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When I think of creativity and innovation, I think of libraries. Libraries are storehouses of knowledge, and they are the places we go to learn, to explore, to dream, and to implement our dreams. Over the years, decades, and centuries, libraries have evolved as learning institutions, incorporating and implementing new technologies. Libraries are storehouses, but they are not museums. The trails that librarians have blazed are littered with discarded technology, weeded books and formats, and piles of ancient procedures.

We talk as an organization about how school librarians are leaders of the pack for this charge to the future, and that statement is partially true. Some school librarians are pioneers, and as each new development or new technology hits the school library, these fearless librarians have been forging trails, experimenting with student learning, and leading the profession in new and different ways. We rely on these innovative pioneers to figure out the best paths, knowing that sometimes they will take the wrong ones. We listen, watch, and wait as they chronicle their journeys. They ditched Dewey, and we gasped with horror and fascination. They flung caution to the wind and invested in e-readers and then circulated them to ensure use. Their libraries were makerspaces before we knew enough to describe what that was. The field needs pioneers to show us where we as a field can be.

Following them, filling in and paving the roads, making them wide and easy to travel, are the settlers. These school librarians write policies and procedures. They figure out how to circulate e-readers and keep track of them. They reconfigure the end-of-year report to account for e-book use. They share their curriculum planning forms that document virtual collaboration. They design instructional units that meet the state curriculum standards while incorporating new technologies and new instructional theories. It is the settlers, not the pioneers, who have truly changed school libraries to become learning commons. The field needs settlers to create livable school libraries based on the experiences of the pioneers.

And what about the traditionalists, those people who sometimes are referred to as sticks-in-the-mud? Taken in the extreme, those school librarians—and there are many of them—are waiting for a better time, more information, and more money before they make any progress toward change. They are the ones that say—without seeing the irony—that they don’t have money for e-books because they don’t want to take any money from their book budgets. They sigh when the principal insists on buying e-readers, and they keep the devices safely locked in the closet, checking on them every once in a while to make sure that they are still safe and sound. They fill out their reports without a twinge of conscience, counting the devices, databases, and virtual learning...
opportunities as if they were being used, instead of just being stored. The field needs pioneers and settlers, but does the field need traditionalists?

Making It Work as a Profession

Truth be told, we need all of the school librarians we can get. As a profession, we need pioneers for their courage and example; we need settlers for their implementation; and we need traditionalists for their ability to slow down the headlong rush to the future. If more traditionalists had slowed the adoption of the Common Core State Standards long enough for thoughtful review, we would not have as much backlash as we have now. The hands that shot up to raise implementation questions about e-readers may have resulted in more thoughtful implementation as questions were answered and alternatives weighed. Traditionalists, starting questions with “But how about…” and “So what do we do when…..” solve problems in preparation before they arise in practice.

Yes, it’s annoying to pioneers and settlers to hear constant nay-saying. Yes, it’s frustrating as a profession when building principals base what 21st-century school librarians should be doing on the activities of the 20th-century librarians in their buildings. It’s heart-breaking for school librarians struggling to put resources in the hands of learners to think of the thousands of dollars’ worth of resources being stored unused in other buildings, even in the same districts.

The field sometimes sees the traditionalists as the biggest problem school librarianship has. In every other aspect of librarianship, problems are considered challenges or opportunities. Traditionalist librarians are not viewed with such optimism. Solutions range from kicking them out of the field, to encouraging principals to replace them, to retraining them to force them into other roles, to simply ignoring them and moving forward. The concept that traditionalists add to the strength of the field is a hard sell to pioneers who want to hover over traditional school librarians with the awesome terror of Dickens’s Ghost of Christmas Yet to Come, raise the armless sleeve of the black robe and intone, “Change.”

The Role of AASL

AASL is the only national association dedicated solely to the needs of school librarians. Its mission is to advocate excellence, facilitate change, and develop leaders in the school library field. As an association, we don’t get to pick and choose who in the profession we decide to serve. AASL must model the dispositions that will fulfill our mission. We must point with pride at our pioneers, disseminate the strategies of our settlers, and respect the traditionalists who keep the best pieces of our history viable.

We need all of the voices that we can muster to develop the best libraries that we can offer to students and teachers. Pioneers must talk not only to other pioneers but also to settlers who can work together to test implementation strategies, develop procedures, and figure out whether new systems should have new contexts or whether current library administrative work can be modified to incorporate new thinking.

Both pioneers and settlers need to reach out to teach traditionalists. Traditionalists also, though, must be open to learning from pioneers and settlers. Otherwise, we tend to separate, as some focus on technology, and others focus on print. This behavior creates a natural division, a circumstance in which both sides are screaming about structure and format, and no one is watching the kids. In truth, as a profession, we can see pioneers, settlers, and traditionalists in our students. The student pioneers run with the wolves and go as far and as fast as their aptitude will take them. The student settlers run as far as the leash we place on them will allow. The traditionalists stay secure within the bounds of the learning corral. We have to teach all of them, not just the ones who are most like us.

It’s not about libraries; it’s about learning. As a learning profession, we need to strive within ourselves as well as strive with each other to create libraries that provide learning opportunities to all students in all schools. It’s a tough, wonderful, fascinating, exciting, and exhilarating life—as it should be. We are school librarians. Each of us, in some aspect of the profession, is a pioneer, a settler, and a traditionalist. It’s time to find our common ground and be as strong as our strongest link, moving inexorably forward to create strong school library programs.

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A thorough reading of articles in this issue of Knowledge Quest introduces school librarians to the basic terminology, concepts, and ideas regarding creativity. My hope is that what you read raises more questions than it provides answers—creativity is not for the faint-of-heart educator who functions best when presented with easy-to-follow toolkits and bulleted plans. Consider this issue a first step to understanding the complexity of creativity and seeking ways to engage students more creatively in learning and life. In this issue you will learn about processes to promote creativity; the qualities, characteristics, and dispositions of creative people; and environments most conducive to developing and fostering students’ creativity.

Fostering Creativity: Difficult but Essential

Lest you think that “doing” creativity in schools will be easy, consider the words of Thomas Alva Edison, the inventor of the light bulb. Edison is widely quoted as having written in his diary that he owed his “success to the fact that I never have a clock in my workroom.” Inquiry is one of the best ways for school librarians to nurture the dispositions of curiosity, motivation, and perseverance, as well as encourage question posing—an essential first step in the creative process. The lack of time in schools to engage in the messiness of creating is a major obstacle that school librarians and their colleagues will need to address and solve.

A second quote attributed to Edison provides a glimpse into his creative process: “I speak without exaggeration when I say that I have constructed 3,000 different theories in connection with the electric light, each one of them reasonable and apparently likely to be true. Yet in only two cases did my experiment prove the truth of my theory.” How often are students marked down when their first attempts fail, and discouraged, they don’t try again? Contributors to this issue provide guidance for school librarians embarking on this journey to understand and support creativity.

In This Issue

In the opening feature Michael Hanchett Hanson writes that academic preparation—knowing the history, controversies, and unanswered questions of subjects taught in school—is key to preparing students to participate meaningfully in today’s rapidly changing world. First and foremost, creators understand the domain in which they create; without this understanding they would not be able to create. Michael also gives us the “big ideas” about theories of creativity and how we can apply them to education.

Mirah Dow describes a unique interdisciplinary collaborative partnership, STEM-ALL, at Emporia (KS) State University. This program prepares teachers and school librarians to integrate science, technology, engineering, and mathematics content in projects for K–12 students.

Gail Bush encourages school librarians to develop and model dispositions identified in AASL’s Standards for the 21st-Century Learner that fuel students’ creativity. She proposes that school librarians master their domain, read widely, and follow their own passions to create paths that inspire students.
Building on Bush’s focus on dispositions, David H. Cropley identifies ways that school librarians can bridge the gap between theory and practice to develop authentic and effective problem-solving opportunities. He describes how librarians support his fostering of creativity in first-year engineering students.

Melissa Techman shares how bravely expanding her own creative activities has inspired creative library projects and events that, in turn, expand students’ abilities in a multigenre world of connected and participatory learning. She also provides food for thought on the topic of why creativity in school matters.

Daniel Willingham discusses the connection between creativity and curiosity. In his article he refutes the prevalent notion that technology is killing students’ capacity for curiosity and makes a good case for their having a lower threshold of boredom than people had in the past. He also identifies ways school librarians can nurture students’ curiosity.

Creativity and inquiry begin with questions. Asking open-ended and purposely ambiguous questions can be challenging for educators too used to asking questions requiring simple “yes” and “no” responses. Jeffrey D. Wilhelm shares tips for generating essential questions, models question-posing, and describes common problems encountered in creating essential questions.

Theresa Dirndorfer Anderson describes a series of “phase states”—plan, play, pressure, and pause—that help explain how ideas and creative insights take hold and, ultimately, flourish. In a process approach Theresa proposes, students are encouraged to be mindfully creative.

Encouraging students’ creativity and assessing their creative efforts are challenges for educators in today’s assessment-driven schools. Carolyn Coil suggests educators allow students to select from among several options to demonstrate their learning. She also advocates open-ended assessment tools such as criteria cards and rubrics that both guide students in their creative endeavors and provide feedback on their work.

Jessica Tucker, a school librarian in North Carolina, created Proud Readers Own What’s Learned (PROWL). She describes some of the creative—and fun—ways that students can share what they’ve read and the energizing effects of PROWL.

Recognizing the congruence between makerspace benefits and 21st-century skills, Leanne Bowler tells how she considered ways to integrate technology-focused makerspace experiences into the education of pre-service librarians. Her goal: to empower them to, in turn, establish library-based makerspaces for young people. She describes her students’ participation in the Bots and Books Design Challenge at the University of Pittsburgh as an exercise in the trial and error of design thinking, multiple design/test stages, figuring out what works, and recognizing “good enough” solutions.

Amanda Galliton, a high school librarian in Texas, describes several ways she is encouraging students to read for information and pleasure, including one strategy that enables students to see what their teachers are reading.

Another of her motivational reading programs is the 2,014 Reading Challenge that allows students to show their peers what they’ve read. She also shares tips for piquing students’ interest in new books.

Lori J. Flint addresses one of the most significant concerns about creativity in schools—why is it that creative opportunities are mostly offered to gifted students? Why isn’t the creative potential of all students nurtured? Lori provides a road map to giving all children an equal shot at being creative.

Another way to combine technology and motivation for reading is the #N2RDG program Naomi Bates and her colleagues implemented at their Texas high school. The program, imagined by their principal, includes reading incentives for teachers and students, Twitter as a means of sharing book recommendations, and a Prize Patrol for the campus-wide community of readers.

Developing the creative potential of all students is possible even in the face of significant systemic challenges such as lack of time and preference for expecting students to have the one right answer. Both Edison and the authors who have written for this issue provide guidance for school librarians wanting to develop creative environments, programs, and opportunities for all children. Caution: nurturing creativity is not for the faint of heart—but it is worth the effort!

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Education has long been a central issue for creativity research. J.P. Guilford famously called for the study of creativity in his presidential address to the American Psychological Association in 1950. Guilford argued that the primary justification for studying creativity in those early years of the Cold War was to identify children with the greatest creative potential and assure that they developed their talents.

Since then, the integration of creativity and education has remained a goal and controversy. In spite of over sixty years of trying to bring creativity into education, education is often criticized for not teaching creative thinking (e.g., Nickerson 2010; Robinson 2011, 49–79), while also criticized from other quarters for not meeting traditional standards. Stepping back, one must wonder why? Learning about the world makes education exciting, and changing the world makes creativity exciting. Since the world is always changing—and more today than ever—education and creativity should naturally align.

Blame for the lack of alignment often falls entirely at the door of education. There is plenty of room for improvement in the schoolhouse, but creativity research shares the blame.

Persistent Challenges
Two of the challenges to integrating creativity into education are the definition of creativity and the goals of education.

Definitions of Creativity
Psychological research has generated many different definitions of creativity that have stressed mere generation of ideas, the moment of insight, lifelong development of skills and purpose, personal sense of fulfillment, spontaneity of expression, and a host of prescribed thought processes. The full range of definitions of creativity is beyond the scope of this article. Instead, I will focus on a few prominent landmarks amid the many theories. (For more extensive reviews of theories in relation to education see...
to assume that having students brainstorm helps them to think more creatively. However, that assumption overstates the evidence by a long shot. Brainstorming may help students develop divergent thinking, which may or may not be important for creativity.

Today, even the most ardent DT proponents do not argue that DT is equivalent to creativity, but, at best, provides an estimate of creative potential (Runco 2010). Other researchers have raised fundamental concerns.

Guilford’s concept was based on the assumption that creative people would think of lots of ideas and then choose one. Case study research that examines how creative people actually work (Gruber 1989; Gruber and Davis 1988; Weisberg 2006, 447–87) has not shown that people doing creative work necessarily rely on generating lots of ideas as DT theory predicts. Creative people develop their own unique perspectives, styles, and habits of thought from years of study and work, applying expertise to creative goals. Robert W. Weisberg and colleagues (Weisberg 2011; Weisberg and Hanchett Hanson 2013) have argued that what appears “outside the box” to other people is actually inside the long-term developmental thinking of the creative person.
The teachers who excite students about learning are the teachers who can show how interesting and exciting the world is.

In other words, there is a fundamental clash between trait theory—DT—and developmental theory. This debate can leave educators stuck between adding often meaningless idea-generation exercises that take time from other lessons or trying to teach lifelong success in a single course or year of study. Little wonder that creativity researchers have found that educators resist their ideas (Cropley 2010; Runco 2007, 178–90).

Researchers have tended to respond to educators’ resistance with more finely nuanced definitions. For example, Ronald A. Beghetto and James C. Kaufman have added “mini-c” and “pro-c” versions of creativity to the traditional division of “Big-C” creativity (domain changing, e.g., Einstein, Picasso) and “small-c” (personal creativity, not changing the domain). Mini-c creativity “focuses on the novel and personally meaningful interpretations of experiences, actions and events” (2010, 195). Beghetto and Kaufman argue that all creativity starts with such personal interpretations. Pro-c covers professional application of creative ideas and roughly aligns with Weisberg’s inside-the-box concept of applying expertise to creative goals, at least for people who do not achieve Big-C status. These new definitions are useful because they pave the way to greater focus on education about domains of knowledge. However, even these definitions continue to focus on ideation, rather than the exciting part of creativity—making things happen!

Educational Goals: Can We Teach Rules and How to Break Them?

Another challenge: a core task of education is to teach the histories, standards, and methods of different domains of knowledge. Scientific method, historical research standards, music notation, color mixing, algebraic principles, and literary genres are cultural conventions: rules. Whatever creativity is, it is not conventional.

Teaching the rules and how to break them at the same time sounds like a recipe for chaos, but the challenge is not as paradoxical as it first appears. Thinking beyond the rules and filling in gaps is part of learning the history and limits of current knowledge. Indeed, to understand a field of knowledge really well—be more than a technician who simply applies the rules—students need to understand the controversies that gave rise to the field. That understanding also, inevitably, includes glimpses or open exploration of the unanswered questions, anomalous evidence, and largely forgotten theories of the domain. Interdisciplinary curricula can go even further, helping students see incongruities among perspectives of different domains. This is the path to creativity through education, as opposed to the path to education through creativity theory.

Creativity researchers have tended to promote teaching creativity by developing multistep processes, often based on divergent thinking (e.g., Creative Problem Solving, Osborn 1953; Design Thinking, IDEO 2013) or a wide range of quick tricks for idea generation (e.g., SCAMPER: Substitute, Combine, Adapt, Modify, Put to other uses, Eliminate, Rearrange, Eberle 2008). Even though creativity cannot be reduced to divergent thinking or formulaic processes, these DT techniques can be useful for students to have in their toolboxes, the “boxes” Weisberg described. As educational theorist Alane Starko (2010) has argued, these tools are useful as long as (a) the tools are fully integrated into the curriculum and not add-ons and (b) students are taught when and how to use the tools, including (c) how to transfer use of the tools from one setting to another.

Although potentially helpful, these techniques cannot be the mainstay of education, even the most “creative” education. The teachers who excite students about learning are the teachers who can show how interesting and exciting the world is. As educators, we can put some of our own professional development efforts into learning to use DT-based educational techniques effectively, but we cannot lose sight of the most important task: knowing our subjects more and more deeply so that we can help our students understand the questions that enliven and drive the domains of knowledge we are teaching.
Using Trait and Developmental Theories in Education

The developmental and trait theories, as presented by creativity researchers, can be frustrating for educators. In the hands of educators, though, these tools can be used—dare we say—creatively. For example, two key lessons from these approaches to creativity include awareness of multiple perspectives and dedication to work.

