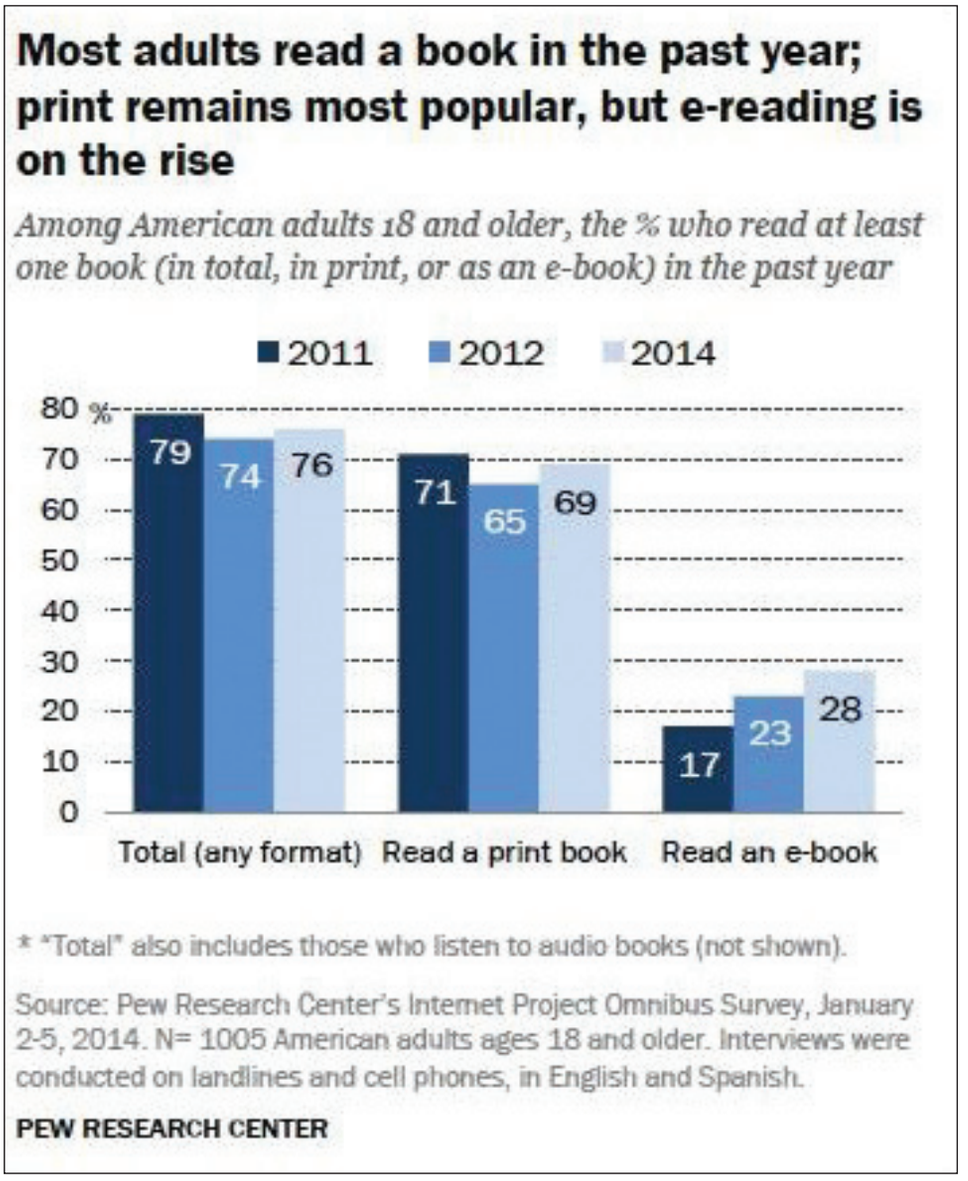
periment, converse, ask for help, and share media with friends and teachers. Concurrently we can help guide conversations and encourage digital citizenship. Peer-based learning goes hand in hand with some of the Sugatra Mitra research in Hole in the Wall, where students help teach and coach each other to learn new concepts.

Events enjoyed on the Ning include digital photography, poetry, music sharing, innovator's awards, readathons, book clubs, informal reading and writing events, design a school logo, and virtual camps. Teachers who have a gift in these areas help judge and coordinate these events. Groups that originate from common interests include grad groups, chapel group, groups from different grades, groups that like specific books or music, and groups that want to discuss politics and other controversial topics like bullying, abortion, and evolution/creation debates. Informal assessment happens on our Ning, and we have recently started awarding digital badges. All content creation is shared via social media and on our newsletters. Our students have started their own newsletter produced on the Ning and shared on Issu. This is informal assessment at its very best and encourages students to become content curators. In the physical commons these events happen with live events, creative bulletin boards, tea and hot chocolate for high school, book club discussions, music, and noise!

Our website, www.hcslearningcommons.org, continues to grow and develop as we add to our collection. Editing it is an ongoing task. We are not tech experts, but we are enjoying becoming lifelong tech learners. Regular blog postings keep patrons informed about learning commons promotions and have become a starting point for all of our staff and patrons as they research and collaborate in the learning commons, connect with book clubs, catalog, and use digital resources and social media.

E-READING AND DIGITAL DEVICES

Recent research from Pew Internet reveals more young people are using mobile devices for e-reading, 50 percent of adults own a tablet or e-reader, and 28 percent of all those who read a book in 2014 read it on an e-reader. This is an 8 percent increase since last year.