DT can teach that there are many perspectives on a problem. The DT tools for education are not sufficient to “teach creativity.” Furthermore, research on brainstorming has shown that DT is not the most efficient idea generator (the goal of DT). Decades of research have shown that the same group of individuals would usually generate more good ideas working alone (Nijstad, Diehl, and Stroebe 2003). The various DT tools can be useful in certain educational situations, though. For example, brainstorming can pique interest in a new topic. Also, students who tend to focus on always getting the right answer can learn through brainstorming or the DT-based creative processes that a problem can always be approached in multiple ways. Learners should also get the message that multiple perspectives are welcome in the classroom and part of their education.

Creativity is work. The case research on people who do extraordinary creative work, mentioned earlier, has shown that significant creativity is long-term work. Moments of insight or free-association brainstorming take on meaning only within existing or developing knowledge about the subject and in relation to creative goals. The view of creativity as work is, itself, an important lesson. For students who have creative aspirations or look up to creative people, but have not grasped the need for dedication, reading and analyzing biographies of people who have done extraordinary things can be instructive and inspiring.

Emerging Possibilities

Beyond the individual-centered developmental and trait theories discussed above, other approaches to creativity in psychology and sociology have not yet made much of an impact on educational theory. However, the paths through education to creativity and through creativity research to education may be converging. Today, many creativity theorists have moved away from the focus on individuals and toward examination of social, cultural, and technological systems for generating and integrating novelty. Just two of the principles that come out of newer directions in creativity research could shift the frame of the creativity/education debate.

Even the “great ones” do not work alone. At the immediate level, creative people work within social systems that teach, inspire, augment, support, encourage, critique, interpret, promote, and, ultimately, accept new ideas (Sawyer 2010, 2012, 211–29). Development, testing, diffusion, and acceptance of new ideas go far beyond the person with the idea, if one person can be credited with the idea. Many people in many roles—including school librarians and classroom teachers—are involved in, and key to, the creative process.

At a broader historic level everyone is participating in the long-term development of knowledge (Csikszentmihalyi 1999; Sternberg 2003). No one is starting from scratch. As Sir Isaac Newton paraphrased Bernard of Chartres, all are “standing on ye shoulders of giants” (1676 letter to Robert Hooke in Gruber 1989). A key role of education is introducing the ideas—the “giants”—on which students may someday stand.

This perspective suggests a broader, participatory view of creativity as a function of social systems and
the ways individuals contribute to those systems. Creativity then calls for greater educational focus on how change happens, as well as awareness of the roles involved. All social studies programs cover historic changes, and some have units on how change occurs. These analyses are important and can be extended to consider current changes in the school and community, as well as the history of change in all subjects. After all, part of what makes math and science interesting is the story of controversies and change, as well as the still unresolved controversies.

The goal, then, shifts away from trying to make all students idea generators (DT) or world-shaking titans, young Newtons or Picassos or Steve Jobses. Changes in cultures, environments, and technologies will provide opportunities for creative initiatives. The contribution of education to such situations is to assure that students are sufficiently educated to recognize the opportunities and take up meaningful roles in bringing about desired change.

Creativity is not an unqualified good. Creativity is disruptive (Christensen and Horn 2008; Mason 2003; Sternberg 2003), leads to complex outcomes, and can serve problematic, ideological functions. Remember that some of the financial instruments that helped cause the 2008 recession were once seen as creative, and many of the causes of current environmental problems are the creative accomplishments of the Industrial Revolution. In addition, rhetoric about creativity can lead to justifications for market domination of cultures and of economic hardships for workers. (See Weiner 2000 for further discussion of the ideological functions of creativity.)

For education, awareness of the downsides of creativity gives a new level of importance to the integration of critical thinking and creativity, a more general move that theorists and educators have long advocated. Students can, and should, analyze outcomes of scientific, artistic, musical, mathematical, and literary change, as well as the potential outcomes of the changes that they want to see in the world.

Conclusion

In other words, the purpose of educators’ promoting creativity is to prepare students to participate in change—for the students’ success and for the good of society. Preparing people to participate in and contribute to their world is not a new role of education. It is the traditional core mission of education. In the end, then, the invaluable contribution of education to creative work continues to be good education, an objective amply difficult to achieve at any time, and one that requires attention to creativity in today’s rapidly changing world.
Michael Hanchett Hanson has taught graduate-level courses on theories of creativity for twelve years. Ten years ago he founded the master’s concentration in creativity and cognition in the Department of Human Development at Teachers College, Columbia University, and is currently director of that program. He has studied and written about practical guidelines for creativity in education, creativity as an emerging social construction, use of ironic thinking in creative work, and existential implications of systems theories. He also speaks regularly about the concept of creativity, its potential, and its dangers. He is president of Contexts R+D, Inc., an educational consulting firm.

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CREATING A STEM-LITERATE SOCIETY

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Picture a professor of library and information science working in her office on the fourth floor of the university library. She is away from student traffic and relatively isolated from other faculty on campus. Nevertheless, the professor has much to be proud of as she uses computer technology to reach, teach, and interact with enrolled students both near and far, as well as to connect with a local and national network of library and information professionals. But something is distressing her.

She is aware that in the United States there is a growing, coast-to-coast community in conversations about creating a STEM-literate society, a general workforce with 21st-century competencies in science, technology, engineering, and mathematics and an advanced national research and development agenda focused on innovations to combat the nation’s most urgent social problems. However, she is distressed because she is not connected to the conversation. She can shape future educators in her tutelage can affect incidental change at the school building level, resulting in little impact on K–12 student achievement. What if this professor exercised the courage of her educational beliefs?

**Imagination First**

The professor reflects, asks questions, and listens, and then an idea emerges. She imagines substantive change through improving future teachers’ knowledge, skills, and dispositions while increasing the number of high school graduates choosing STEM careers. She prepares by attending professional development sessions, conferences, and class-project competitions advertised not to school librarians but to science teachers. She teams up with a physical sciences professor to coteach future teachers. In what Gail Bush has referred to as a “creative tapestry,” a durable and unique collaborative partnership was formed with “threads of shared language representing a vision, trust and respect, multiple perspectives, and social context” (2013, 99).

**Desire to Change**

Eric Liu and Scott Noppe-Brandon have referred to “path-dependence” (2009, 10) or maintaining the status quo, as “the killing of imagination” (2009, 7). They assert that imagination comes before a will to act. Unless one has “the emotional and intellectual capacity to conceive of what does not yet exist, there is nothing toward which one can direct their will and resources” (2009, 8).

In the above actual scenario, my emotions were initially sparked by a frenzy to do something—to have a direct role in increasing America’s scientific research, economic competitiveness, and problem-solving capacities.

My emotions could not be sustained, but my contemplation could continue as I considered other ways that other educators and I could take a new path. I had both the desire to move beyond my solo work as a professor and the ability to conceive of what did not exist. I was focused on human information behavior in a world burgeoning with information overload and urgent social problems to be solved.

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The professor goes to the science, technology, engineering, and mathematics faculty across campus and says she wants to create a campus-wide partnership that will prepare future classroom teachers and school librarians as coteachers. She goes to university administrators and says she wants teachers and school librarians to enroll and earn credit in the same college courses. The administrators pause. The professor remembers her tight schedule for instructing students and grading papers. She goes back to teaching from her fourth-floor office while staying committed to creating a new path.
Creative Actions

Good news! My university’s administrators did not pause for more than a couple of seconds. Instead, they quickly nodded in solid agreement. An institutional culture of imagination, creativity, and innovation existed. What happened next? Emporia State University’s (ESU) project STEM-ALL (Science, Technology, Engineering, and Mathematics: Information, Technology, and Scientific Literacy for All Learners) was born. This is a new interdisciplinary program for teaching information-, technology-, and scientific-literacy. It will bring STEM content into the Master of Library Science curriculum. Even though I did not have all the necessary knowledge, I could imagine the program.

Imagination is related to images. Images are related to what psychologists and brain scientists refer to as the brain’s “mental workspace,” a neutral network that coordinates activity across several regions in the brain and consciously manipulates symbols, images, ideas, and theories (Tse et al. 2005). Before a product, presentation, performance, or program can exist, someone has an imaginative vision. According to Liu and Noppe-Brandon, imagination, creativity, and innovation exist along a continuum. “If imagination is the capacity to conceive of what is not, then creativity, in turn, is imagination applied: doing something, or making something, with the initial conception. But not all creativity [is] inherently innovative…innovation comes when an act of creativity has somehow advanced the form” (2009, 19).

Liu and Noppe-Brandon have contended that quality and durability of creative actions “depend in great measure on the fertility and force of the imagination that feeds the act” (2009, 21). Creativity can begin through Capacities for Imaginative Learning, a theoretical concept and an institute, built on the work of Maxine Greene, at the Lincoln Center Institute for the Arts in Education, the educational cornerstone of Lincoln Center for the Performing Arts in New York <www.lcinstitute.org/about-li/imaginative-learning>. Greene’s theory suggests that close engagement with a work of art will release one’s ability to think of and express new possibilities. The capacities for imagination include noticing deeply, embodying, questioning, making connections, identifying patterns, exhibiting empathy, living in ambiguity, creating meaning, taking action, and reflecting and assessing (Liu and Noppe-Brandon 2009, 36–38).

Expressing New Possibilities

The capacities for imagination embedded in the Lincoln Center program can be realized not only in the fine arts. Capacities for imagination can be realized in formal, natural, and social sciences when mindfulness about being imaginative is developed. This mindfulness is how imagination led to action that resulted in the ESU STEM-ALL program.

Noticing deeply. Doing something with my initial concept began with identifying and articulating layers of details necessary to answer questions: What is STEM education? What are the
challenges of STEM education?
Where are we now with STEM education, and where do we want to go? What does it mean to integrate STEM disciplines and information science? Continuous engagement with the subject was possible through research and reading info about challenges and opportunities published by the National Science Teachers Association (Bybee 2013), the Junior Academy of Science and the Intel/ISEF Science Fairs (Cothron, Giese, and Rezba 2006), and in the Second International Handbook for Science Education (Fraser, Tobin, Robbie 2012).

Engagement and observation of layers of detail were increased when the collaborating professor of physical science and I participated in the 2012 STEMtech Conference. This annual conference offers hundreds of sessions focused on STEM education. Though held in the U.S., the conference attracts an international audience of approximately 1,200 college and university faculty members, K–12 teachers and administrators, government officials, and community, business, and industry representatives. (For more information, go to <www.league.org/STEMtech>.)

**Embodying**. Experiencing STEM education in the way a student experiences a painting or a musical performance—through senses, emotions, and physical representation—happened for me while teaching an upper–elementary student over the course of two school years. I struck out on my own, despite the risk that I might fail and volunteered to mentor and teach her after school.

Her research reports and posters became for me physical representations of what can be accomplished by a bright young girl brand new to the experimental method and to reading scientific publications beyond the content of her science textbook.

Like viewing fine art and listening to classical music, interacting with this eleven–year–old who wants to make a positive difference in the world tagged at my emotions of joy, surprise, and anticipation as she passionately designed an experimental study and articulated how heating water to wash clothes is potentially dangerous to our environment through increased use of fossil fuels and the resulting increased carbon dioxide in the environment. She insists that the public needs to know more about how to best invest in cost–effective energy–saving ways to clean clothes. She now believes that her research publications give her “voice,” enabling her to become part of the solution to a national problem. She is talking about her future college education.

**Questioning, Connections, Patterns, Empathy, Ambiguity.** I asked and answered why school libraries matter (Dow 2013) and what could happen if content and library teachers integrate STEM by sequencing disciplines in lessons, units, or courses so STEM becomes a central emphasis of the educational experience in the process of investigating an answer to a question or solving a design problem. The current pattern of teaching content in separate university programs one content area at a time explains the traditional practice in K–12 schools of teaching content one classroom, one teacher, and one subject at a time.

A current bureaucratic structure and relationship between universities and local schools may be a blind spot in school reform movements and local education planning, implementation, follow–through, communication, and collaboration. If we continue as we are now, failure to recognize and fix the situation may prevent us from graduating all high school students ready for 21st–century jobs, college, and careers. With patience and effort, we must imagine breaking out of existing institutional structures. We must envision future classroom teachers and school librarians enrolled and learning in the same college courses to prepare to coteach content that overlaps multiple academic disciplines.

**Creating Meaning, Taking Action.** Exercising imagination in this scenario grew out of a large social context occupied by many people in need of healthy nutrition, jobs, shelter, healthcare, transportation, and other improvements that promote and sustain healthy living. As ESU’s STEM–ALL project evolved, imagination allowed us to see beyond what already existed. Applying imagination is what enabled us to create a new project. At ESU, we are living proof that when creativity is cultivated, it can happen everywhere.

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**We must envision future classroom teachers and school librarians enrolled and learning in the same college courses to prepare to coteach content that overlaps multiple academic disciplines.**
ESU’s STEM-ALL is built on the conviction that content and library teachers must learn together and then coteach K–12 students. Action is in progress to create four new courses that will be offered for the first time in fall 2014. The new courses will be listed in multiple program catalogs and offered to college students earning elementary and secondary teaching licenses, the Master Teacher degree, and school librarian licensure.

Innovation to Advance Practice

This one-of-a-kind project will create a new Information, Technology, and Scientific Literacy Certificate that can be earned by educators across degree programs. All courses will prepare future school librarians and teachers—together in the same college classrooms—for their shared roles in enabling upper elementary through high school students to 1) gain knowledge of practice, cross-cutting concepts, and core ideas in STEM content areas; 2) be prepared to engage in public discussions of science-related issues; and 3) become critical consumers of scientific information related to everyday lives.

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Works Cited:
Fraser, Barry J., Kenneth G. Tobin, and Campbell J. McRobbie, eds. 2012. Second International Handbook of Science Education. 24 (Parts I and II). Dordrecht: Springer.

Recommended Resources:
FEAR

NO

CREATIVITY
The 1993 Newbery Award recipient, *Missing May* written by Cynthia Rylant, is a little gem of a book, all about lost Summer, grieving Uncle Ob, and Cletus Underwood’s timeless lesson that “Life just ain’t that heavy” (Rylant 1992, 23). According to Cletus, life is more about staying in the moment, creating stories, and making your life happen. Cletus leads a creative—if offbeat—life, and, as creative sorts do, he inspires those around him.

Our young scholars readily encounter creative characters in both literature and in life who stimulate questioning, problem solving, communicating, and pursuing interests and personal growth. How might we join with those models to illuminate a path of creative thinking and inspire a lifelong appetite for intellectual curiosity? By fueling our students’ creativity we demonstrate our respect for the unique individuals they are now and honor them for the people they are becoming. We illustrate to them that as human beings creativity is our natural state of being. After all, we procreate to survive, and we create to evolve as individuals and as a society. Talented colleagues who understand those aspects of learning that are closely tied to creativity used their own creativity to generate the learning standards that guide our profession as educators. School librarians who seek a more creative path to inspiring the student learning dispositions embedded in AASL’s *Standards for the 21st–Century Learner* and want a nudge in that direction are advised to follow these simple steps into the light.

1) Master Your Domain

It may seem counterintuitive, but creativity stems initially from traditional deep knowledge of and confidence in one’s domain, the capacity to then deviate from it, and, in doing so, inch the domain forward by having that creative contribution recognized as such by the community within the discipline. What does that reality mean for our field? Master the standards, both AASL’s and the Common Core State Standards (or your state-adopted standards). It is not rocket science—it is just library and information science, and it is absolutely our responsibility to be diligent in our role as educational leaders. At first glance, it might not sound like the height of creativity to study, read, and be prepared, but a strong foundation is just what is needed to be able to soar. So, take a fresh look at AASL’s learning standards. When stripped away from indicators and such, they easily read as beacons along the path. They were generously written with the intent for each of us to own them as our own:

1. Inquire, think critically, and gain knowledge.
2. Draw conclusions, make informed decisions, apply knowledge to new situations, and create new knowledge.
3. Share knowledge and participate ethically and productively as members of our democratic society.
4. Pursue personal and aesthetic growth. (AASL 2007, 3)

By fueling our students’ creativity we demonstrate our respect for the unique individuals they are now and honor them for the people they are becoming.
Make **no** judgments as you develop your own learning dispositions around creativity. Be gently disposed toward others who are finding their way, and be kind to yourself as you might stumble a bit.

2) Read Widely, Read Wildly

Reading this *Knowledge Quest* issue is a good start and then follow up on references that intrigue you. Pick up Jami Jones and Lori Flint’s *Creative Imperative: School Librarians and Teachers Cultivating Curiosity Together* to find scholars that resonate with you. Venture outside of the school library field for a more textured and thought-provoking adventure. Consider a few favorites who might ignite your own spark. Explore Ellen Langer’s work on the power of mindfulness, Elliot Eisner on the essence of arts education, Vera John-Steiner’s seminal work on thinking. Engage with Mihaly Csikszentmihalyi’s psychology of flow and creativity studies, David Perkins and his Project Zero colleagues on inspiration and refocusing from taming the wild to wilding the tame, and Maxine Greene just for the artistry of teaching. Ask favorite creative sorts whom you know who they like to read and why; pick up those resources and have fun in discourse. (A list of recommended resources is provided at the end of this article.)

When psychologist Jean Piaget was asked what sparked his creativity, he responded with these words:

*It goes without saying that you should read nothing in your own field. If you approach a topic by reading everything that’s been written on it, it’s much harder to find new things... Related fields? Because I think any exploration of knowledge must by nature be interdisciplinary.* *(Bringuier 1980, 126)*

3) Follow Your Passion

While it is said that humans are creative sorts, regretfully, many learners of all ages feel that they are not in touch with their creative voices and even doubt that they have the capacity to express themselves creatively. Over many years of teaching school librarianship, I’ve often been asked how to approach remediating this situation. Here’s a recommendation that seems to suffice: explore artistic expressions of all kinds—even those that you think are quite alien to you. Let natural beauty take hold of you when you least expect it, savor it. Miss your bus stop, learn to folk dance, go to the beach in the winter, tread outside your comfort zone. Loosen your grip a little on what defines your interests, and do something new and different that has your friends and colleagues wondering about what has gotten into you—but in a good way. Continue this exploration until discovery emerges that guides you both deep into your soul and outward to connect with kindred spirits, roots, and wings. Turn up the volume on your inner voice; learn about yourself all over again. Sometimes we surprise ourselves either with deep interests that are rooted in the youngsters we used to be or budding interests born of a new phase of life. Go with these new interests and see where they lead. You have nothing to lose and everything to gain. While you are at it, give your students opportunities to explore their interests and encourage them to find new outlets for creativity.

4) Create Your Path

Ours is a field that rewards innovation and inspiration. We delight in each other’s bold successes and applaud courageous educational adventures. There is no excuse within our flock for relying on the same old same old. Flip, spin, and twirl bird units; differentiate projects that are messy and unexpected; find collaboration among diverse subject areas that share learning goals; delve deeply, and then explore that new territory, and share your journey with fellow learners, be they students or educators.

5) Spread the Joy

Make no judgments as you develop your own learning dispositions around creativity. Be gently disposed toward others who are finding their way, and be kind to yourself as you might stumble a bit. Try synectics for new ways of thinking upside down and inside out. Eventually you will look back and see that your path was one of inspiration, significance, authenticity, value, and uniquely your own. What better model could your young scholars have than a brave educator bursting with robust and vigorous creativity?
You might find that it is often the simplest of flips, spins, or twirls that have the most significant impact. During my tenure as a high school librarian, my colleagues and I were fortunate to host all levels of abilities within our classes. Career planning was trendy at the time, and the activity was particularly challenging for students whose abilities limited their career options. Our basic freshman physical science curriculum required all students to research careers in science, regardless of whether a career in science was a realistic goal for some students. This unit was doomed before it commenced; frustration reigned supreme; and all who entered the unit suffered its wrath. So we flipped it, spun it, twirled it around. We had the students research the careers where their passions lie and find the science within those careers. So simple, yes, but profound nonetheless, for both the students and the teachers who reluctantly came on board.

If you are game for a unique professional journey that will resonate in your students long after you leave your post, try this gambit on for size. Get a handle on the four basic learning standards, manage your understanding of the Common Core State Standards (or your state-adopted standards), and develop a mantra of finding those frameworks within the creativity that abounds in literature and life. Boldly use a modeling approach to creativity—it gets easier over time as rising expectations burgeon among learners and educators alike. Develop in your students the dispositions that will keep them open to the universe, mindful and appreciative of new ideas and ways of thinking, and you will guarantee that for them life just won’t be that heavy.

Gail Bush is professor emeritus of education at National Louis University where she served as professor in the college of education, director of the school library program, and director of the Center for Teaching through Children’s Books. She coedited, along with Randy Meyer, Indivisible: Poems for Social Justice (Norwood House 2013). She has served on the Knowledge Quest and School Library Research editorial boards.

Works Cited:


Recommended Reading:


From RHETORIC To REALITY

Designing Activities to Foster Creativity

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Introduction

The importance of creativity as a component of education cannot be doubted. A great deal has been written over the last sixty years—from J.P. Guilford’s 1950 presidential address to the American Psychological Association to Kyung Hee Kim’s 2011 warning about a long-term decline in creativity scores—that highlights how important it is for children to learn how to generate effective novelty.

A great deal is also now known about the factors that can either foster or inhibit humans’ ability to be creative. These factors span issues of personality, feelings, emotions, motivations, thinking styles, and “environment.” Many researchers in the field focus their efforts on specific pillars of creativity—the person, the process, the press (environment), or the product—while others search for “systems” models that endeavor to integrate these pillars into a single model.

While it is common to see articles on creativity start with statements lamenting the lack of a clear definition of creativity, I disagree with this position. Creativity is well-defined; a good working definition is that creativity is “the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (Plucker, Beghetto, and Dow 2004, 90). Furthermore, while research will continue to investigate a wide range of issues, the fact is we have a good understanding of the factors that are at play. What is, perhaps, not so well defined or understood is how the theory of creativity gets turned into concrete action. This question may not be of much concern to the research community, but it is of vital importance to teachers and school librarians, the developers of creative individuals.

From Theory to Practice

Leaders at the famous Bell Labs in the United States understood the distinction between research and development. For every researcher at Bell Labs, as many as fourteen scientists and engineers worked on development. Researchers (for example, the inventors of the transistor, William Shockley, John Bardeen, and Walter Brattain) handed off their breakthroughs to teams of engineers and scientists whose job was to turn those breakthroughs into practical products. To see the potential of the breakthroughs realized in schools, creativity, as a component of education, requires the same handoff from researchers to developers.

However, I believe that in the field of education a knowledge/skill gap exists between research and development, a gap that may be holding back progress. In the case of the Bell Labs, that gap was occupied by the technicians, such as the glassblowers and instrument makers of the Bell Labs early heydays. School librarians, I believe, are often placed in the same position that technicians held at Bell Labs. As teachers strive to make sense of and implement knowledge of creativity that is available from the research community, school librarians are called upon to help turn rhetoric into reality. That process is one of translating the advice and guidelines about fostering creativity into practical, effective activities that achieve the desired outcomes.

Renowned creativity researcher Robert Sternberg has described the issue of creativity in education as one of developing a habit. Creativity can be taught and improved but, like any habit, requires considerable effort and care so that it is appropriately encouraged. Sternberg explained that to encourage the habit of creativity, three ingredients are needed: opportunity, encouragement, and
Developing the creativity habit is far more meaningful and effective if the classroom activity is representative of the real-world problem-solving process.

A gap remains, however, a gap that must be bridged: “How?” How do we turn those twelve keys into practical, actionable guidance that classroom teachers build into their activities? How, for example, do teachers create opportunities for children to “redefine problems”? How do teachers “encourage idea generation”? How can they give children opportunities to develop a “tolerance for ambiguity”? In particular, how do teachers integrate all twelve keys into a single activity or exercise in an appropriate way to ensure that creativity is encouraged and rewarded in a holistic and effective manner?

The Role of Librarians

This is where the “instrument makers” of the knowledge age—our school librarians—come into play. The fundamental question is about designing activities and exercises to bridge the gap between theory (what educators should do) and practice (how they do it). Providing the holistic glue that makes such exercises relevant and authentic depends in large part on the skills of school librarians. Two examples help to illustrate how librarians are essential to the process.

Over a number of years I have taught creativity to first-year engineering students at a university. Creativity is, of course, a core part of the process of design. Engineers take problems—how to span a river, how to enable long-distance communication, how to heat homes—and develop effective solutions. The design process moves from the identification of the problem through a phase of divergent thinking, in which a broad range of possible solutions is generated and then, by means of convergent thinking, focuses down to a single, feasible solution.

Novelty and effectiveness are critical to developing solutions to the new problems that we constantly face in society. Developing the creativity habit is far more meaningful and effective if the classroom activity is representative of the real-world problem-solving process. Instead of achieving key number 4 (encourage idea generation) in isolation by spending a morning brainstorming uses for a paper plate, teachers must develop practical problems that are engaging and relevant and that simultaneously encourage all twelve of Sternberg’s keys.

With the assistance of librarians, I have used, for example, a problem based on the 1948–1949 Berlin Airlift to give my students an

<table>
<thead>
<tr>
<th>KEY NUMBER</th>
<th>SUMMARY OF KEY</th>
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<tbody>
<tr>
<td>1</td>
<td>Redefine problems</td>
</tr>
<tr>
<td>2</td>
<td>Question and analyze assumptions</td>
</tr>
<tr>
<td>3</td>
<td>Do not assume that creative ideas sell themselves; sell them</td>
</tr>
<tr>
<td>4</td>
<td>Encourage idea generation</td>
</tr>
<tr>
<td>5</td>
<td>Recognize that knowledge is a double-edged sword and act accordingly</td>
</tr>
<tr>
<td>6</td>
<td>Encourage children to identify and surmount obstacles</td>
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<tr>
<td>7</td>
<td>Encourage sensible risk-taking</td>
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<tr>
<td>8</td>
<td>Encourage tolerance of ambiguity</td>
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<tr>
<td>9</td>
<td>Help children build self-efficacy</td>
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<td>10</td>
<td>Help children find what they love to do</td>
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<tr>
<td>11</td>
<td>Teach children the importance of delaying gratification</td>
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<tr>
<td>12</td>
<td>Provide an environment that fosters creativity</td>
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Table 1: A summary of Sternberg’s twelve keys for developing the creativity habit.
opportunity to engage in practical creative problem solving. Part of the practicality and realism that makes the activity engaging and authentic, however, is the context, the background, and the story. Librarians can provide the detail that turns a sterile, abstract exercise into a real-world problem. The exercise I developed required students to devise a means to deliver to “Berlin” a candy bar in a small container; students were restricted by the fact that there was no ground access, mimicking the Soviet blockade of the city in 1948–1949. Open-ended, deliberately vague instructions, coupled with a minimum of rules and of predetermined materials, along with adequate space and time for the activity, created an opportunity for students to exercise most, if not all, of the twelve keys needed to develop the creativity habit.

For younger children, the same principles apply. Once again, the context and “story” are vital to creating a realistic and authentic problem-space that students can engage with. For example, I have used a problem based on the movement of “slime” out of a test tube, through a pipe, and back into the tube, all wrapped in a story either about environmental issues or even just a simple Teenage Mutant Ninja Turtle story. Again, the support of librarians as the creators of the context—fleshing out the backstory, providing the real-world detail—is vital for turning an abstract problem into an effective, real-world creative problem-solving exercise.

Conclusion

A transition from theory to practice is needed to achieve the goals that Guilford first spoke of in 1950—in essence, to understand the “primary abilities” that characterize a creative person and then “to do something in the way of education to improve them and to increase their utilization (1950, 454). The transition from theory to practice is also essential when addressing the concerns highlighted by Kim in 2011—in particular, a marked decline in creativity test scores since 1990 among younger children (kindergarten to grade 3). The creativity research community has provided the theoretical building blocks. Teachers are the developers, charged with turning that theory into practice. It is widely acknowledged that this transformation is not always easy or well-understood; teachers frequently have only a vague idea of what creativity is (Benson 2004), let alone a clear understanding of how to foster it.

School librarians have a role to play as the facilitators of the transformation. They are equipped to help turn the “what” into “how,” both by seeking out and providing the practical examples of implementation, but also by helping to develop the detail and context that turns abstract, uninspiring, narrow problems into engaging, realistic, and authentic creative problem-solving exercises.

Works Cited:


David H. Cropley is an associate professor of engineering innovation at the University of South Australia. With Arthur J. Cropley, he is also coauthor of Creativity and Crime: A Psychological Analysis (Cambridge University Press 2013) and Fostering Creativity: A Diagnostic Approach for Higher Education and Organizations (Hampton Press 2009).
FEATURE

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SUPPORTING CREATIVITY IN SCHOOL LIBRARIES

Finding, Sharing, and Connecting
When people say that I’m creative, I think they mean that I’m curious and love to share what I find. Curiosity is a good thing—especially in schools—and we should model it for our students. Inquisitive librarians connected to a world of creative resources can be excellent role models for students who need help exploring not only content, but the very idea of what’s possible to learn. As our school system embraces new instructional pathways and moves away from stagnant, test-driven approaches, I want school libraries to become centers of student inquiry and innovation.

Media surround us, and we live in a time of information abundance and connectivity. People around the globe work together to connect and produce ideas, products, and stories that delight and inspire. The “creatives” behind such projects often work in places that look very different from current classrooms. I like to give my students glimpses of these worlds where, unlike in schools, boundaries between topics and methods are fluid. I want to show my students an inclusive, inventive, and collaborative approach to work. When we look at the decision making involved in designing presentations, planning interactive e-books, or arranging infographics, we are working on the kinds of participatory production that new literacies entail.

Interests and Connections

Creativity is about openness and connection. It signals the chance to get ideas, share ideas, and try new things or put together old things in new ways. Libraries have always had the potential to source and support creative activities. Public library events and opportunities bring together people, ideas, and stuff (whether fabric, paint, wood, food, or electronics) against a backdrop of the library as an open-access resource. Some school libraries have held only a faint echo of these community-focused activities; others have been lively hubs even before the current makerspaces push. My first year as a school librarian I had only two events: a visiting author and a visiting amphibian expert. Now we have Google+ Hangouts with young writers and rappers at other schools, meet other classes via global connections, have weekly open labs for project groups, contribute to several blogs, sponsor a student-run Pinterest site for book reviews, and—well, you get the idea. Once school librarians commit to what I call “bringing life into the school,” they can tap into the authentic interests of library users and make possible the kinds of contacts that will fuel user engagement and creativity.

My “Heart” Network

I’m not an artist, although I started college as a sculpture major. However, I’ve been lucky to have the opportunity to cover the National Art Education Association conference several times as a writer. The people I’ve met in the arts ed community are essential to what I call my “heart network.” Other key members are National Writing Project senior program associates Paul Oh and Christina Cantrill, who connect and support inventive efforts in hybrid literacies. Their work matters greatly to me and feeds my desire to approach my own practice creatively.

I’ve found terrific ideas in the work of Theresa McGee of the Teaching Palette blog and Tricia Fuglestad of Fugleflicks fame. When I saw how Ian Sands (art teacher in Apex, North Carolina) had his students animate drawings by elementary students in another state, a big “Connected Learning” light bulb lit up over my head! Some of my plans for expanding upper-elementary
Seeking out chances for multi-age connections and cross-curricular projects builds flexible thinking, as well as a sense of community in the school.

Taking Risks

Being creative involves taking risks and being willing to fail. Sometimes when we show willingness to try new things, our students have new opportunities to share their expertise. I’ve revealed to my students that I have a fear of audio-visual endeavors, from creating podcasts to editing iMovies to making GIFs. After hosting an amazing fifth-grade event in the library, a visit from 30 Rock director of photography Matt Clarke and his sons, I was inspired to tackle my fears. Many students have offered to help me, and I’ll be documenting their instruction in our learning blog. Last spring, I took part in “Nerdcamp,” a free-form professional development gathering in Chad Sansing’s middle school classroom. I’d drop in and ask his students to show me how a MaKey MaKey works or try something new in Scratch or get ideas for a future lunchtime Cardboard Club.

Things I’ve Tried

Here are some of the things I’ve done in the last year or so:

- Offered to be a leg “puppeteer” for the University of Virginia Stan Winston Art Festival of the Moving Creature parade
- Offered my services to Kim Wilkens’s Tech-Girls initiative— and in the process of revealing my ignorance of coding, I learned enough to launch weekly coding projects at school.
- Anchored a grant-writing team for our school’s STEM to STEAM tinkering lab—and realized that I wanted students to have the opportunity to do a lot of the “behind the scenes” work of finding experts and practitioners to visit and Skype, as well as writing up various school events.
- Participated in a National Writing Project Educator Innovator Retreat—and in their colearning studio used Mozilla Webmaker tool Thimble (a visual coding editor) to make this remixable online book review postcard.[https://nwp.makes.org/thimble/postcard-book-review].
- Asked some local public libraries if they’d like to collaborate on some Connected Learning events—and enjoyed working with some great librarians to plan events at which teens teach other teens to use Webmaker tools to design and remix online.