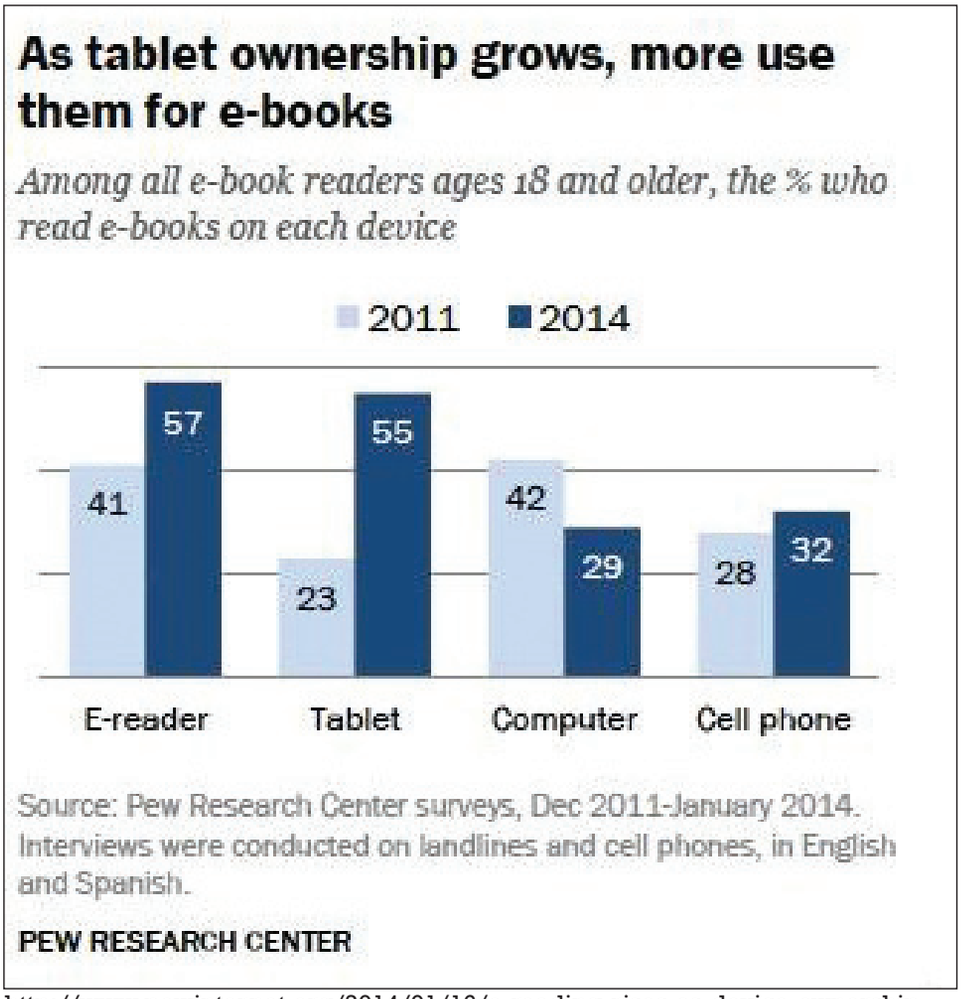
http://www.pewinternet.org/2014/01/16/e-reading-rises-as-device-ownership-jumps/e-readers1/

As a means to address this shift toward digital media, the BC Ministry launched their own draft of digital literacy learning outcomes in 2013:

- Great books foster conversation, inviting critical and deeper thinking.
- Nonfiction can be blended into reading comprehension.
- Reading across the curriculum captures struggling students.
- Students read to learn; motivation is based on text.
- Memory work is being replaced with analytical skills.
- Technology can be used to foster educational purpose.

AN E-LIBRARY WOULD INCLUDE MANY OF THESE DIGITAL LITERACY OUTCOMES AND MORE

We had already bought into the idea of a digital book collection via e- and audiobooks, and although the stats in 2012 were showing only 20 percent of readers were engaging with digital media, we decided to take the risk and subscribe to Overdrive. Our patrons needed help learning how to



http://www.pewinternet.org/2014/01/16/e-reading-rises-as-device-ownership-jumps/e-readers3/

use e-readers, so we purchased e-readers to send out to patrons with the idea of practicing before purchasing. We marketed our small collection, and as it grew, so did the technology, including changes in design and software. Overdrive launched Overdrive READ last year, which allowed patrons to read right from their browser and removed the extra option of downloading software. Students in our virtual classes started ordering their curriculum for book clubs, and our book clubs had instant access to online resources, as did our online teachers.

When the new 2015 BC learning outcomes came out this year in draft form, we were ready to research curriculum and discovered to our great joy many downloadable e-books in open PDF format. Our patrons could have free online curriculum at their fingertips, and the distribution rights allowed a certain percentage to be photocopied. This would allow our families easy access to digital curriculum. Our learning commons staff have begun the process of moving our physical commons kits (which are made up of physical resources along with teaching and parent guides) to virtual, open-access kits. We hope to have all our teachers contributing in some aspect of this big think tank. Experience has shown over time that with excellent marketing strategies and educational webinars, our patrons are now using e-books more than ever (approximately 30–40 percent of our users). Immediate access (twenty-four-hour delay for requests and additions to the collection) is part of the winning combination. This year Overdrive has added many more educational publishers to the mix and is constantly negotiating to add Canadian content. We are hoping to see some of the big-name curriculum publishers move toward this type of digital sharing.

As our virtual presence increased digitally, so did our campus learning commons, which housed our collection of books, media, e-book readers, iPads, and new this year, Chromebooks. On tablets, 1:1 learning was already showing excellent results in our campus high school, and our high school administrator did his research on Chromebooks before helping us move these into our learning commons space. By the end of year three in our long-term goals, we will have enough technology to make a classroom teacher excited about bringing their class into the learning commons for project-based learning. The purchase of a digital reader and a large-screen television meant we were able to transmit live story times for distance-learning patrons. Our campus team is pursuing inquiry-based learning at the next level, with an iBuddy program, a student-to-student exploration using iPads and educational apps. The outcomes include community building, tech literacy, and leadership development. For an inviting approach to book reviewing, student-led investigation and promotion leads to peer inspiration. Student creations are shared around the learning commons for all to see and admire. Their purpose is to inspire creativity, participation, and peer affirmation.

Along with the new virtual space, our physical spaces needed to support the same vision. We began replacing older furniture in the commons with more interactive tables and newer shelving. Space constraints have caused some minor issues, even with constant weeding, so we are constantly researching new spaces within our virtual commons. Adjoining the physical campus book club in grade 6–7, we have virtual book clubs from grades 4–9 that run on Blackboard Collaborate and integrate perfectly into the literacy component of the learning commons. High school students in grades 11 and 12 have helped moderate these book clubs.

Going one step further, last year we incorporated a global vision and collaborated with a school in New Guernsey, England. The collaboration around literacy and culture was illuminating as we shared via blogging and virtual/physical classrooms. The cultural nuances were highlighted as we shared differences in cultural expres-

We have an extensive Susan Barton collection, dyslexia kits, books on different gifts and differences, and other technologies to assist multisensory learning.

sions from British and Canadian perspectives. Virtual camps on Google Hangouts and Blackboard help our students connect using Google Drive and Google documents.

New this year, we added a special education library component and now have consultants who advise us regarding the latest in curriculum and adaptive technologies. Based on their advice, we are now growing a large collection of materials to help students learn with multisensory devices. We have an extensive Susan Barton collection, dyslexia kits, books on different gifts and differences, and other technologies to assist multisensory learning.