Why Creativity Matters

I love to tell my students what I’ve learned from artists, writers, and others: Start anywhere! Use what you have! Value all voices! We discuss the possibilities of up-cycling, as I enlist student help with library and display design. We look for stories throughout the day and talk about how in some new online venues narration is different than in traditional books. Seeking out chances for multi-age connections and cross-curricular projects builds flexible thinking, as well as a sense of community in the school.

Choosing to support creativity in schools is also a political act, in the same way that offering homegrown or truly participatory online learning is an attempt to distinguish an open community from the canned products that are corporate-provided MOOCs. For all the talk about “flipping” classes or lessons, it really works for the greater good only if there is choice and differentiation, student involvement, and an option for learning away from screens. When we truly honor authentic and engaging learning, we have no choice but to explore and encourage creativity.

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Making

FEATURE

Knowledge Quest | Creativity and Innovation

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A connection between creativity and curiosity may seem self-evident, and, indeed, psychologists and philosophers have long held that creativity and curiosity are related. It seems logical enough; we can imagine that the typical individual is satisfied by the usual solution to a problem or the usual way to conceptualize a situation. But the intensely curious individual keeps thinking about it and so might come to a new, creative solution or conceptualization of an old problem. Recent work also shows that curiosity is related to academic performance. In fact, the combination of curiosity and conscientiousness—a feeling of responsibility to get things done—has as big an impact on grades as intelligence (Von Stumm, Hell, and Chamorro-Premuzic 2011).

So, we have good reasons to encourage curiosity in our students. But what, exactly, are we encouraging? Researchers have had a hard time pinning down a definition of curiosity (Renninger and Hidi 2011) or even a way to think about it that’s consistently useful. Is it mostly a matter of thought? Is it an emotional state? Or maybe we should characterize it by what people do when they feel curious. But oftentimes a successful definition is the result of scientific inquiry, not a prerequisite. Therefore, we need to start with something provisional.

I’ll offer a characterization that has both cognitive and emotional elements (Silvia 2008). The starting point is the idea that humans enjoy solving problems. We’ve all felt that snap of satisfaction that comes from cognitive work that pays off. You struggle to understand the assembly instructions that come with your child’s toy, for example, but then you work it out. That feels good.

But we don’t tackle every problem we see. Why? Because some, even if solved, won’t lead to that pleasurable feeling. We’ve solved them (or ones highly similar) before, and so solving them again feels more like drawing from memory than solving a problem. Still others are not undertaken because we perceive that, were we to try, we probably wouldn’t succeed. They’re too hard. So the feeling of curiosity is fueled by three things: first, we understand there’s a problem, a piece of knowledge we lack; second, we seek the pleasure that would come from solving the problem; and third, a very rapid
calculation tells us that we won’t solve this problem immediately, but if we work at it, we might get to the answer.

**What Are We Curious About?**

What’s notable about this definition is that it’s content-free. It suggests that we can be curious about any topic, and conversely, that topics we think interest us may not spark curiosity, depending on how we encounter them. Strange as that may sound, I think the assertion is right. Think how often you find a documentary fascinating, even though it’s about something you thought would be boring. The converse can also be true. You may love your profession, but think of how sometimes you end up bored in talks you attend at a professional conference.

An important distinction should be drawn between long-term interest and short-term curiosity. A good documentary on bricklaying, for example, may pique my curiosity on the subject, but it will probably not lead to long-term interest. (Nor will one bad psychology talk at a conference make me lose interest in my field.) So content seems more likely coupled to long-term interest, rather than curiosity, which seems more transitory.

**What Makes a Book “Curiositing”?**

The way that we’ve distinguished “interest” from “curiosity” means that the term “interesting” ought to apply to books that align with a student’s long-term interests. But there’s not a word for a book that prompts curiosity—that is, one that prompts interest in a topic the student does not care much about in the long term. So I’ll call such a book “curiositing.”

Data on what makes people say that a book (or any piece of writing) piques their interest are available. The two key features are complexity and clarity (Sadoski 2001). Complexity, as it sounds, means that the reader finds some challenge in the writing, be it in the ideas directly conveyed, the themes, the allusions, the moral implications, and so on. Clarity means that, challenging as the book might be, the reader does not find it confusing. He or she is able to get through the challenges to his or her own satisfaction. Happily, these data seem to align well with our provisional definition of curiosity. A book’s piquing of a reader’s interest involves a mental challenge and a successful meeting of the challenge.

**Are New Technologies Killing the Capacity for Curiosity?**

Note that our definition of curiosity implies we’re assuming that feeling curious about something entails a readiness to take on mental work; you’re going to follow through on your curiosity and try to solve the problem that you’re curious about! A common observation among parents and educators is that kids today seem less able to engage. They may be mildly curious about something, but they don’t have the mental discipline to stick to the problem for any length of time. Curiosity seems to evaporate.

Digital technologies are usually blamed. A student might grow curious about, say, an insect she sees in the garden, but when she goes to look it up on Wikipedia, she’ll soon be distracted by Facebook. Or she’ll start a video game or a text message conversation with friends before she ever gets to Wikipedia.

Overuse of digital technologies is often described as “shortening the attention span.” Setting aside the fact that “digital technologies” is a mighty broad category, I still don’t think the commonly expressed view is right. I doubt students today are less able to sustain attention. Middle-schoolers can not only sit through a two-hour movie, they can read long novels like The Hunger Games when they find them interesting enough. The problem is not attention capacity; it’s willingness to deploy attention. I suspect—but can’t prove—that pervasive access to entertainment has made for a very low threshold for boredom. If you’re bored, a quick fix is close at hand. Give a YouTube video ten seconds, and if it’s not paying off, well, a list of suggestions for other videos you might like better is right there on the webpage. Tired of videos? Text a friend. Or visit Facebook.

If my hypothesis is right it would not indicate that students today are less curious than previously, but they might be curious about different things. Why? If curiosity entails a willingness to engage in
mental work, perhaps availability of easy entertainment means that when today’s students do that rapid calculation—If I try to solve this problem, will I get the pleasurable feeling of solving it?—the amount of mental effort they are willing to expend may be somewhat lower than in the past. Their experience may have led them to expect high payoff relatively quickly, with a modest outlay of their own mental effort.

Second, we should bear in mind the distinction between long-term interest and short-term curiosity. Curiosity is not a serious commitment. It’s a pleasurable sampling, like a wine-tasting. For that reason, it can be frivolous. I would argue that indulging our curiosity is never a waste of time. That perspective implies we should honor curiosity in students wherever we find it, however trivial its object may appear to us.

Third, we should bear in mind that curiosity is prompted by a good question. We are curious because we detect a problem, an unanswered question, and we think that if we work on it, we’ll feel the pleasure that comes with solution. So, we might prompt more curiosity in students if we spend more time thinking about and developing questions. But not all questions are created equal. For the solution to seem rewarding requires that the student have some investment in the question in the first place. That’s why bald, out-of-the-blue questions—”Why do you suppose snakes shed their skins?”—seldom work. The best books, documentaries, and speakers are able to sneak up on good questions, so that by the time the question is posed, the audience is panting to know the answer. A common technique is to use a narrative structure, which I’ve described in detail elsewhere (Willingham 2009).

I would argue that **indulging our curiosity is never a waste of time**. That perspective implies **we should honor curiosity** in students wherever we find it, however trivial its object may appear to us.

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### How Can We Make Students More Curious?

Can we make students more habitually curious? If curiosity is like other aspects of motivation it’s likely that some part of it is genetically inherited but not all (Gottschling et al. 2012). The home and school environments make a difference. So what can be done?

First, as is almost always true, modeling what we want students to learn is a good place to start. I remember when I first started teaching I was surprised that my end-of-semester student evaluations often mentioned my interest in cognition. That seemed odd. Wasn’t it my teaching that mattered, not how I felt about cognition? Looking back, I’m surprised that I was surprised. After all, if I don’t seem keenly interested, why should the students be? Likewise, if we want students to be habitually curious, they should see that attitude in us.

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learning to love the questions

How Essential Questions Promote Creativity and Deep Learning

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I’m currently in my thirty-first year of teaching. What keeps me motivated is the engagement and joy that I experience when my students—whether middle-schoolers, undergraduates, or the practicing teachers with whom I work—deeply and creatively immerse themselves in the challenges of understanding and then apply what they are learning, producing important and usable meanings and actions instead of just consuming information provided from external sources.

We know that deep learning that is then transferred and creatively applied to the world is “socially constructed”; that is, it is not received passively from a source outside oneself, but is actively created with cultural assistance, such as that from a disciplinary community. This kind of learning is “internally persuasive.” Internally persuasive discourse, according to M.M. Bakhtin, “is affirmed through assimilation” (1981, 345). It is applied to new material, new conditions; it enters into interanimating relationships with new contexts.

If we want school topics and scientific findings and historical documents to matter to our students, if we want students to creatively extend and elaborate and use what they have learned, Bakhtin has argued, then we have to engage students in the internally persuasive discourse of honest inquiry. If we want learners to carry what they have learned forward to future tasks and challenges, then we must engage them in internally persuasive discourse. How? Through critical reading, followed by speaking and listening, and then the composing of meanings that can be shared and applied.

In contrast, according to many reviews (e.g., Nystrand et al. 1997; Hillocks 1999), precisely the wrong moves are seen in typical American classrooms. In those classrooms teachers transmit “authoritative discourse” (asking kids to play the game of guessing what those in authority already know) instead of engaging students in developing internally persuasive discourse that assists them in moving toward independence and competence as meaning-makers and that requires and rewards their creativity.

We further know that creativity and innovation involve questioning and the capacity to frame topics as problems to be solved. We know that we are living in a time of a new generation of standards, including the Common Core State Standards (CCSS) in the U.S. Compliance with these standards requires that educators encourage students to ask questions of texts, of disciplinary issues, and of the world. The new generation of standards also requires deep understanding and application of higher-order strategies that are best cultivated through inquiry. (For a review of research, see Newman et al. 1995, 1996; Wilhelm 2007.)

For example, a focus on knowing what to notice and knowing how to question is helpful to creativity, to applying what has been learned, and to developing higher-order strategies such as analyzing, inferring, and evidentiary-based reasoning, all of which are emphasized in the CCSS (Wilhelm 2012).

To work toward the next generation standards, to foster student engagement, and to teach toward transfer and creativity, teachers can pose essential questions that frame learning as a problem to be solved, that is, as inquiry. This major change means that we teach...
content and concepts in a way that matters to kids and that leads to animated learning conversations. These conversations, in turn, lead students to the creative production of meaning instead of the reception of it.

What Is an Essential Question?
Questions that probe for deeper meaning and set the stage for further questioning and creative activity foster the development of critical-thinking skills and higher-order capabilities such as problem solving and understanding complex systems. (All following material is expanded upon in Wilhelm 2007, and Wilhelm, Wilhelm, and Boas 2009.) A good essential question is the principle component of designing inquiry-based learning that requires student contributions and creativity and applications.

An essential question typically requires and rewards one of the following thought processes:

- Student develops a plan or course of action
- Student makes a justified judgment or decision

The essential question works to purposefully direct student learning, highlights learners’ capacity to act as novice experts and contribute to ongoing disciplinary conversations, and focuses the course of student research, whether short or extended. As such, essential questions are powerful and commit students to the processes of creative and critical thinking through inquiry. Ultimately, the answer to the essential question will require that students craft a response that involves knowledge construction. This new knowledge building occurs through the integration of discrete pieces of information obtained during the research process and the application of the students’ own thinking, insights, life experience, and creative connection of various ideas and themes that move across texts and domains.

How Can We Compose Compelling Essential Questions?

The Basic Process
First, identify and examine the text, theme, or concept in the curriculum that must be addressed. Brainstorm questions that we or the students believe would compel and require them to think about the central issues without dictating the direction or outcome of their thinking. For example, the question "Why is plant and animal extinction bad?" contains its own answer, namely that extinction is bad; therefore, this is not an essential question.

Second, use the six typical queries that newspaper articles address: especially Who? What? Why? and How? To these queries add the word "good," "best," "most," "greatest," or some other qualifier in front of the theme or concept. Examples are: Who was the greatest president/military leader/policy maker? What are the most influential inventions/movies/works of art? How are cells like modern cities/cell phone networks/ the water cycle?

Third, select key words that elicit students’ focusing on impact, effect/affect, how, why, if, etc. Use words that make sense to us and, more importantly, to students, as the question is intended to invite them into the inquiry.

Finally, apprentice students into the capacity of questioners, first to ask their own subquestions relating to an essential question and eventually to ask their own essential questions that can guide reading, problem solving, composing, voting, and many other real-life activities throughout learners’ lives.

Characteristics of Essential Questions
Essential questions should:

- Matter to students now and in the future
- Connect to students’ current lives
- Be about quality and require students to make judgments
- Get at “the heart of the matter” (for the topic, text, discipline, etc.)
- Possess emotive force, intellectual bite, or edginess
- Be open-ended, debatable, possible to contend, arguable
- Be linked to data (Resources are available to use in pursuit of answers.)
- Be concise and clearly stated

Tips for Generating Questions
Generating essential questions is a fascinating intellectual exercise for us as educators. Here are some tips for generating effective essential questions:

- Transform standards into questions
- Identify the "big ideas" of the unit, concept, or discipline and turn these big ideas into questions
- Reframe a required text, topic, or standard by focusing on why it matters right now to students and to the discipline

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• Consider: What questions drive the discipline? What problems inform current research?

• Consider the heart of the matter: What is the true importance of this curricular topic? Why is it in the curriculum? What should students carry away and use? Why do you love teaching it? How do you want students to use what they have learned?

• Look around the community for issues that intersect with the topic

• Ask ethical/moral questions or questions of application: What should we pursue? What should we do with the knowledge we have?

Model Essential Questions

Essential questions can be asked in any discipline. Here are a few sample questions in a few commonly taught disciplines:

SOCIAL PROBLEMS/HEALTH
- What is waste, and what are its effects?
- Who is hungry, and what are the effects?
- What does it mean to be healthy?

CULTURAL ISSUES
- Are sports (or is competition) overemphasized in North American culture?

LANGUAGE ARTS
- What is courage?
- What is a good relationship?
- Who gets power and why?

PHYSICS
- Where do waves come from?

BIOLOGY
- Why do organisms die?

HISTORY/CULTURAL VALUES
- Who was/is a great person? A great leader?
- What is worth fighting for?
- Are wars ever necessary?
- Is U.S. history a history of progress?

GOVERNMENT
- Is government necessary?
- Can liberty and security be balanced?
- Who gets power and why?
- What is a good government?

MATH
- Was geometry discovered or invented?
- What is quantifiable and what is not?
- To what degree are numbers “real”?
1. An essential question is NOT a question that can be answered with a “yes” or “no.”
2. It is NOT a question that can be answered quickly or through information retrieval by means of a Google search.
3. It is NOT a blurry or overly abstract question.

1. An essential question IS a question that guides inquiry as a problem to be solved.
2. It IS a question that will give inquiry a frame, a focus, and an immediate context of use.
3. It IS clear and concise.
4. It IS a question that has no single “right” answer but does have justifiable answers.
5. It IS a question that tells us as questioners—and our fellow learners/audience—what a project will address.

When assessing our own questions to see if they are “essential,” we can look for the following common problems. A question is not essential if it:

- Can be answered through information retrieval—that is, by consulting pre-existing authoritative discourses
- Does not require creating data or constructing new understandings
- Begs the question; that is, assumes the answer to the question being asked
- Is leading (The teacher already knows the answer, and the students are playing “guess what the teacher already knows.”)
- Is too generic
- Is too narrow and specific
- Is not intriguing and compelling to kids
How Can We Revise Questions?

Often questions commonly used by educators can be recast to focus on broader issues in a discipline. The examples below show how typical questions used in classrooms can be transformed into essential questions on the same topics.

**TOPIC: Relationships**
- **Question:** Where do our marriage questions come from? (info retrieval)
- **Revision:** What makes a good relationship and how do cultures try to promote good relationships?

**TOPIC: Civil Rights**
- **Question:** How did we win the fight for civil rights? (begs the question—that is, assumes that civil rights have been won)
- **Revision:** What are basic human rights and how can they be secured and protected?

**TOPIC: Survival**
- **Question:** Why is it bad that animals are going extinct? (leading)
- **Revision:** Who survives?

**TOPIC: Identity**
- **Question:** Who am I? (generic)
- **Revisions:** What makes me me? What influences who I am? Where do I belong? What shapes my view of the world?

**Conclusion**

My own students used to ask: Why do we have to do this stuff? Nobody asks that question any more. Now they know. They know because we have negotiated an essential question that compels them and that leads naturally to creative problem solving, composing, service learning, and social action in the context of learners’ own lived experience. This is my point and the takeaway of this article: Essential questions create a problem orientation that leads to exciting learning conversations, to creative problem solving, and to the consolidation of major concepts, connections, vocabulary, strategies, and ideas that can then be used to extend further learning and to solve problems in students’ lives and out in the world. What could possibly be more creative than that?

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MAKING THE 4Ps AS IMPORTANT AS THE 4Rs

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Nurturing the transmedia literacies of our young learners takes on enormous significance in the participatory culture characteristic of this digital age. As young learners appropriate new digital tools, the expressions of their ideas take forms that can almost instantaneously be shared with global networks and kindred spirits. Never far removed from these conversations about digital literacies and participatory culture is the use of the term “creativity.”

Even if little agreement has been reached about how to go about doing so, nurturing the creativity of our students is increasingly recognized as important for their learning and for their overall participation in the dynamic future worlds they will inhabit as adults. They will need to be creative, innovative, anticipatory, and imaginative about what might emerge. In many countries, reports have been commissioned to enable governments and workforces to better manage what many see as an inevitable transition from work in traditional sectors to the creative and cultural sector (e.g., European Commission 2010; Green and Hannon 2007; Pratt 2012; Tims and Wright 2007; Wright et al. 2009).

While an awareness of technical elements is still important, other qualities characteristic of innovators and entrepreneurs are increasingly valued: creativity, imagination, curiosity, networking, and communication skills. Karlyn Adams (2006), Mitchel Resnick (2007), and Kathryn Moyle (2010), for instance, suggest that students who will flourish in these new environments are those who don’t necessarily have a mastery of particular tools or systems, but rather a capacity for lifelong learning, creative thinking, experimentation, and risk-taking. Sir Ken Robinson has been very vocal about changes he believes need to be made in our schools to support the creativity—and, thereby, the learning—of our children in response to the demands of this century. For him, creativity is “applied imagination” because it involves “…putting your imagination to work to make something new, to come up with new solutions to problems, even to think of new problems or questions” (2009, 67). While there are many definitions of creativity, for me framing creativity in this way draws attention to the effort that in many ways remains behind-the-scenes for enabling someone to be at their creative best. It is a perspective that I believe is well suited to discussions about the way school librarians can support the creativity of young learners.

Four Phase States of Creativity and Innovation Culture

My own long-standing interest in better understanding this “invisible work” of creativity (Anderson 2010, 2013) led to the development of the 4P heuristic shown on the next page. In exploring the anthropology of creativity, the driving concern
Four Phase States of Creative Cultures

**PLAN**
In many of our engagements with information, the plan is present in the structure or scaffolding that shapes our exploration. Even if not deliberately structured, initially at least, such engagement involves having some sense of what we are looking for—even if it cannot be clearly articulated to self, others, or systems. In an assignment, for example, students are often told to clarify a topic and create an outline to help them plan the work they need to do to successfully complete the task. As part of such a plan, they are likely to approach a school librarian or use their favorite tools to start searching the Web for information.

**PLAY**
Inspiration and innovation often arise when we are able to diverge from our plan. The play phase state is potentially present in all those moments that could subvert what we think of as our plan. It is present in the playful engagements with ideas, lateral thought, serendipitous discoveries, and those moments when a student is prepared to take risks and venture down unknown pathways. The powerful interplay between uncertainty, risk, and creativity makes the practice of uncertainty a critical component of this play phase state. Playing with ideas and approaches to a task enables a student to experiment and take leaps into the unknown; to take risks and celebrate and enjoy the uncertainties and ambiguities encountered along the way. To take full advantage of this playfulness, students need to learn how to see mistakes made along the way not as failures but rather as celebrations of lessons learnt.

**PRESSURE**
The sensation of being overwhelmed by a task or tensions associated with feeling overloaded with information and working to meet a deadline are situations where the pressure phase state is perhaps most acutely experienced. At times, staying focused is very difficult; at such times, deadlines compel us to stop thinking too much and to just go with our heart, gut feeling, or an intuitive judgment of what is good enough. From the standpoint of creativity, these experiences can be powerfully productive forces for inventive engagements with information. The pressure of a deadline can focus the mind and force us to call on instinct and a felt sense of the matter at hand. It is, however, very difficult to harness such experience for a creative outcome when pressure overwhelms.

**PAUSE**
As beneficial as pressure can be, everyone has a breaking point. Closely linked to pressure, therefore, is the fourth and final phase state: pause. To pause is to take time out to refresh, to nurture our felt sense of what we want to do and how we wish to do it. Such a pause involves making time to think about our thinking and for reflective practices we find most conducive to our own characters. To pause is to make time to nurture mind as well as body. The pauses we introduce in our lives can afford us essential time we need for thinking—and to be at our creative best. The pause phase involves finding spaces that nurture time to think and to reflect. Sometimes this space can be nurtured by taking a walk or a swim, or it might mean developing a contemplative practice like meditation. (For further reading about the 4Ps see Anderson 2013.)

of my investigation has been a desire to understand how ideas and creative insights take hold and ultimately flourish. The four Ps (plan, play, pressure, and pause) emerged as a way of representing the characteristics of creative and innovative cultures witnessed in my ongoing ethnographic explorations of academics, students, and creative practitioners. Modeled loosely on phases of physical states of matter (solid, liquid, gas/vapor, and plasma constituting everyday fundamental forms), the “phase state” is a useful metaphor for imagining creative thinkers’ movement from one phase to another in response to local conditions, much like physical matter that moves from one phase state to another, even though the matter remains recognizable. When the conditions are right, phase states can also coexist without conflict.

**An Evolving View**
Conceiving of the 4P heuristic (see the inset for a description) in terms of phase states draws on a systemic, ecological understanding of the conditions enabling creativity and innovation consistent with John Howkins’s discussion of creative ecology as “a niche where diverse individuals express themselves in a systemic and adaptive way, using ideas to produce new ideas and where others support this endeavour even if they don’t understand it” (2009, 11–12). The strength of such ecology lies in the dynamic responses to one’s surroundings and relationships, as well as the continual learning and creation of meaning taking place within that ecology.

In the same way that our understanding of states of physical matter is ever changing, so, naturally, must our awareness of the phase states of creativity and innovation continue to evolve. For
“The main question of our age is how we live our lives… HOW do we handle ideas and knowledge, both our own and other people’s? WHAT relationship to ideas do we want? WHERE do we want to think?”

—John Howkins

this reason, these four phase states are designed as a starting point for discussion about catalysts for creative capacity. These phases are neither mutually exclusive nor imagined as existing in a particular order or hierarchical arrangement. Instead, it is my contention each of the four phases (and the different kinds of engagements with information that figure in each one) need to be nurtured in some form to tap into our creative capacities.

The 4Ps in Practice in a Classroom

Preparing students for the challenging contexts described in the opening paragraphs of this article calls for new and modified pedagogies that can nurture students’ capacities for creativity, innovation, and experimentation. The classroom should be a place where both teachers and students can experiment with ideas (Moyle 2010, 38; Sternberg 2003, 334–35). A creative milieu designed to allow these abilities to flourish is one that establishes a risk profile that supports experimentation and manages student anxiety concurrently. Getting that mix right is an art in and of itself!

Projects undertaken with students and teachers at my own university have shown how making a deliberate effort to enlist teaching and learning strategies mapped to each of the four phase states can nurture the creative capacities of students. The plan, in the form of the curriculum driven by learning objectives and the scheduled class time, scaffolds the semester and helps keep students “on track” as they explore new ideas. The pressure of assessment tasks and grades further shape the learning context in ways that can be productive, provided they are managed well. Building in reflective practice (pause) and opportunities to tinker with ideas and take risks (play) provides essential green spaces for the mind, spaces needed to support and sustain creative engagements as part of that learning experience.

In many secondary and tertiary school settings, the plan and pressure phase states would be the most visible, but ensuring that pause and play strategies are part of the learning mix is critical for creativity and innovation. There is, however, an ongoing challenge in creating a sustainable balance between the need for developing recognized professional competencies (meeting standards, representing the plan phase) and nurturing students’ capacities for experimentation and creative thinking (breaking away from standards, representing the play phase).

At my university, students reported that in terms of being at their creative best the ideal classroom experience invites them to frequently experiment, express uncertainties, and take risks. Unfortunately, their teachers often reported a reluctance to offer such opportunities because they perceived the university to be a very risk-averse system. This finding is problematic in relation to the claim by John Biggs and Catherine Tang (2007) that establishing the appropriate learning environment to help students “be” creative means building trust and encouraging the taking of intellectual risks.

Mindfully Creative—The Metacognition of Creativity

Howkins, writing about creative ecologies as places for learning, opened with the question:

The main question of our age is how we live our lives. As we struggle with this, we face other questions. How do we handle ideas and knowledge, both our own and other people’s? What relationship to ideas do we want? Where do we want to think? (2009, 1)

In an age of “big data” and information accessible at hyperspeed, becoming more minded about our responses to such questions is critical for nurturing
Developing a mindful awareness (PAUSE) and playfully engaging with the everyday uncertainties we face (PLAY) are critical conditions for incubating and shaping ideas.

our creative capacities and those of our students. The time and effort involved in dealing with large quantities of information (characteristic of the pressure phase state in this 4P heuristic) are not conducive to deep reflection. We need to be more mindful of the consequences of privileging plan and pressure phase states at the expense of play and pause.

In our modern world, making plans to enable us to avoid risk seems to dominate our thinking and dominate our practices. Plan and pressure seem to be two phases often privileged in our culture, given the resources (money, time, effort) we seem to devote to them. However, by putting so much of our energy and resources as a society into managing the planning and pressure phases, we sideline the other two phases. You cannot plan to be imaginative or creative. You can, however, build time for opportunities for the play phase state (experimenting with ideas and taking some risks) to unfold within a plan. While we cannot always afford to be playful and take many risks, it is important to learn to recognize when there is scope for being a little playful. Developing a mindful awareness (pause) and playfully engaging with the everyday uncertainties we face (play) are critical conditions for incubating and shaping ideas.

The 4Ps are offered as a tool for becoming more aware of conditions that can nurture creativity and innovation in a particular setting—for enabling students to become mindful of what enables them to be at their creative best. Being aware of these catalysts can also help teachers and school librarians evaluate ways the learning environment they design supports student creativity. Critical thinking and creative thinking are equally valuable. It is thus important to strike a balance between divergent thinking characteristic of playful moments and convergent thinking that helps us keep to a structure or stick with a plan.

Sites of stimulation are needed for those moments when learners may find it difficult to find the words to adequately express their ideas. Sites of stimulation are needed for those moments when learners may find it difficult to find the words to adequately express their ideas.

CRITICAL thinking and CREATIVE thinking are equally valuable. It is thus important to strike a balance between divergent thinking characteristic of PLAYFUL MOMENTS and convergent thinking that helps us keep to a structure or stick with a plan.

Learners must also find ways to pause to see what emerges from that slow, hazy thinking Guy Claxton (2006) associates with creativity. For some people in some situations, pressure practices might help kick-start such creative thinking; for other people or other times applying pressure can be counterproductive. The challenge is working out how to identify the best practice for any individual in any context.

Role of School Librarians

The school library program can help students develop such mindfulness about their creative capacities. School librarians who model engaging with information in unexpected—often exponentially changing—ways help students see that they, too, can work with information in planned and playful ways. The school library and librarian are also well placed to help create the space and the practices learners need for nurturing the "felt sense" Eugene Gendlin (2004) associates with thinking at the margins of understanding and experimenting with ideas in those...
uncertain moments. By offering guidance to help students develop the balance that best suits them in that instant, school librarians can help students hone creative literacies alongside critical information and digital literacy skills. The school library can thus become a site for creative doing and a training ground for learning to reflect on that doing.

In this article I have sought to argue that all four of the phase states represented in the 4P heuristic are essential for fostering and sustaining creativity. While we cannot ignore the capacity that plans and pressures have for focusing our minds in productive—and even inventive—ways, if play and pause phase states are not sufficiently valued individually or organizationally, we risk losing out on the creative capacities they help enable. As information professionals and educators, we have opportunities to step in and help our students develop the creative literacies needed to engage with information in ways represented within each of the phase states presented in this article. Our goal should be to find ways to help learners engage with each of these four Ps so they can carve out the time and space they need to be at their creative and inventive best in whatever situations they face now and in the future.

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Creativity in an Assessment Driven Environment
Assessment: What Is It?

The title of this article may cause many readers to come to the immediate conclusion that it is about creativity and how it fits into the world of testing so prevalent in most schools today. However, assessment is much broader than testing! Assessment can be defined as any method through which one gathers data or information about something (Coil and Merritt 2011, 4). Assessing may incorporate measurement and testing, but it also includes evaluation and appreciation of creative products, processes, and performances. It encompasses finding out much more information than test results alone can give. Assessment means using all the available information, along with one’s own observations and previous knowledge, to make a decision about the whole.

Creative students are those who are able to put things together in new ways, can observe things others might miss, construct more novel products, give more novel performances, use more unusual or unconventional imagery to make points, observe ordinary things, and find in them an area to wonder about or a problem to solve (Brookhart 2013, 29). Assessing this type of creative thinking can be a challenge. In this article, a number of practical approaches to meet this challenge will be presented.

Assessing may incorporate measurement and testing, but it also includes evaluation and appreciation of creative products, processes, and performances.

Common Core State Standards and Creative Thinking

Assessment in many schools is now tied either directly or indirectly to the Common Core State Standards (CCSS). This tying is a positive development in terms of teaching and assessing creativity and creative thinking. These standards provide educators with wide latitude in both content and in ways to teach. The standards do not focus on mastery of specific content but, instead, rely on major concepts, ideas, and skills that direct students to use content to examine questions, look at multiple issues, think creatively, and find a variety of ways to solve problems.

Because the Common Core State Standards are both general and conceptual in nature with broad curriculum application and a
problem-solving focus, they have the potential to both lay the groundwork and provide the framework for higher-level thinking, including creative and critical thinking, in ways that lower-level test-prep curricula never can. The adoption of the CCSS should not lead to a regimented, scripted curriculum focusing on students’ passing standardized tests. Instead, the CCSS holds the promise of providing opportunities for developing and assessing creativity through the integration of new ideas, technology, the arts, and higher-level questioning (Coil 2013, 6).

One way to teach creative thinking is by using ill-structured problems representative of real-life situations in which there is no obvious right answer. These types of problems should be authentic and relevant to students and allow for numerous creative alternative solutions instead of one correct answer. This approach provides many opportunities for students to brainstorm creative possibilities, and then discuss and find evidence-based solutions to challenging problems. Assessment comes through checklists and rubrics and, perhaps, by ongoing discussion rather than through testing with one-size-fits-all answers.

Common Core State Standards and the Arts

A second way to foster creativity while being guided by the CCSS is to integrate the arts into instruction in nearly all subject areas and disciplines. Arts integration can be defined as “an approach to teaching in which students construct and demonstrate understanding through an art form. Students engage in a creative process which connects an art form and another subject area and meets evolving objectives in both” (Silverstein and Layne 2010, 1).

The arts provide multiple ways for students to make sense of what they learn (knowledge and comprehension), use what they learn (application), and create something new based on what they learn (creative synthesis and evaluation). Because the arts are hands-on, they allow students to show what they know through kinesthetic learning as they design products and do authentic performances. Music, drama, painting, drawing, sculpture, graphic arts, and digital design all use creative processes as students learn about literature, science, history, geography, engineering, math, and technology. While encouraging such creativity seems like a positive endeavor, many educators hesitate to do this because they are unsure of how to assess these products of learning.

Criteria Cards: A Tool for Assessing Creative Products and Performances

Criteria cards have short, easily understood lists of criteria (generally four to six) that
students can look at each time they use the same process or complete the same product, project, or performance. The cards provide guidelines for doing a creative product or performance that students can draw on and refer to over and over again (Coil 2011, 16). Criteria cards are not so prescriptive that they eliminate creative thinking and production. Instead, they give students a focus and a method so that they know how to proceed. For example, suppose you are teaching students about literary elements and want all students to show what they have learned about the setting of a given story. To encourage creativity, each student could show this knowledge in one of four ways: drawing, diorama, mural, or painting.

Criteria cards will be very helpful to guide learners as they choose and develop these products. At the same time, students will still have a great deal of flexibility in terms of how they can use creativity in the process and product. Examine each of the criteria cards on the right. Each can stand alone as an assessment or can be part of a larger rubric in assessing literary elements. (See Rubric for Creative Product: Literary Setting in this article.)

Using Rubrics to Assess Creativity

Rubrics are a type of specific directions or guidelines used to direct and assess student work. They identify criteria that indicate to students which are the most important elements in a product, project, or performance. Most complex rubrics also contain some type of rating scale so that various levels of student performance can be indicated (Coil 2007, 147).