In the fall of 2013, our schools partnered with an online school in Alberta, ACOS. We are currently researching a decentralization process to help provide digital and non-digital resources. Right now we ship materials all over the province and also to Alberta. As we incorporate libraries from a distance we realize the value of keeping media digital.

We are now enjoying year three as a learning commons. The beauty of the learning commons vision is that libraries are not only the vibrant hub of the school but are also the center for innovation, cutting-edge technology, and inquiry-based learning. Students and families will flock to the learning commons because they have a sense of community and belonging. They have found a place that will encourage intellectual conversation around literacy and discipleship. Within our schools we also run an immersive technology program that allows for students to learn, create, and research in virtual worlds. Finding a niche within this program is also on our list for the future.

Change is the epitome of learning, and the learning commons theme resonates with this in mind. We realize that in a year or two we will need to research the statistics again and move forward to welcome new ideas and technologies. Change has occurred not because of one thing we did right but because the tide in libraries had changed, and we needed to ride that change. This vision has allowed all of our library team to become digital leaders in their own areas within the commons. We are thankful for a new learning commons vision, an amazing learning commons team, a super community of student content creators, and an incredibly supportive administration team who have helped make our learning commons dreams possible.

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Pippa Davies has enjoyed working as a Teacher Librarian and Learning Commons Chair at Heritage Christian Schools Learning Commons since 2004. Her experience encompasses the role as a learning commons specialist, and teacher in many domains, including the public, medical, legal, reference and education fields. Her goal is to constantly challenge herself to learn new technology and educational innovations for her schools, students and for her own research purposes. Pippa was an active participant and presenter in the three, year Vancouver Symposium on Christian Education, with the culmination of a pedagogical manifesto, for Christian Education in the 21st Century. When not working Pippa enjoys hanging out with her husband, and three adult children. She loves hiking, reading, surfing the net, and cooking sumptuous meals!

Follow her @PippaDavies on Twitter

Why a Middle School Learning Commons?

"There were many visits to other schools to examine libraries, technology labs, and common areas to see how design could impact the successful use of a space."

CHAD STEPHENSON AND JASON STONE

ABSTRACT:

This article hopes to answer the question "Why a Learning Commons?" for librarians, administrators, technology coordinators, and other middle school teachers. The San Francisco Friends School has created a middle school learning commons on the third floor of its urban enclave in the Mission district of San Francisco. Over five years, the school has renovated a space to fit its program and staffed it with a coordinator, technology director, librarian, and educational technology integrator. The model was developed and adapted to be among the first for middle school students in the United States.

After five years, our library was at a breaking point. With no new staff or physical expansion, the program had grown to be K–8 in the same sized room as the K–5 program that it had started in. The school enrollment had doubled, and it was now being scheduled relentlessly between classes and adult meetings. Technology needs were increasing, and shelving had reached capacity; the room, after school, was a major hub for kids but was too loud and crowded to be a quiet study space.

A second level above the library had always been reserved for expansion since the school moved into its current location, but it had yet to be developed. During the five years in our new home in a renovated former Levi's factory, information needs and growth in technology had moved light-years onward. Ideas for integrating educational technology had moved ahead, and technology like iPads and e-book collections had become commonplace. In addition, students who were third graders were now eighth graders, and with all their homework and gear, could hardly fit in the space during their class visits.

In conjunction with building out the second-floor facility, staffing would need to be added to supervise and be a presence in the space, as well as to grow and facilitate the program. One of the challenges for this person would be to build out the space alongside (or possibly behind) building out the program. Another would be to design a space that would house a traditional print library program but support newly developing areas in educational technology. The school hadn't yet developed the program or curriculum, but the space would need to be designed for what was to come next.

The second level would not just be a physical extension but an extension of the library program, focused on the middle school students, families, and teachers. The program would also need to include project-based learning with technology and information literacy, as well as to build on the "culture of reading" begun in the lower school portion of the program.

GROWTH AND DEVELOPMENT OF A LEARNING COMMONS

A campaign to raise funds for this space was under way, and the head of school needed to bring a vision of the space to present to donors. It would have to support and focus on middle school students and would need to incorporate a modern vision of a learning environment. To build support for this vision, we invited David Loertscher, author of *Learning Commons: Where Learners Win!* to help us build a vision of what would become our learning commons. We toured the yet-to-be-built space with our head of school, technology coordinator, and middle school head to build a picture in our minds of what the space would do: house the collection, help students and teachers collaborate, and be a hub for learning with a flexible floor plan. Accompanying it would be a virtual learning space that would help students collaborate and build knowledge and projects together online.

Additionally, we invited Debbie Abilock, a national library advocate and consultant, to join us on another tour. She helped us consider how this space would not only serve information needs but would also help teachers and students build knowledge and real-world connections between learning and projects. She noted that it should include the needs of the entire community's learning to help fulfill its goal as a learning space.

But a name is what we really needed. To best equip our head of school to begin helping others to envision the space, help us build a list of supporters, and help us hire someone to staff it, we decided it would need to be something understandable and expandable to include all these areas of program and purpose. We chose "learning commons" to meet these needs—something familiar to college campuses and recognizable to applicants who may be either librarians or teachers with a technology background and one that would give them focus to design a unique program with a basis in education and design in common areas.

A GOOD FIT FOR EXTENDING THE LIBRARY PROGRAM

In the first version of the library, the design called for the technology director and librarian to share an office in the library. This was intended to centralize the technology service needs and library services while also giving a home to both programs. An added benefit was to unify the programs and services by having the two key players create an environment of built-in collaboration by sheer adjacencies. This model also scaled well, as the program was built to include other people, as offices of the library learning commons (LLC) would house both technologists and library counterparts to the program, eventually on both levels.

The new learning commons would also need a caretaker. The learning commons coordinator would share an office with the director of technology and would need teaching experience, experience working in libraries, and a solid foundation in technology for students. This person would also design the learning commons itself and be a teaching partner for middle school teachers.

The vision of the learning commons would be that it would do many jobs for many groups—it would be a place to make learning visible, allow groups and classes to meet and use the space, be flexible, house a middle school library collection, work in flow with the lower school library, and serve as a third space for a "lab model" of student creation and production of content.

As we began our search to hire the coordinator, the committee struggled to articulate answers to several questions: What makes a learning commons different or unique from a library? What would be similar? What background would a person need, and how would we find that person? How could our community adopt this new space? Would visitors make their way to the third floor of a building to access this new space, and what would keep them coming back?