### DRAWING
1. Pictures and images are clear and understandable
2. Neat and colorful
3. Shows topic accurately
4. May use crayon, markers, pencil, chalk, or other media

### DIORAMA
1. Realistic depiction of scene
2. Sides have background scenery
3. 3-D figures and objects in foreground
4. Durable construction
5. Accurate

### MURAL
1. Hangs or is painted on a wall
2. Is a rectangular shape at least 12” x 36”
3. Shows several objects, people, and/or scenes
4. Colorful and neat

### PAINTING
1. Has paint applied to a surface
2. Uses a paintbrush or other tool such as a sponge
3. Visually attractive and colorful
4. Creative use of space
Creating good rubrics and sharing them with students help educators evaluate all types of products and performances accurately and fairly since rubrics require educators to be precise about expectations and criteria for assessment. With rubrics, students and teachers alike understand exactly how student work is evaluated. The criteria are most definitely not a secret! Being clear about expectations gives students an understanding of the meaning behind their grades or final assessments.

Not only can specific criteria on the rubric guide evaluation of student products and performances, using explicit criteria also helps educators give students accurate feedback about the strengths of their work as well as about the elements that need improvement. In this way, students have useful information about what they have created and about their progress as learners. Many students are encouraged to create more complex products, write more creatively, explore the arts more fully, and investigate topics in more depth based on the guidance and subsequent feedback they are given from application of rubrics, especially when these are used as formative assessments.

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### RUBRIC FOR CREATIVE PRODUCT: LITERARY SETTING

**NAME:**

**DATE:**

<table>
<thead>
<tr>
<th>CRITERIA</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5 Extension</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shows one or more settings from the story</td>
<td>Setting is not from the story</td>
<td>Shows one setting from the story</td>
<td>Shows one setting from the story in detail</td>
<td>Shows more than one setting from the story</td>
<td>Combines setting, characters and quotes artistically and creatively</td>
</tr>
<tr>
<td>Has quotes from the story about the setting</td>
<td>Has no quotes from the story</td>
<td>Has a quote but it does not correspond to the setting shown in the product</td>
<td>Has a quote that corresponds to the setting shown in the product</td>
<td>Has more than one quote that corresponds to the setting shown in the product</td>
<td>Shows quotes and setting in a particularly unique and creative way</td>
</tr>
<tr>
<td>Shows details about the setting of the story</td>
<td>Vague product with no details</td>
<td>Shows one or two details about the setting</td>
<td>Shows several details about the setting</td>
<td>Shows many details about the setting</td>
<td>Incredibly detailed showing unusual aspects of the setting</td>
</tr>
<tr>
<td>Shows characters in the setting of the story</td>
<td>Shows no characters from the story</td>
<td>Shows a character from the story but in an incorrect setting</td>
<td>Shows a character from the story in the correct setting</td>
<td>Shows characters interacting in the setting</td>
<td>Details about the characters are shown clearly</td>
</tr>
<tr>
<td>Follows (your choice) of criteria card</td>
<td>Meets only one of the criteria on the card</td>
<td>Meets only 2 of the criteria on the card</td>
<td>Meets 3 of the criteria on the card</td>
<td>Meets all of the criteria on the card</td>
<td>Meets all the criteria on the card with creative detail and design</td>
</tr>
</tbody>
</table>
A typical complex rubric:

- Contains a scale of possible points or levels to be assigned for varying degrees of mastery or quality
- States the different traits or criteria used to evaluate the product or performance
- Provides pointers or descriptors for assessing each of the criteria; these descriptors help identify where on the scoring scale a particular student’s work currently falls

In the rubric on the left, Creative Product: Literary Setting, I have listed five criteria. “Follows (your choice) of criteria card” is one of my criteria. This flexibility gives the students a choice of the product they want to create. The scale of possible points begins with 1, which indicates minimal work, to 5, which indicates that a student has gone above and beyond expectations. Students can easily see the progression from minimal work to excellence.

Creative production and/or creative thinking are addressed in each of the criteria. Column 5 is purposely written in an open-ended way so as to incorporate but not define the types of creativity that might result and be evident in the final product. A rubric such as this can be used to give students points or grades, but that is not necessarily the purpose. Often rubrics addressing creativity are used as guidelines for students so that they understand how to enhance and improve their work.

Many school librarians work with students reading literary texts. Use the Common Core State Standards as a beginning point in leading your students to think more creatively about these texts. Then, usually in conjunction with the classroom teacher or the art teacher, develop rubrics that will reflect not only students’ knowledge of the text but also their creativity in thinking about the text and then producing something original, be it creative writing, an imaginative or inventive performance, or developing some type of innovative or original product.

In this way, you can enhance and encourage creativity even within an assessment-driven educational environment.

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Works Cited:


Proud Readers

Own What’s Learned

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Put the power back in the reader’s hand. Proud Readers Own What’s Learned (PROWL) was developed out of the need to find an engaging, creative process for readers to express what they have read and frankly, to let teachers see that the students actually read the books. In other more prescriptive reading programs students can go through the motions and actually pass tests without having deep knowledge of books read. PROWL was piloted last year at Elizabeth D. Koontz Elementary School in Salisbury, North Carolina. This program combines Common Core State Standards (CCSS) with technology and higher-level thinking skills on Bloom’s Taxonomy. Most importantly, students don’t see participation in the program as work. We want to focus on helping kids develop the habits of thought necessary for creativity, habits such as perseverance, engagement in work, and thinking skills. Through their enjoyment of this reading program, students go well beyond the basic requirements.

Program Logistics
PROWL provides students freedom and perimeters. All students are given a 4-by-4 grid listing various ways to tell about their books (see figure 1). Students work through the grid at the rate of one box per week. They must do one activity from each box in a row before moving to the next row. (If a student doesn’t read a whole book in a calendar week, the student bases the selected activity on the part of the book read that week.) This scheme allows students to

![Figure 1. PROWL grid for fifth-graders.](image)

**We want to focus on helping kids develop the habits of thought necessary for creativity, habits such as perseverance, engagement in work, and thinking skills. Through their enjoyment of this reading program, students go well beyond the basic requirements.**
select how they want to share but gives me the structure to make sure they are meeting diverse goals within the CCSS. Students are eager to share their work and consistently connect their peers to books of interest. At Koontz Elementary, this sharing is accomplished through the morning news program, which can show both live and prerecorded feeds. Kareem said, "I like to do this because they will show it on the news, and I want people to see what I can do. Then people will want to read what I read."

Two of the students’ favorite projects are blogging and the “confession booth.” Both projects require the same information, but that information is presented in two different ways. The students are asked to share basic information about a book they have read. Then they are required to answer a higher-order thinking question of their choice. One such example for fiction text is, “Give your opinion about a character. Justify your opinions and tell why you agree or disagree with that character.” For informational text, a student could answer the question, “How can I apply what I learned from this book to my life or learning?”

Blogging and Confession Booth

Blogging requires a Web 2.0 resource. Students create posts and read one another’s reviews. Through blogging, students learn the importance of proofreading and concisely sharing online their point of view. The confession booth is a computer placed in the school library with a tri-fold board set up to provide privacy. Using a program called Photo Booth, students create a video telling about their book. While the confession booth addresses the ELA Speaking skills in CCSS (Literacy.SL.5 goals), students are also required to share their information (see figures 2 and 3) within a minute.

Some librarians may call this a booktalk, but a creative student dubbed this process “a confession booth for books,” and the name stuck. When asked, “Did you like being creative with the projects?” fifth-grader Taylor said, “Yes, because I am an artist, and I got to say what I want to say…most of

Figure 2. Instructions for blogging or creating a video about a novel.

Figure 3. Instructions for blogging or creating a video about a nonfiction book.
the time teachers make us find what she wants, but this time I got to talk about what I liked.” She wanted to analyze and synthesize a text, and these projects gave her the opportunity.

Timeline
For each project students have additional choices they can make when generating their projects. In the timeline, the students can create on paper or use a digital tool such as Keynote or Comic Life. It is important to stress here that technology should not be used for the sake of technology. Just as a child needs to learn how to grasp a pencil, students need to learn how to use computer programs to express their knowledge. In the timeline students must order five to eight events. They must choose a timeline focus such as: tell the order of events from the story, compare information in the text, tell the problem and solution, or identify cause and effect of a situation.

Additional Projects
The scale model project asks students to use junk lying around their houses. Using details from a fictional story, each student recreates a scene or place in the book. Then the student must be prepared to tell why the scene/place was important in the story. For informational text, each student is asked to create a 3-D model of an object or animal the student learned about by reading the book. The learner also must be prepared to tell facts and details about the object. To share projects with the school, I take pictures or record the student telling about the project. The projects are also displayed in the school library.

The beauty of PROWL is that it allows students multiple creative ways to share about a book.

The Additional Projects category includes creating a Wordle; writing a poem, rap, or song; or creating a comic strip or new book jacket.

Guidelines were created for each type of project. Within each project students can handwrite or use a computer. Sometimes the projects have evolved. For example, one student wrote a song. After receiving praise for how well she caught the essence of the book in the lyrics, she wanted to record the song. She used a program called GarageBand to record herself singing. Then we made a vidcast displaying the cover of her book while her recording played. For two months after the vidcast was shown on the morning news, that book did not stay on the shelf.

Because a lot of technology was introduced in the PROWL projects, more traditional forms were also on the grid. This variety helped teachers and students balance out the learning curve. The students could create a test, complete a book report, or a poster. All items were used to highlight books in the school library.

Conclusion
The beauty of PROWL is that it allows students multiple creative ways to share about a book. The students can express themselves through pen and paper or through technology. They are given the ability to share basic content knowledge of a text but also asked to think more deeply by sharing their perspectives.

It is imperative to note that, once the program is in place, students’ work cannot die! Display it; use it; broadcast it to the school. Kids love to read, and we can help ignite that passion while simultaneously igniting their creativity.

Additional Information
Goals are focused on fifth-graders but span across grade levels. The standards listed are CCSS.

Blogging
Literacy.W.5.1
Literacy.W.5.6
Literacy.W.5.10
Programs: EDU 2.0, Edmodo, Destiny, etc.

Confession Booth
Literacy.SL.5.1
Literacy.SL.5.4
Literacy.SL.5.5
Literacy.SL.5.6
Programs: Photo Booth, GarageBand

Timeline
Literacy.RI.5.1
Literacy.RI.5.5
Programs: Comic Life, Keynote

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Creativity Through "Maker" Experiences and Design Thinking in the Education of Librarians

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Makerspaces are an increasingly prominent feature within libraries—moving the library environment from a space for consumption to a place of creation (Austin et al. 2011; Bagley 2012; Britton 2012a, 2012b; Britton and Considine 2012; IMLS 2012; Scott 2012). A makerspace is a physical place in the library where informal, collaborative learning can happen through hands-on creation, using any combination of technology, industrial arts, and fine arts that is not readily available for home use. The underlying goal of a makerspace is to encourage innovation and creativity through the use of technology—to offer a place where everything from STEM learning to critical expression to future start-ups can be nurtured. Akin to a laboratory, the kind of learning that happens in a makerspace is hands-on, iterative, and experimental and touches a wide array of literacies.

Proponents of makerspaces argue that such environments target a unique package of complementary 21st-century skills and aptitudes such as creativity, innovation, transmedia navigation, visual literacy, and (if based in technology) computational thinking. These are the kinds of skills identified by the Institute of Museum and Library Services in their 2009 report on museums, libraries, and 21st-century skills and by the Partnership for 21st Century Skills (<www.p21.org>).

Coupled with this congruence between makerspace benefits and 21st-century skills is a growing interest in design thinking: an open-ended, nonlinear, and often messy way to generate innovation and creative solutions.
Coupled with this congruence between makerspace benefits and 21st-century skills is a growing interest in design thinking: an open-ended, nonlinear, and often messy way to generate innovation and creative solutions. Creative confidence comes when people are given the opportunity to think like a designer. The hands-on, learning-by-doing experiences afforded by makerspaces implicitly require a design approach to problem solving.

New as the maker movement is, there is little in the literature that investigates it in relation to the education and training of librarians. As someone who trains future librarians, I wondered if there was a way to integrate meaningful “making” experiences with tangible technology into the professional training of librarians so they can, in turn, effectively establish or manage a library-based makerspace that asks young people to think in new, creative ways. What skills, knowledge, and aptitudes do librarians need to implement makerspaces that reflect the core mission and goals of the library?

To address these questions, I piloted a “maker” experience with Library and Information Science (LIS) students, some of whom are training to be school librarians, at the University of Pittsburgh. These students participated in the Bots and Books Design Challenge, an extra-curricular event held each spring during the School of Information Sciences iFest. Working in teams of two or three, students were challenged to select a children’s story and interpret it through a robot that embodies the mission and goals of the library?

The students’ robots interpreted traditional tales such as Hans Christian Anderson’s Little Ida’s Flowers and the Ballad of Mulan. Makers also turned to much-loved children’s books and built robots depicting Giraffes Can’t Dance, Corduroy, and The Very Hungry Caterpillar.

In our interviews with the students, several of them mentioned their surprise at the iterative nature of prototyping their designs, having erroneously believed that the design process was completed as soon as they had conceptualized the project. In actuality, the project was an exercise in design thinking, which typically involves trial and error, multiple design/test stages, figuring out workarounds, “good enough” solutions, and ongoing cost/benefit analysis. Despite the participants’ frustration in not having planned for trial and error, they all found the Bots and Books Design Challenge rewarding. One participant who claimed to have had little experience in crafting or programming suggested that the activity would be a nice “gateway making” experience for other LIS students. Her experience gave her confidence, leaving her with the thought that if she could do this (program and build a robot), she could complete a more technical challenge in the future.

Robotics are a key component in the emerging DIY/maker movement in libraries and help to support the school library’s mission by promoting STEM learning, critical expression, and 21st-century literacies such as pro-

Figure 1. The Visual Programming Language used to design and build robots with the Hummingbird controller.

The technical platform used for the robots was the Hummingbird controller and visual programming language (see figure 1), both developed by Carnegie Mellon University’s Community Robotics, Education and Technology Empowerment Lab (CREATE Lab). Each robot kit includes a set of motors, LEDs, sensors, and electronics for building and programming an interactive, expressive robot. Tutorials, ideas, and documentation are provided through the Hummingbird website <www.hummingbirdkit.com>.

The visual programming language was specifically designed for children and has been successfully used with students in elementary school. We expected that most of the students at the School of Information Sciences, including librarians-in-training, would be able to jump into the programming with relative ease. Nevertheless, a brief one-hour introduction was offered, explaining each of the components connected to the Hummingbird controller and demonstrating how to use the visual programming language.
gramming. The design challenge described here demonstrates a unique method for harnessing technology in ways that encourage creativity and technical practices while, at the same time, respecting library science’s humanist roots in literature. The design challenge also called for design thinking and a constructionist approach to learning (learning by making), experiences unfamiliar to some LIS students.

The next steps will be to integrate the design challenge into a regular LIS class and shift our research attention to questions of where and how “maker” experiences might fit into a formal LIS curriculum. My hope is that librarians can bring these opportunities for creativity to children and youth in school and public libraries.

Acknowledgments: I thank Brian Beaton, Wesley Lipschultz, and Michael Depew for their helpful comments and suggestions in planning the Bots and Books Design Challenge.

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Robotics are a key component in the emerging DIY/maker movement in libraries and help to support the school library’s mission by promoting STEM learning, critical expression, and 21st-century literacies such as programming.

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Strategies to Create Lifelong Readers

Amanda Galliton
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Motivation is one of the dispositions that leads to creative thinking. Finding creative ways to motivate students to read doesn’t have to be a brand new, never-heard-of idea. Being creative is about finding something and making it work for you, your library, and, more importantly, your students.

If you haven’t discovered Pinterest, now is the time. Pinterest is a website that allows users to collect images and save them into different categories. Search “middle school library” and thousands of bulletin board ideas, lessons, posters, and book titles come up. I looked for something that would promote reading campus-wide, and two of our school’s reading projects evolved from something I saw on Pinterest this summer.

One way our campus is promoting reading is a sign on each teacher’s door. I purchased gender-neutral border paper at our local office-supply store and printed “Mr./Ms. ______ has read ______ books this year. How many have you read?” Every other week I send an e-mail to the faculty members and ask them to send me the title and author of whatever they’ve read recently. I then print off a 3- x 5-inch picture of each book cover, laminate the pictures, and have my student aides tape them to the teachers’ doors and change the number on each sign to correspond with the total of books read.

Our second project this year is a 2014 Reading Challenge. I’ve challenged the student body to read 2,014 books. Ours is an Accelerated Reader (AR) school, and we use AR to keep track of the number of books read (and quizzes passed). Using AR helps us keep track by allowing us to run reports for the number of quizzes taken during a specific time period. At our campus standardized dress is required of students; to reward them for reaching this reading goal, we have discussed allowing them a “free dress” week toward the end of the school year. For each book read, a student gets a 3- x 5-inch note card on which to write the title; after the student decorates the card in a manner that corresponds with the content of the book, the card is laminated and hung in the hallways to continue the strip representing books read by our students.

In addition to these two projects, this is the second year that I have created “First Lines” PowerPoint presentations that always get the students talking about books. I create a presentation for each grade level with age-appropriate books and present it as a lesson when that grade comes to the school library. Each slide contains images of four book covers and the first line from one of the books. Students guess which book the line comes from. I do a brief book talk about the book or show a book trailer from YouTube. Months later, students will ask, “What was that book with the first line…?”

Along these lines, I remade a bulletin board from Pinterest based on Carly Rae Jepsen’s song “Call Me Maybe.” The board displays: “Hey, I just met you/And this is crazy/Here’s my trailer/So read me maybe.” Book covers are placed around the lyrics. Each cover is accompanied by a QR code that, when scanned by a QR reader on a smartphone, takes the student to a book trailer. When roaming the shelves, students are also allowed to watch trailers if they come across QR codes in books.

Another idea I found on Pinterest is “Coming Soon.” Each semester I hang across the circulation desk a banner of images of the covers for forthcoming books that I plan to purchase for the library. The book cover image is supplemented by a note containing the release date and, if relevant, series information.

Students’ responses to these efforts have been gratifying. Students notice which teachers have book covers on their doors and how many books each teacher has read. Several students have come to the library asking about one of the books on a teacher’s door. I’ve also noticed that the teachers are making an effort to read more middle grade and young adult literature. They are listening to suggestions that students make to them and creating a campus-wide conversation about reading. Students look for and notice their own note cards hanging up in the hallway. I’ve heard of private competitions between students to see who can read more books in a six-week period and receive more note cards to display.

Creating lifelong readers remains my primary goal as a school librarian. If these creative ways of motivating students to read create even one life-long reader, the efforts will have been worth my time.

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“I discuss the subject of creativity with considerable hesitation, for it represents an area in which psychologists generally...have feared to tread” (Guilford 1950). Thus opens J.P. Guilford’s landmark 1950 presidential address to the American Psychological Association. Guilford, in his remarks about intelligence being a multidimensional construct, identified creativity as a vastly neglected domain of human capability, and he sought to rectify that. In preparation for that 1950 speech, he searched Psychological Abstracts and discovered only 123 resources related to creativity. Conversely, in a search of the 21st-century equivalent of Psychological Abstracts, I found over 5,000 articles; I found more than 4,000 book titles in Amazon.com’s online book section—many books not yet even publicly available! This contrast demonstrates that today we can readily access numerous resources about the now very popular topic of creativity. Many of these resources originated in the
domain of the education of gifted and talented students. How that focus came to be—and why we should encourage creativity in all students—are the topics of this article.

Blame It on the Government
First came the 1957 launch of the Soviet Sputnik I satellite, which started the space race and heralded a new era in American education. This event served to focus attention on preparing a new generation of mathematicians, scientists, and technological innovators to move the United States ahead in the space race and beyond. In 1958 the first large-scale funding of gifted education began, thanks to the National Defense Education Act. Then came the Civil Rights Act of 1964, intended to bring about equality to all people in this country, and that meant equity in education for all types of learners, including the gifted and talented (NAGC 2008), who were then, as now, considered the human capital who could help make and keep the United States the great country it is.

Then:
In response to a mandate from the [U.S.] Congress (Public Law 91–230, Section 806), a study was conducted on the gifted and talented which consisted of five major activities: review of research, analysis of educational databases and the development of a major database, public hearings to interpret regional needs, studies of programs in representative states, and review and analysis of the system for delivery of Office of Education programs to benefit gifted and talented children. (Marland 1971, abstract)

This research was conducted because of an addition to Public Law 91–230, section 806, which is also known as the Elementary and Secondary Education Act (ESEA) of 1965, which over the years has morphed into the No Child Left Behind Act (NCLB 2002) of today. In the 1971 report submitted to the presidents of the U.S. Senate and House of Representatives, a primarily volunteer advisory panel of eleven researchers from coast to coast created a new definition for high ability/potential learners. Their definition was:

Gifted and talented children are those identified by professionally qualified persons who by virtue of outstanding abilities are capable of high performance. These are children who require differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society.

Children capable of high performance include those with demonstrated achievement and/or potential ability in any of the following areas:

1. General intellectual ability
2. Specific academic ability
3. Creative or productive thinking
4. Leadership ability
5. Visual and performing arts
6. Psychomotor ability

(Marland 1971, 8)
Is What’s Good for the Gifted Good for Everyone?

Now that we understand why and how a focus on creativity initially came to exist as an offshoot of gifted education, we need to examine whether the focus on creativity should remain there or branch out into more general directions. In a manner of speaking, yes, the focus on creativity in gifted education is appropriate, as what’s good for identified gifted students is good for everyone. However, that focus on creativity only in the context of gifted students must have limitations. While we obviously cannot expect students to work at levels beyond their capacity in core academic disciplines, educators should set the expectations’ bar high and then, by including creative opportunities and curriculum, help all students at least attempt to reach their personal best. We should also provide opportunities for identified gifted and talented students to work with one another to support their specific intellectual, social, and emotional needs, but we need to introduce such affective components into all educational opportunities. What could possibly be bad about making all classrooms psychologically safe places and basing all student-teacher relationships upon mutual care and respect?

When we consider the federal definition of giftedness, which still stands except for the psychomotor aspect (which was eventually removed from the definition), we are being inclusive of a wide range of human talents and endeavors, and not just academic or intellectual abilities. These other domains include creativity, productivity, leadership, and the visual and performing arts, which should be nurtured in all schools for all students, as well as in the home, but often are not.

What could possibly be bad about making all classrooms psychologically safe places and basing all student-teacher relationships upon mutual care and respect?
What Happened to Play in/as Learning?

I have taught in public schools, some amazing ones, in fact, so I know what infusing creativity, play, drama, music, and movement into lessons can achieve. Doing so results in deep, rather than rote, learning. This infusion leads to the joy of a job well done and fun in the doing. It allows the teacher to go to school daily knowing this day will be unique and possibly even wonderful because of what that teacher has planned based upon deep content knowledge, excellent facilitation skills, and knowledge of the students. But today, working daily with college students interning in public schools, I hear about some pretty amazing happenings there, and not usually for the good.

In recent years, the pressure of high-stakes tests under NCLB has often resulted in a constriction of the curriculum and how that curriculum is delivered to students. Concerns about students not passing these tests has led many educational administrators to subtract academic freedom from teachers’ repertoires and to direct said teachers to use rote scripts and super-detailed pacing guides that tell teachers not only what to teach, but, also, how, when, and where. Most often, these scripts and guides are low-level material that is not motivating to students, is boring for teachers, and certainly does not allow for creativity on anyone’s part. Making every lesson of every day based upon the ubiquitous six-step (or other) lesson plan (hook students, tell them what you’re going to teach, model the lesson, guided practice, independent practice, and then repeat, repeat, repeat as needed) results in a stultifying day of worksheet after worksheet in many schools.

Gone is the belief that well-trained teachers can deliver excellent lessons, that student development should determine instruction, and that creativity—students’ and teachers’—has a place in school. Too often, now, I hear from teachers, "I don’t have time to be creative"; "I get in trouble from my principal if my students are too loud/not sitting at their desks without fidgeting"; "I have to teach directly to the test."

How to Become More Inclusive in Non-Academic Domains

Why should we infuse creativity and other non-academic content and dispositions into teaching and learning? How can we bring creativity, movement, and the arts into our everyday educational practice while simultaneously improving learning?

With the advent of mandates such as the Common Core State Standards and the set of Learning and Innovation Skills identified by the Partnership for 21st Century Skills, we are now supposed to bring creativity (back) into the classroom. That said, not everyone has a doctorate in gifted and creative education; indeed, few teachers have had more than a mention of these topics in their pre-service training programs. Therefore, many classroom teachers may not know how to include creative aspects in their teaching and encourage creativity in their students. Here are a few simple-to-implement ideas that can help both educators and students be more creative. (The information in square brackets in this section refers to citations in the list of recommended resources.)

The first way is simply to change how we do what we do every day. We can provide the basic structure many students need, but alter the delivery of information—surprise students and help them become more flexible thinkers. By purposefully providing ambiguity and then encouraging creative inquiry and discovery learning, we can help students learn with our guidance, not with our telling them what to learn and how to do it.

Next, we can teach Arthur L. Costa and Bena Kallick’s 16 Habits of Mind [n.d.] to encourage creative achievement [Flint 2013], including finding humor, taking responsible risks, thinking interdependently, gathering data through all the senses, and more. These are life skills from which all children can benefit, not only those labeled as gifted and talented.
Only in schools do we separate people by ages, and subjects into separate silos, so use the real-world technique of approaching subjects from a multidisciplinary perspective to get more work accomplished in less time. Mixing movement, drama, and music with academic content turns virtually any lesson into high-interest, engaging learning. For a win-win situation, add to the mix older students working with and inspiring younger learners.

Universal Design for Learning (CAST 2013) can help us change things up and give students choices about how to learn curriculum content and how to demonstrate their learning. By providing these multiple means of expression (how we present information to students), multiple means of student action and expression, and multiple means of engagement, we can help all learners take advantage of their own strengths.

As educators, we can leave space in the curriculum for real-life work or, better yet, use authentic problems and challenges to meet curricular needs. Regardless of grade level, students love these types of challenges. Community Problem Solving (CmPS) could be used to integrate real-life work (Future Problem Solving Program Int’l 2013), or we can provide other authentic service-learning opportunities.

We can mindfully teach to the whole child by teaching at the top of Bloom’s Taxonomy for the cognitive domain and being sure to include elements from the psychomotor and affective taxonomies. Interestingly, at many universities pre-service teachers only in the physical education, health, and fine arts education programs are taught about all three taxonomies. Fortunately, information about each of these domains is readily available online and can be used for our own professional development. When teaching and learning are interesting and high-level and we let students engage socially and move more, we encourage better work and have fewer classroom management issues.

By differentiating processes, environment, and products in ways that work for us and our students, we can improve learning outcomes when engaging students’ interest (Tomlinson 2000). Differentiation is not just for elementary students! Teaching secondary students and educators in multiple ways can help them be better prepared for both postsecondary education and the workforce.

A Caution about Creativity

Here’s the funny thing about creativity—creative thinkers, regardless of gifted status, probably embrace and enjoy opportunities to be creative. If, however, learners have never experienced these opportunities or had creativity figuratively beaten out of them, they may find creativity threatening, even when they become educators themselves.

If students, classroom teachers, or school librarians have been told there is always one right answer (convergent thinking) and that everything must be done “by the book,” those people may find creativity threatening and think of themselves as not being capable of creativity. Becoming creative is a process for some, and one that needs to be coaxed, cajoled, and nurtured into existence. We need to help our students and colleagues understand why creating, problem solving, and divergent thinking are important, as well as how to teach and do them. One way I discuss creative open-ended assignments with my students and colleagues is as a walk of faith—that students have to trust me to do my job, which is to support them and help them do well, and that I will, in turn, trust them to do all that I know they are capable of. Because learners may never have heard such words from a teacher before, they may initially approach the idea with skepticism before eventually coming to accept it.

A Country without Creativity?

In a post-smokestack age, the United States has only one way to avoid a declining standard of living, and that is through innovation. Advancements in science and engineering have extended life, employed millions, and accounted for more than half of American economic growth since World War II (Rosenberg, Landau, and Mowery 1992), but advancements are slowing. The nation has to enlarge its pool of the best and brightest science and math students and encourage them to pursue careers that will keep the country competitive (New York Times 2013).
Having read these views on the future of the United States, I am inclined to agree; infusing creativity is not just a matter of personal preference but also a matter of national importance. The time has come to undo the damage we have done to the past few generations of students and educators and to bring up new ones in a better way.

We need to accept and believe that creativity is not just for gifted and talented people; it is for everyone. A long-held understanding is that there is a threshold above which creativity and intelligence are not correlated; it follows that “creative” and “genius” do not necessarily always have to go together. This threshold is approximately at an IQ of 120, whereas people are typically identified as moderately gifted at or above an IQ of 130. The fact is, creative dispositions can occur in just about anyone, and these dispositions include a strong commitment to a personal aesthetic; an ability to excel at not only solving problems, but in finding and defining them; mental fluidity; flexible thinking; a tolerance for ambiguity; a willingness to take appropriate risks; objectivity; and intrinsic motivation.

While every human being may not excel in all six of these arenas, many will be good in several of them and certainly deserve the opportunity to try to be creative. Bringing a little more organic creativity into the schools, homes, and workplaces in our country just may change the way we all think about learning and working and create a new type of life-changing literacy (Piirto 2014).

Author’s note: Many thanks to mentor and colleague Jane Piirto for steering me in the right direction for this article.

Works Cited:

Recommended Resources:
To encourage high school students to read, Northwest High School principal Jason Childress created a pilot program #N2RDG that began during the 2013–2014 school year here in Justin, Texas. The premise was to make the program as simple as possible, centered around reading text in various formats, such as e-books, books, database articles, and required reading. Information about what everyone read is posted via Twitter using the hashtag #n2rdg. Students can read as many books as they want, and extrinsic rewards are given for every five books read (or equivalent other reading), up to a maximum of thirty books; students are encouraged to read beyond the limit.

The idea originally sparked with NHS principal Jason Childress as a way to extend the twenty-five book challenge implemented at the junior high schools. Childress and his administration team worked out a program that was in line with an already established program but distinctly different and created to reflect Northwest High School. The principal then handed the concept over to an associate principal, several teachers, and the school librarian (myself); we served as the nucleus of a think tank to design the specific program targeting the high school audience. Including faculty members in the planning created teacher buy-in to a new program that looked chaotic at first but began to flesh out with more meetings, recommendations, and ideas—including ideas gleaned from other stakeholders and from reading programs at other schools in the area.

The admin and reading program team encourages every educator/admin on campus to display reading lists posted beside doors, wear t-shirts with the #N2RDG logo, use advisory as a place to discuss books, and allow free reading time. Faculty members are also encouraged to give dedicated wall space in classrooms for the library to use to display books, and use the state-of-the-art television studio on campus to broadcast teacher segments about the best books they’ve read. (The TV broadcasts also include book trailers created by the school librarian to further encourage students to check out books.)

Students know they will be rewarded for their reading, which is inherently embedded in public education. Those students who logged all thirty books are visited by the Prize Patrol and recognized in class for their participation. (The thirty-book prize is an invitation to a cookout hosted by the principal, whom students LOVE!) Surprisingly, those that complete the thirty-book challenge asked if they could continue turning in their reading lists without rewards attached. The Prize Patrol will continue to recognize any student who reads over and beyond thirty books. Students recognize that the value of reading continues even without extrinsic rewards!

Students who have not yet read thirty books are also rewarded. After reading five books students get their choice of a school lanyard, team sticker for a vehicle, or two cookies from “Java City,” the coffee

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1 “Advisory” refers to a cohort of twenty to thirty students who meet as a group with their advisory teacher once or twice a month. These sessions keep students up to date on campus activities and also serve as a place to encourage reading. Students sometimes use the time to update their reading logs, which contain short synopses and to talk about books they’ve read.
shop inside the school library. The prizes get bigger as students read more books. A beverage from Java City is one of the ten-book prizes. A popular choice at the fifteen-book level is two weeks of reserved parking. Readers of twenty books earn a school t-shirt or a travel mouse for a tablet. At twenty-five books students can opt for a free parking pass for the coming school year or a free movie pass.

The program has two tiers; one is the teacher reading challenge, which is handled by a campus curriculum coordinator, who recognizes teacher readers and distributes extrinsic rewards as well. (Teachers participate in the same program as the students, but the rewards are different.) I am in charge of student reads and distribution of rewards. Any student who wants to participate is given a reading log sheet. These sheets are collected by the advisory teacher and used to tally rewards. I get the information so I can keep a running total of how many books are read by students during a month. After the first round of rewards and recognition, the program gained ground. (Checkouts increased, too.) As I write this in December (which had 975 books read during a two-week period), I’m looking back to see that in October 1,395 books were read by students, while in November the number read jumped to 1,535, with more participants turning in reading logs.