As a librarian, my focus was to be sure the learning commons included goals that aligned with our existing library program and served as an extension of it. Technology and library programs would need to continue to support one another using the space but allow teachers to have greater support in using the tools in that space.

We knew our key was our hiring of the learning commons coordinator—would it be a librarian or technologist? My best hope was a fusion, a hybrid of the two roles, plus someone who could design and teach the hybrid curriculum, all the while presenting this new model as cohesive and a good fit for the school.

As the search continued, the job description was refined. We became more focused on finding a person with teaching experience in middle school, and then experience in technology and libraries. And as each candidate brought more to the table, we realized that our search delay had helped us articulate how the learning commons would benefit our school's program beyond what a standard library program would. And as we narrowed our decision, the person became more and more clear to us . . . just in time.

The final job description focused on the skills of establishing a welcoming and well-used space, collaborating with teachers to support the integration of information and communication skills, and contributing to the development of the K–8 scope and sequence in media literacy and information technology. Other key skills included teaching students how to access, evaluate, use, share, and create information; modeling and promoting literacy and the enjoyment of reading; developing the

collection of print materials; and working as a full member of the middle school teaching team. Due to the newness of the space, program, and position, we also focused on finding someone with an innovative startup spirit and a collaborative, flexible, and approachable temperament.
—Chad Stephenson, librarian

LEARNING COMMONS COORDINATOR: DESIGNING A SPACE TO HOUSE A PROGRAM

Hiring the coordinator for the entire school year ahead of the build-out allowed for planning the space to house a program. Starting from scratch with an empty space instead of redesigning a currently existing library or lab also allowed for an original, ground-up vision of the space.

However, this presented the challenge of concurrently planning a new instructional program and the physical space to support that program. Clear collaboration and communication with all school constituencies was vital to achieve this double goal. To gain an understanding of student, faculty, and parent needs for our new space, gathering as much information from each group as we could was important. Middle school teachers were interviewed to gain an understanding of how a new collaborative workspace could change how they teach and how each teacher could envision a modern collaborative classroom. Middle school students were interviewed to learn what they would like in a new middle school hub, both academically and socially. Parents were asked for detailed feedback after all construction project informational meetings and throughout the fundraising process.

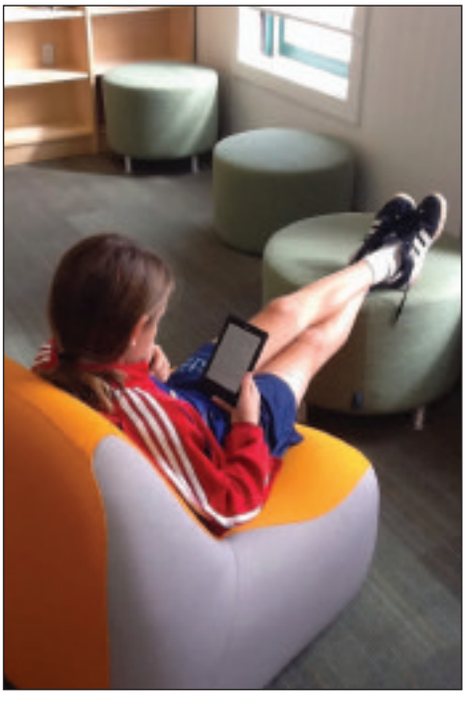
A 2,200-square foot open floor plan (on the third floor of our building) meant a clean palette on which to create the learning commons. However, contingent conditions included regularly spaced structural wooden support columns from the original historic construction that could not be relocated but were used to help structure usage zones: a central teaching area with a large flat-panel display for groups up to fifty, wall and mobile shelving to house a print collection of 3,500 items, small-group collaborative areas, a conference room with a retractable glass wall, circulation desk with built-in "genius bar," printer and copier station, and laptop cart storage. A large outdoor patio was created in order to provide middle schoolers with much-needed additional outdoor space and to expand the functional space. With the learning commons located directly above the original library, a staircase was built to connect the two spaces and their programs.

The school's original architects and the construction company were on board to continue this third phase of construction. Their prior knowledge of the building, the school, and its program reduced the amount of time and energy needed for the planning process. From the very beginning, the architects were communicative and responsive to suggestions, questions, and comments from our team. To reduce the number of communiques between the school and architects, all e-mail communication was funneled through our school's business manager. At each face-to-face meeting with the architects on campus, members of our LLC team were always present, as well as members of the administration and business department, guaranteeing a collaborative planning process and clear communication and expectations.

There were many visits to other schools to examine libraries, technology labs, and common areas to see how design could impact the successful use of a space. We focused on campus location, furniture, lighting, ingress and egress, display options, and shelving. Regarding the programming of such spaces, we examined scheduling, staffing, and curricular integration.

Local "design thinking" experts were

invited to come and offer suggestions and advice on our project. A small team from IDEO, a company specializing in design thinking, came and helped the LLC team and several teachers define the main challenges to our work, then "ideate" solutions to what an ideal learning commons would offer. Through a series of workshops and brainstorming with IDEO, we were able to refine our hopes and dreams for the space. Later in the year, local award-winning designer Yves Behar came to discuss what he had found successful in creating productive work spaces that enable small and large groups to collaborate. Adding to information gleaned from these experiences, the book *The New Learning Commons: Where Learners Win!* (Loertscher, Koechlin, and Zwaan) was an invaluable resource for envisioning how our new teaching space could add to our overall educational program.



Through this research, we learned that a room's furnishings could make or break the usability of the space. We realized that we needed seating, tables, and fixtures that were lightweight, easily moveable, and stackable, yet sturdy. In addition, we wanted to have a variety of hard and soft seating options to allow users to customize their collaborative and individual workspaces to their liking. We arranged for samples of seating to be delivered to our school and carried out multiple "in-the-seat" tests of each sample with several students of various heights and sizes. Scale drawings and floor plans were created to test how the tables, chairs, and shelves could all fit within the room. Final furniture, fixtures, and equipment (FF&E) decisions included flip-top tables on wheels, lightweight aluminum chairs, bookshelves on casters, moveable whiteboards, four flat-panel display screens, and a variety of upholstered ottomans and lounge chairs. We expanded the middle school print collection by adding approximately one thousand new titles, with the help of a small student advisory panel.

Construction began in March 2013 and was completed in late August the same year. Display and signage were quickly put in place, and the room opened to great fanfare on the opening day of the 2013–2014 school year.

THE LEARNING COMMONS AS A HUB FOR LEARNING

In its role as a new middle school hub, the learning commons was an immediate success. The students quickly warmed to the more developmentally appropriate nature of the room and greatly enjoyed the new outdoor space offered by the adjacent patio. The school's strong culture of reading was supported by both the expanded collection and the new areas for quiet reading. The soft seating was most popular, with students discovering new ways to organize the ottomans and whiteboards to create private reading nooks and workspaces. Parents, administration, and faculty adopted the room as a comfortable work area and meeting space.

A few classroom teachers became early adopters and used the learning commons as an expansion to their current classrooms. With much more space than the school's typical classrooms; far greater options of display screens, seating, and table arrangements; and built-in collaborative work tools, the learning commons offers teachers new opportunities to teach existing units. In a seventh-grade math unit on linear equation, bungee cord drops of stuffed animals and dolls off of high bookshelves, and then out of our third-floor windows, made use of the new space. A fifth-grade class studying geometry and area used the room's layout itself as an investigation into shapes and measurements. Seventh- and eighth-grade humanities classes used the small-group collaborative opportunities for book groups and writing labs.

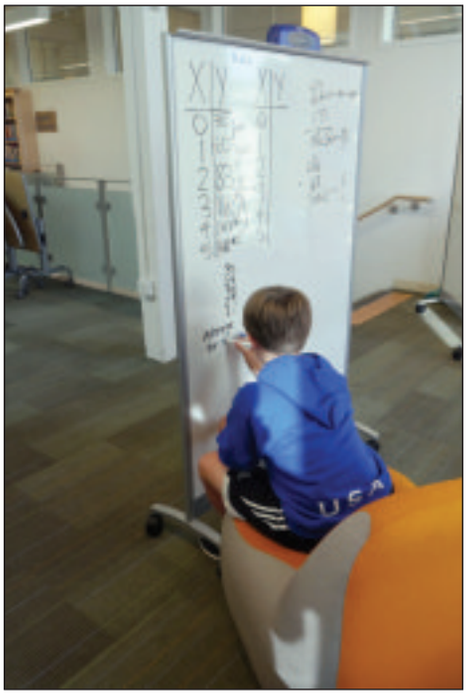
As the school year progressed, attention could be focused more on the library learning commons program. The team of librarian, learning commons coordinator, director of technology, technology integrator, and academic dean began focused research into best practices of information literacy,

technology, and project-based learning. After examining the work of, among others, *The Partnership for 21st Century Skills*, the ISTE NETS, the AASL *Standards for the 21st Century Learner*, and a variety of maker movement resources, we narrowed our library learning commons program to focus on a three-tiered system: information and media, technology, and innovation and creativity. These categories best fit the existing curriculum of our school and offer the most connection points for our faculty to begin examining how our new program could add to their teaching. Faculty meeting time and individual interviews with all faculty to explain this new work and gather information on their current teaching are currently under way. Additionally, our school's curriculum-mapping software helps to see both an overview of curricula and to map out the nascent LLC program.

KICKING THE TIRES: LOOKING BEYOND THE PHYSICAL SPACE

Looking ahead to upcoming years, we realize the new library learning commons is just getting started. As a physical hub to our middle school and a center for middle grade and young adult literature, the newly constructed space is an unqualified success. Next steps include using the learning commons as a catalyst for developing a stronger middle school online class presence, increasing the sharing of student learning and expertise, and encouraging more use of the space by parents in their own learning. Looking ahead, the focus will be on developing the LLC program to fully support instruction across all grades to support innovative teaching and learning in the areas of information and media, technology, and innovation and creativity. This is the true challenge, and it will be the core of making the most of the new space and program.

In the coming years we will be careful to continually evaluate our progress and regularly gather feedback from all users. Given that a learning commons is only successful when it is offering all of its users a quality learning environment, we need to hear from those users. With the full support of the faculty, administration, parents, and



students, it is exciting to see how our library learning commons program can help give our community the true twenty-first-century educational experience it deserves.

—Jason Stone, learning commons coordinator

Chad Stephenson has served as a teacher librarian for over 16 years, most recently at San Francisco Friends School as the lower school librarian. His ideas about library design and program implementation have been influenced by having worked at over fifty sites throughout the Bay Area, both public and private. Chad has also served as the president of BAISL (Bay Area Independent School Librarians). He can be reached at chadstep@gmail.com.

Jason Stone has been working with libraries and technology departments since 1995, He has a passion for helping children and adults learn to use technology as a tool for learning, discovery, and play. In his current role as Learning Commons Coordinator at The San Francisco Friends School, he is intrigued by the learning opportunities offered by these tools and the access to seemingly endless amounts of information. Jason can be reached at jstone@sffriendsschool.org.

The Evolution of a Traditional Library to a Learning Commons

"Our usage was skyrocketing, and our statistics for the end of the 2011–2012 school year proved it."

JOAN L. ACKROYD

There are times when you go by instinct and trust that you are doing the right thing for your students, your teachers, and yourself. My first year at Monticello High School in Charlottesville, Virginia, turned out to be one of those times.

Due to a shrinking budget, my fulltime library media specialist job at the elementary level was reduced to part time. A position opened up at Monticello, and I moved into my current position for the 2010–2011 school year. After previous experiences in both classroom and public library environments, I began my library media specialist career at the middle school level. So even though I choose to describe this evolution to a learning commons as shaped by instinct, I did have years of experience working with students and teachers from PK–12 to inform my decisions. I also cannot emphasize enough the *impact* that my role as mother has had on my philosophy and actions as a professional. Creating a positive educational experience for my children has become a lens through which I strive to meet all students' needs. Fortunately, this lens meshes with the student-centered flexibility that is core to creating an effective learning commons.

I truly loved working with my PK–8 students. Their boundless energy, inquisitive nature, and creative spirit fed my soul and inspired me to respond in kind. I learned something new about technology, creativity, and collaboration from my students every day. My first month at Monticello was dramatically different. The media center had been a traditional high school library staffed by two librarians and one assistant. Students visited independently with signed passes or with a classroom teacher. Circulation was moderate. Usage was primarily for research, quiet study, and reading. Teachers reserved the library for instruction, including lessons in research, copyright, citation, and reader's advisory—everything necessary for students to complete assignments, think critically, and graduate as informed, digital citizens. But something was lacking. I missed the spontaneity and challenge of working with a student body with diverse needs. Hosting twenty to forty students during any of our four periods wasn't truly serving our school population of 1,092.

Whenever possible, I made it known that the library would also be open to all students and teachers as a gathering place. Talking was encouraged, and the no food or beverages rule was lifted. It didn't take long for our students to respond. In addition to scheduled classroom visits, we averaged seventy independent student visits each period. Our students have tight schedules, their only break being a thirty-minute lunch. We also have a daily remediation program called Mustang Morning. Students needing remediation are "drafted" by teachers. Unencumbered students may visit the library during Mustang Morning. These brief periods didn't give our teens much time to socialize. We were beginning to provide a space for socialization and also a respite from a demanding school day.

While space is at a premium in most school libraries, we have plenty of room. The design is reminiscent of Thomas Jefferson's Monticello, located nearby. The main library space is two stories tall, with exposed metal beams and large expanses of glass. Columns frame this area with bookshelves placed behind them, on the diagonal. Modern and airy, the space invites quiet reflection and study. The tall ceiling and exposed beams, however, amplify any unwanted sound. The perimeter is comprised of five smaller rooms: two storage rooms, a workroom, and two offices. Storage rooms housed old equipment, archived periodicals, and a professional collection, but I decided that they could be put to better use. My initial idea was to convert the equipment room into a media lab, thereby affording students and staff the opportunity to use newer technologies to create digital products. Dave Glover, colibrarian (and musician/rapper), decided to resur-

rect some cast-off computers and loaded them with the free version of FL Studio, a music-authoring program. The magnetic force of music for teens was palpable, and Mustang Studio quickly became a mecca for students. They made beats all day long, but more importantly, their behaviors were beginning to evolve. At-risk students stated that having a chance to work in the studio, for even a brief time, was what motivated them to attend school. Students commented that they were working with kids they would never even have spoken to in classes or in the halls. Students were building collaborative skills.

Exciting, but also noisy and chaotic! No longer a traditional library media center, our space still had several limitations. The acoustics that worked successfully in a traditional library worked against us, amplifying even casual conversation. Our instructional area, a bank of centrally located tables, was constantly inundated with distracting conversation. I found myself pleading with students to quiet down. Teachers conducting research with their classes lamented that we had lost control. Meanwhile, Mustang Studio was bursting at the seams, overflowing into other areas. The open, welcoming environment we were trying so hard to promote was at risk.

Our solution came in the form of what had been a yearly challenge. Every summer our building is leased out to CFA, a global financial analysis company that administers a program of study and rigorous examination. In these precarious financial times, this brings needed revenue to Albemarle County Public Schools. The library becomes the company's base of operations. This translates into packing up the library during the first week of June each year. Everything gets packed and stored either in trailers parked on site or in unused classrooms. The space is reduced to four walls and a carpet. The impact on our schedule is enormous. From April through the first week in June, getting the collection in shape for packing takes priority. Early in my first year at Monticello, I began to entertain the possibility of coming up with a new arrangement. I reasoned that a totally empty space should easily be reassembled in the arrangement of my choice in mid-July, when the "library" returns. My instinct told me to divide and conquer both the space and our students. Impressed with the engagement of our students, our superintendent and principal gave us the go-ahead to plan the new arrangement and renovation of our library. Funds were allocated from the CFA revenue, and I began collaborating with Building Services and the original architect. Almost every available space was repurposed for student and teacher use; however, the renovation was basically limited to four areas: relocating bookshelves, erecting a glass wall as a sound buffer, creating a studio suite, and creating a whiteboard room.

Tall bookshelves were relocated to the rear of the main library space. Intensive weeding began, thereby eliminating as many bookshelves as possible to keep spaces open. Luckily I had the help of Elizabeth Waterbury, my library assistant, to determine the shelving logistics. Elizabeth is now an elementary librarian in our division, and it certainly helped to have a San Jose University student helping me form my vision of our space. Repositioning our low bookshelves allowed us to create two lounge areas adjacent to the circulation desk. This area had been occupied by desktops resting on bulky desks. Although they were not yet scheduled for replacement, I was able to convince our IT department to swap our desktops for a cart of laptops destined for an adjoining computer lab. Soft seating was purchased for what we now call our reading lounges.

Relocating the book collection freed up space behind the columns on each side of the library. A glass wall (matching the original windows) was erected on the right to serve as a divider/sound buffer, creating what we call our glassroom. This has become our teachers' favorite instructional space. It's semiprivate, seats thirty, and contains a mounted projector. Our open classroom on the left is an instructional space (seating twenty-five) that flexes into a casual gathering space for students, who use it for study, socializing, and lunch. It's often noisy and always collaborative—our students love it!

After installing a new viewing window between the rooms, my office and the room that had housed our professional/periodical collections now became our studio suite. Rooms were painted a muted shade of purple that we hoped would inspire students to create even more of the cool beats we were now used to hearing. With some help from the Music Resource Center, a local nonprofit dedicated to teaching musicianship and music production among area youth, Dave furnished the studios with recording equipment and an iMac loaded with LogicExpress. Changes were also made to the room we were previously using for our Mustang Studio. One wall was painted with "idea paint," turning it into a gigantic whiteboard. We initially called it our whiteboard room, and it served as a collaborative classroom space, quiet study area, or gathering spot for students. It connects to our workroom, enabling teachers to work with large and small groups simultaneously. Our professional collection is now shelved in this area. Students were encouraged to use the microwave and sink. It has become another favorite spot for lunch and study.

Our usage was skyrocketing, and our statistics for the end of the 2011–2012 school year proved it. Classroom visits totaled 1,014 for all spaces, a weekly average of 28. The total annual number of students visiting independently soared to 28,000! We had become the hub of the school, a shift that was primarily student led (always a good thing in education). Our attempt at disruptive innovation provided the comfort and respect craved by the digital natives we taught each day. Teachers began to realize that our comfortable spaces removed an often-adversarial relationship with students that traditional classroom arrangements have perpetuated. At first

glance appearing chaotic and noisy, further observation would show that amid the socialization, students were engaged and on task. There's no arguing that students had claimed ownership of what had evolved into a contemporary youth media space, but we still needed to cultivate this ownership among our teachers. We also began revamping our library website in an attempt to mirror virtually what we were accomplishing physically (Kowalski, 2014). We added pages to allow access to music the students produced in our studios, a growing pathfinder page to reflect the increased collaboration with teachers, and a "Writers' and Poets Cafe" page to encourage teen authors.

A staffing change proved to be the boost we needed to evolve our media space into a true learning commons. Needing classroom hours to finish his certification, Dave transferred to our English Department. He would now be teaching two periods of English but would maintain his presence in the Mustang Studio by teaching a music production elective class each day. IdaMae Craddock (a veteran English teacher), now my colibrarian, transferred into the library and began working on her MLS at Old Dominion University. Her past collaborative experience with our faculty enabled us to work together to bring teachers in.

It now was imperative that we demonstrate the utility, comfort, and flexibility of our innovative space. One of our district's instructional goals for the year was to build a bank of performance/project-based lessons. We began the year with a staff orientation consisting of mini performance tasks in each space, through which teacher groups rotated. They collaborated on an activity in the whiteboard room. We set up Bluetooth wireless headsets in the open classroom to demonstrate that teachers now had the ability to schedule screenings of newsworthy or curriculum-related videos as another way to deliver content. Our glassroom served as a display area for performance-based lessons that teachers had designed over the summer at our curriculum, assessment, and instruction workshops. We even had staff create beats in the studio. Our teachers were amazed and excited at all the possibilities for collabo-

ration. Like with our students, food and comfortable seating helped teachers relax and engage.

That year saw teachers and students finally using the space as a learning commons should be used: for gathering information, inquiry, socialization, and project creation. We met with teachers and collaboratively designed lessons in all departments. Our English teachers have reserved space to construct Rube Goldberg machines to demonstrate the hero's journey based on their reading of *The Odyssey*. They've used our studios and new HackerSpace (with its green screen) to create videos focusing on persuasive writing and to add music to ballads. We jointly host an increasingly popular poetry slam each April. Science and social studies teachers have crafted videos on ecosystems and rotated through stations on migration and the civil rights movement. Our health and physical education teachers come to us for research, for presentation creation, and to record music for cheerleaders. Our Mustang Studio continues to engage students. Students may use it independently 75 percent of the day and after school. The culinary arts classes visit weekly to update their blogs. World language students have scanned booklets into digital format. Finally, our fine arts students have created famous artist podcasts, recorded audition CDs to send to colleges, and participated in percussion jam sessions.

With flexibility as our mantra, we have embraced the maker movement by morphing our whiteboard room into what is now our makerspace. Ira Socol, our assistant director for educational technology and innovation, wrote an initiative that purchased MakerBot 3D Replicator printers for several of our schools, including our learning commons. Math teachers have used this new technology to design and print parabolic structures. Students independently use the MakerBot to print throughout the school day.

The 2013–2014 school year ended with 2,323 classroom visits, averaging 58 visits per week. The total number of walk-in students reached an astounding 35,000 by mid-May! These numbers could not have been sustained without the dedication of our library assistant, Gina Habermeyer. Her love of students, books, and learning is integral to our success. Teachers and students are eager to provide a never-ending array of great projects to display, adding to this commons culture. A welcoming attitude, respect, and trust can work wonders.

Growing into a learning commons that has had a positive impact on our diverse school community has certainly brought me the spontaneity and engagement I was seeking. I have witnessed our students' evolution from having a "recess" mindset to becoming young adults that are learning to think critically and manage their time independently. We still have a long way to go, for the challenge of filling each space with relevant projects that engage students as learners and lead them to become competent digital citizens is an ongoing task. Our website needs to evolve into a virtual learning commons to which our entire school community will contribute. Analysis of how to best meet our school's needs is a task we perform daily, entering a state that David Loertscher refers to as "perpetual beta" (Loertscher & Koechlin, 2012). I believe that continuing to listen to my inner voice while still hearing the voices of my students and teachers will keep us all moving forward.

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Kowalski, Sue. "Rethinking the Possibilities @ Your Library: Creating a Library without a Library Space." *Knowledge Quest* 4(2014): E18. *eLibrary*. Web. 02 Sep. 2014.

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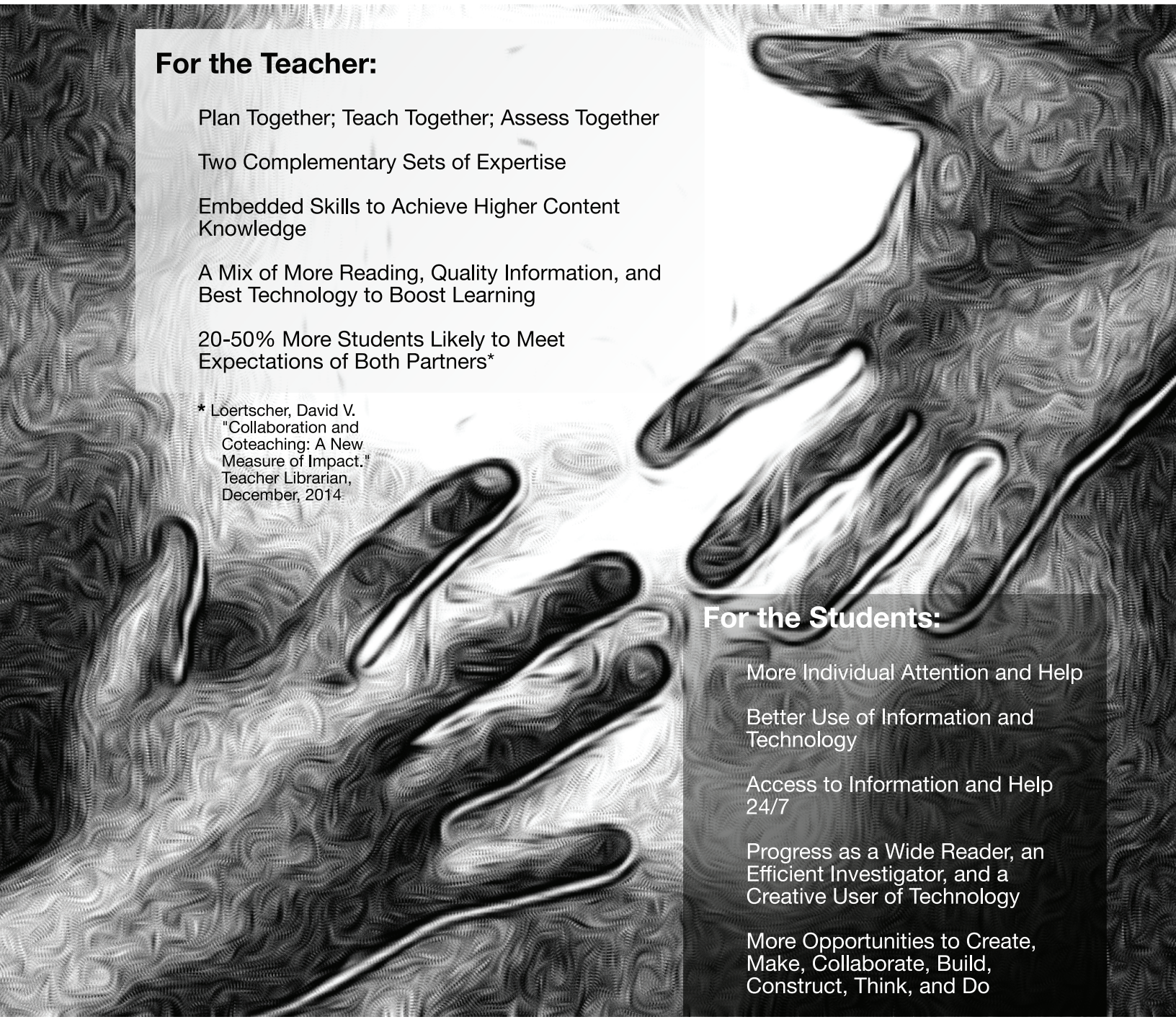
Joan Ackroyd is a librarian who draws her energy and inspiration from her children, grandchildren, and all the students at Monticello High School in Charlottesville, Virginia. She is a graduate of Bowling Green University and received her Library Media Certification from James Madison University. Joan has worked as a librarian at the elementary, middle, and high school levels. Her passion for providing engaging opportunities for all student populations led her to transform a traditional high school library into a dynamic Learning Commons.

Part 5: Posters

Part five includes a few reproducible posters that have appeared in recent issues of *Teacher Librarian* for your use with teachers, students, and in professional development sessions.

10 Reasons to partner with your teacher librarian



For the Teacher:

Plan Together; Teach Together; Assess Together

Two Complementary Sets of Expertise

Embedded Skills to Achieve Higher Content Knowledge

A Mix of More Reading, Quality Information, and Best Technology to Boost Learning

20-50% More Students Likely to Meet Expectations of Both Partners*

* Loertscher, David V. "Collaboration and Coteaching: A New Measure of Impact." Teacher Librarian, December, 2014.

For the Students:

More Individual Attention and Help

Better Use of Information and Technology

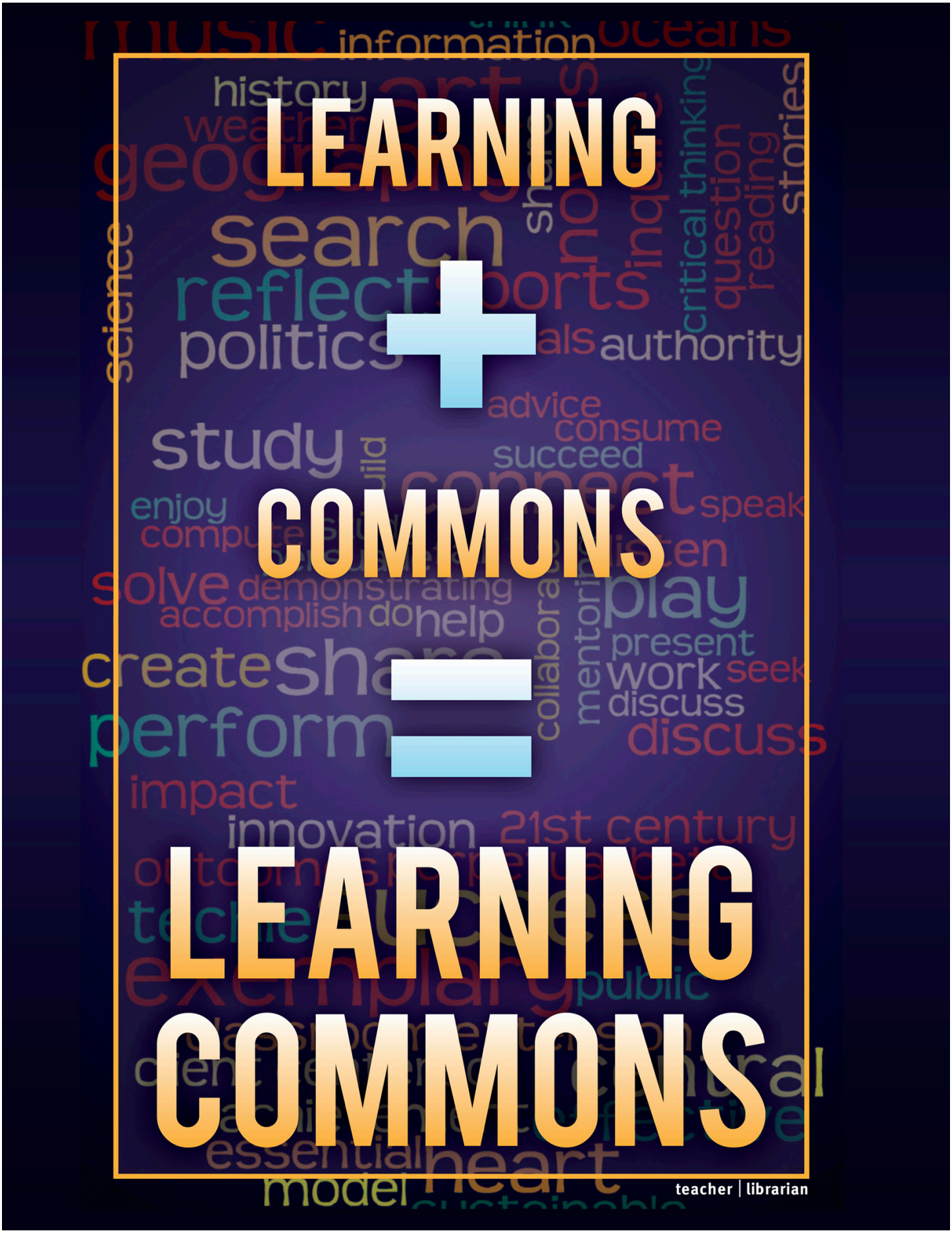
Access to Information and Help 24/7

Progress as a Wide Reader, an Efficient Investigator, and a Creative User of Technology

More Opportunities to Create, Make, Collaborate, Build, Construct, Think, and Do

The Bottom Line: Two Heads are Better Than One

The Whole is Greater Than the Sum of Its Parts: 1 + 1 = 3


LEARNING
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COMMONS
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LEARNING
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The Virtual Learning Commons

At the Center of Teaching and Learning

The Successful Learner

Personal Expertise

What I know and am able to do; what I "bring to the table"

Cooperative Group Work

My ability to build something to specifications that fits with other pieces to become a working whole.

Collaborative Intelligence:

My ability to combine what I know with others to produce something that no one of us could have created alone.

Created by David V. Loertscher and Carol Koechlin

Illustrated by Mark Loertscher

Author-Title Index

Subject Index