Since this is a pilot program, data will be gathered to see if #N2RDG has any correlational effect on state and campus assessment tests. More significant than test results, though, is seeing students talking to each other about books, checking out books on a regular basis, and working/studying in a pervasive culture of reading for pleasure instead of doing only forced reading in textbooks. The focus on creating conversations that directly correlate to #N2RDG has paid off. Because teachers and administrators are also involved, receiving rewards as well as publicly displaying their book lists, conversations about reading have been sparked campus-wide.

In addition, #N2RDG received the 2014 Young Adult Reading Incentive Award from the Texas Library Association. The award honors a librarian who has shown exceptional ability in motivating young adults to read by developing and implementing a reading incentive program for young adults in grades 6–12.

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Naomi Bates is a high school librarian at Northwest High School in Justin, Texas. She is actively involved in the Texas Library Association and serves on various association committees. She is also an active member of the Texas Computer Education Association. She was named by Gale Cengage and School Library Journal as one of five emerging library leaders for 2010–2011; she has also been honored by TCEA as Library Media Specialist of the Year.
How can students learn about topics important to all U.S. residents and have fun simultaneously? By “playing civics” at the iCivics website <www.icivics.org>. This innovative educational gaming site, which was a 2013 AASL Best Website for Teaching and Learning <www.ala.org/aasl/standards-guidelines/best-websites/2013>, is designed to help students learn more about elections, constitutional law, the three branches of government, forms of government (mainly democratic), economics, campaigns and elections, and other topics.

The site contains seven sections of games and twelve webquests that cover the major curriculum topics for K–12 civics classes: citizenship, constitutional law, economics, and the three branches of government. Educators can register each of their classes on the site. The time needed for each game session ranges from approximately fifteen to sixty minutes; therefore, students can play one complete interactive game within a single class period. The site is designed to allow all registered students to keep track of their previous scores, or students can opt to skip the registration phase and play online anonymously.

The iCivics site also includes educators’ resources. Because iCivics content is arranged in curriculum units, each with an accompanying lesson plan, collaborating with teachers is easy; lessons can be tweaked and adapted as appropriate to develop a custom experience for students to work through. Each lesson plan is set up in a familiar form with an overview, lesson objective, step-by-step procedures, recommendations for what lessons should come before and after the current lesson, and accompanying student work and informational sheets. All of these resources are available for teachers in a copyright-free downloadable Teacher’s Guide. Some lessons even include decks of presentation slides.

**iCivics in Action**

I discovered iCivics in spring 2013 via its Twitter site and thought...
iCivics would make an excellent site to link to my library’s website so eighth-graders could review right before our state standardized tests were administered. Based on the most recent results from both formal and informal classroom and district assessments, the areas most in need of attention for eighth-grade civics classes in my building were the major concepts relating to economics.

After approaching my school’s two eighth-grade civics teachers with the idea, I was delighted to find out that they were well aware of iCivics. However, they did not have much opportunity to use the site consistently due to either the high demand for computer labs in our building or because their rooms were in a WiFi dead zone that prevented students from using wireless capabilities with the devices on the mobile carts. I offered the library computer lab and instructional space for collaborative review.

Six weeks prior to the official test date, I met with both teachers during their planning time. After reviewing the online lesson and pupil handouts, we were able to devise a pacing chart for carrying out the review in three sessions. The first two sessions’ focus was reviewing the major characteristics of the market economy and clarifying the concepts of supply and demand. Each session was divided into two segments. The first lesson segment took place at the work tables in the instructional area of the library’s main floor. The second segment took place in the computer lab.

Sample Sessions 1 and 2—INSTRUCTIONAL SPACE:

Using the library instructional space on the main floor, as coteacher, I explained the logistics of that specific session. Upon entering the library, students were directed to the computer lab to log on at a designated station and then redirected back to the instructional area so the classroom teacher could introduce the lesson to the students and go over the lesson concepts. PowerPoint presentations, either from the iCivics site or created specifically for the lesson, were used during this segment as part of the review process.
Sample Sessions 1 and 2—COMPUTER LAB:

Using the computer lab, the class was directed to the library’s wiki to access online documents. To better engage the students in this review, I updated all printable worksheets by transferring the info from the iCivics forms to online Google document forms, using the same fill-in-the-blank and multiple-choice formats from the iCivics downloadable form. Completion of the Google forms allows teachers to see immediately who needs additional remediation on a specific concept. After students completed submission of the review form, we closed out the lesson, either at the computer stations or in the instructional space, depending on the time available.

Sample Session 3—COMPUTER LAB:

A third session in the computer lab was set aside to follow up on the concepts of budgeting; students played the game People’s Pie or, in some cases, another iCivics game chosen by the teacher as appropriate for general review.

By the third session, students were hooked. They were enthralled with the opportunities the site provided for role-playing lawyers, judges, and political figures. A straw poll was taken at the end of the year, and the most popular game last school year was Supreme Decisions. In this game students listen to both sides of a case and help to influence the remaining tie-breaking decision. According to many students, the chance to practice the concept is what helped them to clarify detailed issues and retain information. In my school 96 percent of the eighth-graders passed their state-mandated civics test that spring! This was an improvement of 5 percent over the previous year.

Of course I can’t give total credit to iCivics, but it didn’t hurt.

As a result of the springtime success with the iCivics site, I have incorporated the site into my lesson plans. According to Empowering Learners, “The mission of the school library program is to ensure that students and staff are effective users of ideas and information. The school librarian empowers students to be critical thinkers, enthusiastic readers, skillful researchers, and ethical users of information…” (AASL 2009, 8). This kind of engaging lesson supports that mission.

Collaboration with Teachers

This type of collaborative effort also speaks to one of the other goals established by AASL, which is to build collaborative partnerships with other educators. By building relationships within small circles of curricular or grade-level areas, school librarians can begin to establish themselves as trusted sources of support for the curriculum and as experts in information-gathering and resource management. Having a link to iCivics on my library resources website helps teachers see me as a valuable instructional partner.

During the 2013–2014 school year I am again working with both civics teachers. I’m aware of their pacing calendar, and as their classes move on to new concepts, I take the initiative to work collaboratively with the teachers throughout the year. Use of iCivics has been expanded at our school; the site is used to introduce students to new concepts from the curriculum and to support re-teaching or remediation.

The iCivics resources are also great for cross-curriculum planning. This year the English classes will be reading Nothing but the Truth by Avi, a book that deals with freedom of expression. The iCivics mini-lesson “Texas v. Johnson (1989)” covers the basics of what freedom of speech is and how the U.S. government cannot prohibit an individual from expressing himself or herself because others in society disagree with the means of expression or the ideas expressed. The unit on the Avi novel has provided me with another opportunity to collaborate with classroom teachers.

Everybody Wins

Overall, iCivics engages learners and creates a bridge between the regular classroom and the school library. This resource offers an opportunity for the school librarian to become partners in learning with the students who are exploring multiple resources on a given topic, to become an information specialist in charge of collecting and providing access to resources, and to be a teacher who draws on curriculum from other content areas to supplement and enhance what the other educators in the building are doing!

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Work Cited:
INNOVATIVE. CREATIVE. FLEXIBLE.

Independent thinker. Collaborative learner. These words describe the 21st-century learner, both in nature and expectations. School librarians have always seen themselves as creators of environments that nurture these characteristics—but do students and administrators agree? With the learning commons model David Loertscher calls for drastic change, change he describes not just as an evolution but rather a revolution <www.davidvl.org/Home.html>. Part of this revolution includes modifying physical spaces in the school library to reflect and showcase model instructional practices. Despite the desire to embrace the vision of a learning commons, many school librarians struggle with how to make the vision a reality.

Mary Barbee and Holly Frilot of Gwinnett County (GA) Public Schools (GCPS) took time to talk about how their district is making the learning commons model a reality in their schools.

Mary Barbee, director of media services and technology training for GCPS, began embarking on that vision several years ago. Emphasizing the importance of flexible spaces for instruction, Mary encourages school librarians to move the vision forward:

A school library that supports project-based learning, inquiry, reading, and collaboration has to be furnished and designed for those functions. It has to flex easily into arrangements that support group-project work, small-group collaboration, and individual study. Comfort contributes to learning in an obvious way—we are much less distracted when we are comfortable!

Today, through combined efforts of individual school librarians, local school administrators, and district personnel, the vision is becoming a reality.

Flexible instructional spaces are the hallmark of a learning commons model, and many schools in GCPS are embracing this idea by making changes to their current spaces. Large-group instruction areas morph from stagnant to active by changing the configuration of the tables, adding an additional projector and screen, and using wheeled chairs that swivel. When tables are placed in an “X” arrangement, the “front” of the classroom is eliminated. School librarians and teachers move easily from table to table to facilitate instruction.

Pleasure reading areas are still valuable—after all, there’s nothing like relaxing in a comfortable chair and curling up with a good book—but today’s library spaces and furniture must be able to accommodate how students learn.
Freedom of movement in the school library has become a necessity.

students to turn to see the screens without disrupting class and allow students to more easily break into small groups for collaborative work. Large-group instruction moves from impersonal to intimate in this new space. Freedom of movement in the school library has become a necessity. Classes often shift between large-group instruction, small-group collaborative work, and individual learning all within the same class period. The ability to shift between these groupings without major disruption is important.

Digital access must be as flexible as the rest of the instructional spaces. Online databases, e-books, and Web 2.0 tools provide rich resources for research and content creation; these resources should be accessible from all areas of the library. Computer mobility poses a difficult challenge in GCPS since many libraries still use desktop computers. Some existing schools address this challenge by changing the configuration of the computers from rows to small groups or circles. Even though the computers are stationary, collaboration is physically easier because of the small-group areas. When the district purchases new technology, an all-laptop model in the libraries will promote the greatest degree of flexibility. Students will use laptops in whole classes or move the devices about the library as needed for individual use or small-group work. As Gwinnett continues to implement a district-wide BYOD initiative, digital access points in the library to support research, creativity, and collaboration will continue to improve.

Collaborative work spaces in the school library are not limited to tables with computers. Tall project tables provide a large surface for group research, project work, or even makerspace activities. Some project tables are outfitted with power to allow charging mobile devices, further increasing instructional flexibility. If working at a project table seems too confining, students may opt for a more mobile option. With a swivel work surface to support books or devices and casters to move freely, Node chairs allow for instantaneous collaboration. (Look at <www.steelcase.com> to see examples of Node chairs.) Students transition easily from team work to individual work and back again. Throw in a few ottomans, and a quiet reading area has been transformed into a dynamic learning environment.

Pleasure reading areas are still valuable—after all, there’s nothing like relaxing in a comfortable chair and curling up with a good book—but today’s library spaces and furniture must be able to accommodate how students learn. Small laptop tables next to soft seating allow some students to read on devices or work on laptops while others read from print books. Couches and lounge chairs that were once reserved for individual reading now become a hot spot for collaboration. More space is often needed in the library to accommodate new and flexible furniture. With the availability of many district–provided digital resources, schools require fewer print materials, and as a result, less shelving. By using a combination of digital and print resources, the students benefit from having multiple access points, a robust selection, and more space for collaborative learning.

Creating these flexible environments requires vision, commitment, and planning. By developing a long-term plan that provides instructional focus and prioritizes needs, changes can be made in phases if necessary, especially if funding is an issue. To implement changes, schools often combine local school funds, PTA funds, and grants. In addition, funding at the district level for libraries in new and renovated schools will support more collaborative design and furniture options. Holly Frilot, a media instructional coach for GCPS, works with school librarians and local administrators to develop these plans and form a cohesive design for their space. “It’s important to have a cohesive design for the space rather than purchasing an odd collection of pieces over time,” says Holly. “The vision for the space is not just to accommodate teaching and learning, but to inspire teaching and learning. I want that excited buzz of learning to be evident when you walk in the doors. Administrators and school librarians often have the same vision—they want to see a lively space where teaching and learning happens in multiple forms.” Administrator support and school librarians with strong instructional vision and focus make a winning combination for change and help make the learning commons revolution a reality.

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Sometimes, the story chooses you.

Writing Historical Fiction

(OR HOW RESEARCH AND CREATIVITY GO HAND IN HAND)

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Beginning novelists are often advised to write what you know, and, on the surface, this makes sense.

How straightforward it would be for a doctor to write medical thrillers. How tidy for an art historian to publish the next Da Vinci Code. But what happens if you’d rather not write about something you know? What if you can’t? Because, as many writers have come to realize, sometimes it’s not possible to choose the story you write. Sometimes, the story chooses you.

In my new YA novel, A Death–Struck Year, seventeen-year-old Cleo Berry’s life is turned upside down when Spanish influenza ravages her city. The idea for the book grew organically, stemming from a love of coming-of-age novels and a fascination with disease fiction—a fascination I choose not to examine too closely. When I first started writing Cleo’s story, I knew next to nothing about the 1918 pandemic or World War I or how people lived, ate, and dressed in early-twentieth-century Portland, Oregon. There was plenty I didn’t know, which meant one thing. It was time to visit the library.

Research often gets a bad rap. It’s boring; it’s dry. And anything that is boring or dry fails to resonate with students of any age. But when traditional library sources are enhanced by various outside (and tangible) experiences, research can be a prime example of immersive learning. The process, rather than being tedious, can be very, very fun.

A few examples:

For me, researching historical fiction has always been equal parts investigation and imagination.
Maps and Architecture: Robert Louis Stevenson once wrote, “The author must know his countryside, whether real or imaginary, like his hand; the distances, the points of the compass, the place of the sun’s rising, the behavior of the moon, should all be beyond cavil” (Hill 1978). My heroine was born and raised in Portland. It was important that I understood the streets and buildings and neighborhoods as well as she did. Armed with old maps unearthed from the Oregon Historical Society and Portland City Archives, I explored. I visited the old train station, the Skidmore Fountain, the historic residential neighborhood of King’s Hill, even Yamhill Street, where a sprawling public market once thrived. A great deal of time was also spent wandering aimlessly, knowing Cleo’s story could only be made better as I became more familiar with her world.

Transportation: A century ago, Henry Ford’s Model T was the most ubiquitous car in America. (Customers were told they could order the automobile in any color, so long as it was black.) Therefore, it was easy to choose a car for Cleo to drive. Then I wondered: how did you drive a Model T? How did one drive in general? Did they even have traffic lights back then? I wasn’t going to torture my readers by including an info dump on early automotive history, but because Cleo spent a great deal of time in her car, these were answers I felt I had to know. I found step-by-step driving instructions in Robert Casey’s The Model T: A Centennial History. Afterward, I dragged my family with me to visit one classic car show after another so I could study “my” car up close and personal. A good resource was the Model T Ford Club of America, which keeps an online calendar of regional and national car shows.

Clothing: I knew that women wore skirts and dresses and fancy hats. I knew that men wore crisp suits and handkerchiefs—and that was the extent of my knowledge about fashion in the 1910s. Luckily, JoAnne Olian’s book Every Day Fashions, 1909–1920, As Pictured in Sears Catalogs was invaluable. I also watched plenty of period dramas (and, yes, okay, Legends of the Fall was one of them). Also helpful was a peek at the vintage costumes on display at the McConnell Mansion Museum here in Moscow, Idaho.


Food: Every region has its distinct culinary flavor; the Pacific Northwest is no exception. Luckily, I stumbled upon a resource that could explain it all to me in fantastic detail. James Beard (1903–1985) was a famous chef who grew up in Portland. In Delights & Prejudices, he not only offered readers a first-person account of life in the City of Roses, but also reminisced about the culinary
experiences that shaped his career: shopping at the Carroll Public Market, picnics, a subpar dining experience at the city’s top hotel. After I had read Beard’s book, I spent a fair amount of time sampling what the city had to offer, much of it seafood, from vendors ranging from food carts set up on almost every street corner to Jake’s Famous Crawfish, a historic landmark.

For me, researching historical fiction has always been equal parts investigation and imagination. Research doesn’t have to be a dreaded experience: the hapless student surrounded by dusty tomes and small print. With a little creativity, research can be more of a treasure hunt: a clue-sniffing bloodhound with his nose to the ground and his tail wagging high, following a trail that always begins in a library but rarely ends there.

Makiia Lucier grew up on the Pacific island of Guam. She received a Bachelor’s degree in journalism from the University of Oregon and a Master’s in library studies from the University of Wisconsin–Milwaukee, where she studied literature for children. She’s had plenty of jobs, mostly in libraries, and currently resides in the small college town of Moscow, Idaho. Her debut YA novel, A Death–Struck Year (HMH Books for Young Readers 2014), is a selection on the American Booksellers Association Spring 2014 Indies Introduce New Voices list. Visit Makiia at <www.makiialucier.com>.

Work Cited:

Recommended Resources: