

CULTIVATING CREATIVITY

27 INTERVIEWS FROM
INNOVATIVE EDUCATORS



An abstract geometric design on a dark grey background. It features several triangles of different colors and sizes. A large light blue triangle is positioned in the upper right. Below it, a smaller yellow triangle points towards the right. To the left of the blue triangle, a white triangle points towards the right. Further down and to the left, a larger yellow triangle points towards the right. At the bottom left, a red triangle points towards the right. The overall composition is minimalist and modern.

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INTRODUCTION

In the middle of grocery shopping with his five-year-old son last November, Alec Couros made a startling discovery about creativity.

As he and his son approached the fruit section, his son asked, “Do bananas grow with tips up or with tips down?” Since there aren’t a lot of banana plants in Regina, Saskatchewan, Couros didn’t actually know off-hand. But, being the connected father that he is, he pulled out his iPhone, Googled it, and in less than 30 seconds, the two of them were looking at photos of banana plants and no longer had to wonder.

No longer had to wonder.

“I did that entirely wrong,” Couros, professor of educational technology and media at the University of Regina, writes in a blog post about the experience. “At the very least, I could have asked my boy, ‘Well, which do you think, son?’ perhaps followed by ‘So, why do you think that?’ But I didn’t. And because I didn’t, I messed up a great learning opportunity.”

“Instead of providing my boy with an extended opportunity to be curious, to imagine deeply and to think creatively, I reinforced one of the worst habits of our generation. I demonstrated to my

boy that you can solve a problem without thinking. And I won’t do that again.”

As the natural progression of the brain would have it, when we are presented with a question, we spend time mulling over potential answers to that question before arriving at an answer. In today’s digitally advanced society, however, we are presented with an answer—the answer—right away, if we want it. What’s more, this kind of instantaneous knowledge eliminates the risk of being wrong.

In the field intelligence, there is a phenomenon called the Flynn effect: Each generation, IQ scores increase about 10 points, indicating that enriched environments are making kids smarter. But in the neighboring field of creativity, a reverse trend has been observed in recent years: scores are dropping.

In 2010 Kyung Hee Kim of the College of William and Mary discovered, after analyzing almost 300,000 scores of American children and adults, that creativity had been steadily rising, just like IQ scores, until 1990. Since then, creativity scores have consistently inched downward. “It’s very clear, and the decrease is very significant,” Kim says. It is the scores of younger children in Amer-

“What if quizzes measured kids’ ability to question, not answer?”

Jen Medbery, Fast Company

ica—from kindergarten through sixth grade—for whom the decline is “most serious.”

According to Kim’s analyses, which employed the famous Torrance Tests of Creative Thinking, scores at all grade levels began to decline in the United States somewhere between 1984 and 1990, and have continued to do so ever since. The drops in scores are highly significant statistically and in some cases very large. In Kim’s words, the data indicate that “children have become less emotionally expressive, less energetic, less talkative and verbally expressive, less humorous, less imaginative, less unconventional, less lively and passionate, less perceptive, less apt to connect seemingly irrelevant things, less synthesizing, and less likely to see things from a different angle.”

According to Kim’s research, all aspects of creativity have declined, but the biggest decline is in the measure called Creative Elaboration, which assesses the ability to take a particular idea and expand on it in an interesting and novel way. Between 1984 and 2008, the average Elaboration score on the TTCT, for every age group from kindergarten through 12th grade, fell by more than 1 standard deviation. Stated differently, this means that more than 85% of children in 2008 scored lower on this measure than did the average child in 1984.

There are several reasons to doubt Kim’s study, the most apparent of which is that it assumes creativity can be measured at all. On top of that, many experts say the Torrance Tests are outdated and even irrelevant given recent advancements in the fields of neuroscience and psychology. More than a few educators simply haven’t noticed the trend at all in the twenty-five-plus years they’ve been teaching.

But what about the most famous TED Talk of all time, Ken Robinson says schools kill creativity? Is saying schools kill creativity really that different from saying creativity is declining in students? Isn’t one just the cause of the other? While the majority of creativity experts and education specialists we interview at the end of this book deny the existence of a creativity crisis, per se, most of

them agree that schools could do more to provide a climate that fosters creativity.

So could society, argues teaching mentor and creativity consultant Jeffrey Davis. “Schools don’t exist inside a cultural vacuum,” he says. “You could assign blame to schools for being test-happy and measuring everything, thus stifling creativity, but the reason schools measure everything is because our culture is obsessed with measuring!”

You could also argue that the “crisis” lies in the fact that greater human creativity is required in today’s society in order to compete in the job market. “Need a job? Invent it,” writes New York Times columnist Thomas Friedman. The high-wage, middle-skill job is being replaced by the high-wage, high-skill job, and unless you have the adaptability and ingenuity to keep up with the rapidly shifting landscape, you’ll be left behind. Another possibility is that we have created a real crisis by believing in a false one. After Kim came out with her study and Newsweek published their disruptive article entitled “The Creativity Crisis” in 2010, we fell headlong into political chaos, pointing fingers and distorting the scale of the issue.

In times of crisis, it often helps to see whether other nations are experiencing the same issues and, if so, what they are doing about them. Curiously, there is very little evidence of a worldwide creativity crisis, even in countries with education systems similar to that of the United States, where “teaching to the test” appears to be the biggest deterrent.

In April 2012, ADOBE released a report on the global state of creativity, which showed a decline in all five participating countries—the US, the UK, Germany, France, and Japan. 50% of respondents believed there is a decline in original creation in their nation, and 60% said that their current education system is stifling creativity. But these results are suspect, since ADOBE draws its profit largely from helping clients be more creative. Richard Florida came out with the Global Creativity Index in 2011 which placed Sweden at the top and the United States in second. In his





report, Florida defines creativity as the three T's (Technology, Talent, and Tolerance) that drive a country's long-term economic prosperity. Sweden, the United States, Finland, Denmark, and Australia have the highest Global Creativity Indices, all three T's considered. Individually, the story is slightly different. Finland is top in technology, and Japan and Israel show up in the top five. For talent, Finland is first again, followed by other Scandinavian countries, and Singapore and New Zealand make appearances in the top ten. And for tolerance, Canada ranks first, followed by Ireland, the Netherlands, New Zealand, and Australia. The Scandinavian nations and the U.S. round out the top ten alongside Spain, Uruguay, and the United Kingdom.

But this report has little to do with schooling. More likely than not, Finland is top in technology not because its schools have outstanding STEM programs but because it's the home of Nokia, the world's second-largest mobile phone manufacturer. Japan doesn't boast a high Global Creativity Index, but that's because Japan doesn't boast.

According to the aforementioned ADOBE survey, Japan lives in the shadow of its own success: While Germany, France, and the UK all see Japan as the most creative nation, Japanese respondents overwhelmingly believe that creativity is still reserved for artistic (78%) and elite (52%) communities, and that age is a major deterrent to creative output. The extent of the "creativity crisis," therefore, depends on who's holding the measuring stick.

But we all know that we could be doing better, and that creativity is becoming an increasingly important quality in a world where innovation is the new knowledge.

"Today," says Tony Wagner, an education specialist at Harvard, "the capacity to innovate — the ability to solve problems creatively or bring new possibilities to life — and skills like critical think-

ing, communication and collaboration are far more important than academic knowledge. "Every young person will continue to need basic knowledge, of course. But they will need skills and motivation even more. Of these three education goals, motivation is the most critical. Young people who are intrinsically motivated — curious, persistent, and willing to take risks — will learn new knowledge and skills continuously. They will be able to find new opportunities or create their own — a disposition that will be increasingly important as many traditional careers disappear."

Not everyone will create brilliant, "disruptive" products—products that transform a market as, say, Steve Jobs has done. But many young people, given the right encouragement, can bring something extra to whatever they do—that spark of imagination and curiosity which can lead to the creation of better products, services, and ideas.

Our schools need to address this reality, and education policy must be transformed accordingly. We will certainly face challenges—including time, resources, and training— but the truth is, we have little choice in the matter. Creativity is no longer a luxury, but a necessity.

"Today's students will need such tools to tackle the problems they stand to inherit," wrote Dan Berrett for The Chronicle of Higher Education earlier this year. "Climate change, income inequality, and escalating health-care costs cannot be remedied by technocratic solutions alone, say advocates of teaching creativity. Knowledge will need to be combined across disciplines, and juxtaposed in unorthodox ways."

Regardless of the instantaneousness of information in today's world, as long as we continue to use that information in creative ways, challenge assumptions presented to us as "right" answers, and embrace the possibility of being wrong, we will retain our creative skills. "If students can gain some facility with creative thinking now, colleges reason, perhaps they will be more adaptable both as employees and citizens in an uncertain future." ■



PART 1
WHAT IS
CREATIVITY?



WHAT IS CREATIVITY?

In the late 1960s, the psychologist J.P. Guilford drew a distinction between two forms of thinking: convergent and divergent. With its frequent use of standardized tests, education today tends to lean heavily toward convergent thinking, which emphasizes the importance of arriving at a single correct answer. Divergent thinking, however, requires coming up with alternative theories and ideas, sometimes many of them, to produce a useful solution.

Guilford claims that divergent thinking is required during all stages of the creative process. However, some degree of convergent thinking (which leads to a single solution) is also required, particularly during the elaboration phase of the creative process, when it is essential to discriminate and choose between alternatives (convergent) while at the same time generating new ideas (divergent).

Essentially, Guilford is equating thinking creatively with thinking “outside the box,” a concept with which we are all familiar. Rosa Aurora Chavez-Eakle of the Maryland State Department of Education Council for the Gifted and Talented goes into more detail in this passage from a 2010 paper published by the Johns Hopkins School of Education:

“During the past decade, I developed the association integration-elaboration-communication phenomenological model of creativity (Chávez, 1999, Chávez, 2004). This model was developed from phenomenological observations and deep phenomenological interviews with poets, scientists, writers, music composers, social researchers, and plastic artists. The first stage of the creative process, the association-integration stage involves the association of previously unrelated elements of inner and outer experiences, forming new associations among what is perceived through the senses, thoughts, memories, ideas, and emotions.

“The second stage, the elaboration, involves all the subsequent conscious and voluntary work

that is required to transform the associations developed in the previous stage into tangible works. The final stage, communication, involves sharing the work with others, a process that can be challenging and requires special courage. Sharing the creative outcome with others often unleashes new creative processes in other individuals, making creativity ‘contagious.’”

Note that Chavez says she interviewed not only artists but “scientists” and “social researchers,” still identifying a singular definition of the creative process. This finding is in keeping with the current notion that creativity should not only be associated with fine artists and performers, but with doctors, engineers, historians, technicians, and anyone else whose job requires—or even allows— them to think outside the box.

But wouldn't you call doctors and engineers innovative, not creative? What is the difference? True, creativity and innovation are often conflated, and rightfully so—each contains elements of the other. The consensus appears to be that, while creativity may never manifest itself in a measurable way, innovation always leads to a quantifiable end product or result.

In April, Business Insider released a piece entitled, “There’s a Critical Difference Between Creativity and Innovation.” The author writes, “The main difference between creativity and innovation is the focus.

Creativity is about unleashing the potential of the mind to conceive new ideas.

Those concepts could manifest themselves in any number of ways, but most often, they become something we can see, hear, smell, touch, or taste. However, creative ideas can also be thought experiments within one person’s mind.

Creativity is subjective, making it hard to measure, as our creative friends assert. ■

“What is often lacking is not creativity in the idea-creating sense but innovation in the action-producing sense, i.e. putting ideas to work.”

Theodore Levitt

Innovation, on the other hand, is completely measurable. Innovation is about introducing change into relatively stable systems. It's also concerned with the work required to make an idea viable. By identifying an unrecognized and unmet need, an organization can use innovation to apply its creative resources to design an appropriate solution and reap a return on its investment.

Organizations often chase creativity, but what they really need to pursue is innovation. Theodore Levitt puts it best: “What is often lacking is not creativity in the idea-creating sense but innovation in the action-producing sense, i.e. putting ideas to work.”

By this definition, we can gather that innovation requires creativity to be effective, and creativity requires innovation to be effected.

Some may argue that it doesn't matter which term you use; creativity and innovation are part and parcel of the same idea: originality. But is this even true?

Kenneth Goldsmith, the first-ever poet laureate of the Museum of Modern Art in New York, thinks not. For the past several years, Goldsmith has been teaching a class at UPenn called Uncreative Writing, which inverts the paradigm of traditional “creative writing” courses. His students are penalized for any semblance of originality and “creativity,” and rewarded for plagiarism, repurposing, sampling, and outright stealing. But as counterproductive and blasphemous as this may sound, it turns out to be a gateway to something unusual yet inevitable, that certain slot machine quality of creativity:

“The secret: the suppression of self-expression is impossible. Even when we do something as seemingly ‘uncreative’ as retyping a few pages, we express ourselves in a variety of ways. The act of choosing and reframing tells us as much about ourselves as our story about our mother’s cancer operation. It’s just that we’ve never been taught to value such choices. After a semester of forcibly suppressing a student’s ‘creativity’ by making them plagiarize and transcribe, she will

approach me with a sad face at the end of the semester, telling me how disappointed she was because, in fact, what we had accomplished was not uncreative at all; by not being ‘creative,’ she produced the most creative body of writing in her life. By taking an opposite approach to creativity — the most trite, overused, and ill-defined concept in a writer’s training — she had emerged renewed and rejuvenated, on fire and in love again with writing.”

This concept may be too difficult for younger students to grasp, but it is an extremely useful redefinition of creativity in today’s information-saturated world, and an idea that Thomas Friedman was getting at in his New York Times piece, “The Professor’s Big Stage”: Due to the sheer volume of text on the Internet, and the ease with which we are granted access to information, it no longer matters what we know but what we can do with what we know.

According to Goldsmith, the definition of creativity is shifting, so that it no longer aligns with notions of “original genius” and inventiveness. A vast amount of material is here before us; why waste our creative energy adding to it when we can use that energy to manipulate what we already have?

Still, one could argue that this idea is, itself, original.

Regardless of how you choose to define creativity, experts tend to agree that it’s attainable for everyone. Researchers say that no one is born with a special capacity for creativity; it’s an innate form of potential found in all human beings. That isn’t to say that everyone grows up in an environment that values or nurtures creativity—because it will remain in the form of untapped potential if no one bothers to tap it— but it will flow freely if permitted. ■



HOW DO YOU MEASURE CREATIVITY?

Arguably the most famous organized assessment of human creativity is the Torrance Tests of Creative Thinking (TTCT), created by E.P. Torrance in 1990. The tests remain the most widely used instrument to measure creative potential, and have proven reliable in multicultural settings.

The TTCT provide a creativity index (CI) and scores for the following dimensions: flexibility, fluency, originality, elaboration, resistance to premature closure, and abstractness of titles. Additional points are added to the final score for emotional expressiveness, story-telling articulateness, movement or action, expressiveness of titles, synthesis of incomplete figures, unusual visualization, internal visualization, extending or breaking boundaries, humor, richness of imagery, colorfulness of imagery, and fantasy (Torrance & Safter, 1999). The TTCT have shown high reliability and high predictive validity for future career image, and for academic and style-living creative achievements in 22 and 30-year follow-up studies (Torrance, 1988, Torrance, 1990, Torrance, 1993).

In addition, the TTCT have been used in more than 2,000 research projects and translated into 50 languages (Bronson & Merryman, 2010). A normal distribution of the creativity index in the general population has been reported using these tests, finding no significant differences between males and females (Torrance, 1990; Torrance & Safter, 1999).

Like intelligence tests, Torrance's test—a 90-minute series of discrete tasks, administered by a psychologist—measures for concrete behaviors and patterns of thought, usually in school-aged children.

But the shocking thing about Torrance's creativity index, wrote Po Bronson and Ashley Merryman their 2010 Newsweek piece, is how incredibly well they predicted those kids' creative accomplishments as adults.

"Those who came up with more good ideas on Torrance's tasks grew up to be entrepreneurs, inventors, college presidents, authors, doctors, diplomats, and software developers," Bronson and Merryman reported. "Jonathan Plucker of Indiana University recently reanalyzed Torrance's data. The correlation to lifetime creative accomplishment was more than three times stronger for childhood creativity than childhood IQ." Another prototype tool for assessing pupils' creativity in school, outlined by the Chronicle of Higher Education, maps the dispositions of creative habits of minds along 5 dimensions: inquisitive; persistent; imaginative; collaborative; disciplined (each dimension including 3 sub-dispositions). The findings of two field trials in English schools show that the "formative assessment tool" led teachers to be more precise and confident in developing their pupils' creativity, and learners to be better able to understand what creativity entails and to record evidence of their progress.

The common thread, no matter the discipline, is that students must produce an original work, be evaluated by their peers, and revise their work based on that feedback.

Creative tasks are, by their nature, ambiguous, with no clear right or wrong answer, they say. Such tasks require taking intellectual risks, trying, evaluating, and discarding ideas, and making connections. To check whether these mental processes are actually happening, students at a private school in Kentucky, for example, must complete writing assignments for each project; faculty and administrators collect samples of finished works and use rubrics to assess them.

An even more direct way of measuring creativity

would, ideally, be through brain scans. In neuroscience, logical thinking has traditionally been related to right cerebral hemisphere activation, whereas the kind of thinking that takes place in dreams has been related to left hemisphere activation (Martindale et al., 1984).

During creativity, both kinds of thinking take place at the same time (Arieti, 1976).

When evaluating differences in brain cerebral blood flow (CBF) between highly creative individuals during the performance of activities from the Torrance Tests, individuals with high creative performance showed greater CBF activity in both right and left brain hemispheres at the same time (Chávez-Eakle, Graff-Guerrero, García-Reyna, Vaugier, & Cruz-Fuentes, 2007). In this research, areas that showed greater activation were right precentral gyrus, right culmen, left and right middle frontal gyrus, right frontal rectal gyrus, left frontal orbital gyrus, and left inferior gyrus (BA 6, 10, 11, 47, 20). These areas are involved in cognition, emotion, working memory, novelty response, imagery, multimodal processing and pleasure (Chávez-Eakle et. al, 2007).

At the Centers for Research on Creativity (CRoC) in Los Angeles, James Catterall and Anne Bamford are developing a test called the Next Generation Creativity Survey, which uses traditional self-report scales along with ratings of original student work on the basis of creative skills and motivations. "By assessing individual creative thinking and motivation," the CRoC website reads, "the NGCS measure goes beyond current models that rely only on counting curricular and afterschool offerings. Current creativity index designs provide a limited indication of creativity in the curriculum and are not useful for assessing creativity learning among students."

The test is being piloted in eight art, science, and social problem-solving programs across the United States—for example, through The Wood-

“Current creativity index designs provide a limited indication of creativity in the curriculum and are not useful for assessing creativity learning among students.”

NGCS

en Floor ballet school in Santa Ana, CA; the Los Angeles Teen Classic Poetry Slam; the Chicago Arts Partnerships in Education; and the Little Rock, Arkansas public schools. The 2013 survey is still in progress, but the results of a preliminary inquiry at the Inner-City Arts Creativity Laboratory in Los Angeles from 2012 is available on the CRoC website.

For a great overview of different ways of measuring creativity at the national, regional, and individual level, see The European Commission's Measuring Creativity: the book, which considers a wide range of human traits as they relate to creativity, including confidence, independence, sensitivity, intelligence, entrepreneurship, financial success, introversion/extroversion, problem-solving skills, imagination, initiative, inquisitiveness, awareness of others, and much more. However, there is a school of researchers and educators who believe that creativity can't, in fact, be measured in a standardized fashion. It is such a mutable, abstract quality—capable of shifting and being manifested differently from individual to individual—that some argue measuring it would be counterproductive, even harmful. The alternative is to recognize, foster, and reward creativity when we see it.

“I think you can see creativity in action,” says retired high school English teacher Dawn Hogue.

“When a student presents an idea or a point of view so uncommon or new that it turns heads, that's evidence of creative thinking. I imagine there is no accurate rubric or measurement tool for creativity. Plus, what's creative and what's not is somewhat subjective, so I would hate for it to be too entrenched in standard assessment. I've seen rubrics that refer to things like ‘uses creative approach’ or ‘shows divergent thinking,’ but I'm not sure those markers are meaningful.”

Creativity expert Keith Sawyer agrees, rejecting a general quotient like the Torrance Test Creative Quotient. The most appropriate way to teach and assess creativity, he says, is in specific domains.



“Creativity research shows that you get the best results when you teach creativity within the context of a specific discipline (rather than teaching one “general creativity” course),” Sawyer says. “This means that if you want creative physicists, then your physics department classes need to be changed; if you want creative computer scientists, then the computer science curriculum needs to be changed. If you just add a three-credit creativity course, but then students get the same old memorize-and-regurgitate curriculum in their STEM classes, the creativity course won't be able to overcome the uncreative STEM teaching.” Creativity assessment, he adds, should be tailored to each subject.

Creativity consultant Jeffrey Davis, taking a middle-of-the-road approach, says, “It would be valuable to measure conditions that allow creative ideation and insight to occur,” noting that it could help teachers to better design their classes.

He proposes a series of “creative strength assessments” for teens and young adults which would inform them of the ways in which they are strong creatively.

Instead of a black-or-white, have-it-or-don't assessment model, Davis's model would help students identify their innate potential and leverage their strengths to create individually and in collaboration with others. The assessment might measure things like problem solving ability, interpersonal intelligence, and communication skills.

In addition, “the report would mirror back to students one or two ‘dormant’ qualities,” Davis says, emphasizing the distinction between dormant and absent, “along with suggestions for balancing or compensating for them.”

Though the debate over measuring creativity has been raging for several decades, the data is slow to catch up. What educators and researchers can be sure of is that creativity is valuable at any level, from any individual, for any purpose.

THE IMPORTANCE OF CREATIVITY IN EDUCATION

When we talk about the importance of creativity in education, we no longer need to make a qualitative argument for personal enhancement or the de-automatization of society; the proof is in the numbers.

A recent IBM poll of 1,500 American CEOs identified creativity as the No. 1 “leadership competency” of the future. A study of over 1,000 college-educated professionals showed that 71% of respondents think creativity should be taught as a class, like math and science, and 85% believe that creative thinking is critical for problem-solving in their careers. As early as the 1990s, curriculum developers in England, Germany, Japan, the Republic of Korea, the Netherlands, and the United States deliberately highlighted creativity as a prerequisite for functioning in modern society. More recently, Richard Florida’s Global Creativity Index survey (2011) found a trend of 0.84 between a nation’s “creativity” and its GDP per capita.

There is a positive correlation between the creativity of a nation’s workforce and that nation’s economic prosperity, and there has been for a while. Let’s not kid ourselves here.

But the correlation between economic prosperity and creativity in education— now, that is a little murkier. Finland is currently ranked number-one in Florida’s Index, but does this mean that Finnish schools foster creativity more than other schools do, or that Finnish people are simply more innovative? Are Finnish students encouraged to think creatively, or are a few creative minds running the whole show (read: Nokia)?

In any case, what matters is that every student receives the opportunity to tap into his or her own creative potential. Naturally, the greater number of creative citizens a country has, the better. And schools can help this cause.

In addition to economic prosperity, experts have

cited adaptability as one of creativity’s many boons. Today’s students can’t possibly anticipate the information and skills they will need years down the road, especially as our technological landscape continues to evolve at such a rapid rate. However, as Sir Ken Robinson has pointed out, if they have the tools to be creative and to innovate, they will have a much better chance of succeeding no matter how the world changes. Supporters of traditional, passive learning styles tend to pit creativity against standardized testing and rote memorization as if the two can’t coexist in a single learning environment. However, creativity has been shown to enhance memorization through associative mental devices such as the Method of Loci, a mnemonic tool whereby items are paired mentally with physical locations in a sort of “memory palace.”

You could go on and on arguing for the value of creativity on a personal level, but what else—on a societal, national, global level—makes creativity so important?

Mark Batey, Ph.D., wrote an illuminating piece for Psychology Today on the subject. He lists seven themes and research studies that convinced him that creativity is the number-one skill for the 21st century:

1. Creativity and innovation are the number-one strategic priorities for organizations the world over;
2. Creativity is part of our day jobs;
3. Organizational profitability rests on individual creativity;
4. Creative teams perform better and are more efficient;
5. Creative organizations are more profitable;
6. Creative leadership is fundamental; and
7. Successful economies and societies will need to be creative.

The full article may be read [here](#), but here are a few highlights:

Creative organisations are more profitable: First, creative companies harness the creativity within the organization to improve or invent new products, processes and services. As indicated in the Ernst & Young 2010 Connecting Innovation to Profit report: “We assume that 50% of our revenue in 5 years’ time must come from sources that do not exist today. That is why we innovate.”

In the same Ernst & Young report it was found that highly successful companies realise that: “the ability to manage, organise, cultivate and nurture creative thinking is directly linked to growth and achievement.” Further, the report highlighted that “Innovation ‘for the sake of it’ is often essential, but the speed at which a fast-growth company moves forward will depend on its ability to connect creativity to profit.”

In a recent study of 190 agile companies, Bottani (2010) found that their flexibility and speed of reaction were strongly dependent on creativity. Similar results have been found in a study of agile companies by BTM where agile firms were prepared to innovate and experiment with creative approaches to emerging technologies, work practices, product or service concepts and customer segments or product markets.

Similarly, within the research frameworks that have examined the characteristics of High Performing companies, creativity features strongly. The Accenture Institute of High Performance (2003-2010) found that High Performing organisations created powerful strategies, encouraged deep insight, originality and the engagement of creativity across all employees. Lastly, these companies invested disproportionately in recruiting and developing people.”

And, with regard to 7) Successful economies and societies will need to be creative:

“From an organisational perspective we can see

why we must demand creativity from individuals, teams and the firm. However, according to the 2010 Winning Ingredients report from Standard Chartered... successful economies will need to utilise cash, commodities and creativity. The report concluded that:

“Creativity may be the most powerful of all the resources to be rich in. With vast numbers of people entering the workforce, huge improvements in productivity, and continued globalisation, the rewards for innovation and creativity will become even greater.”

Given that for much of the western world we have exhausted our supplies of cash and commodities, creativity may be all we have left.” If we agree more or less on the definition of creativity as the ability to think “divergently” and “outside the box,” to challenge assumptions and propose alternative solutions, then the true task of education systems around the globe becomes, in essence, teaching students to be different. And in saying be different, I mean thinking differently, doing things differently, expressing oneself differently, and appreciating differences (which happens to be the foundation of respect). There is a time and place for sameness, to be sure, but it is not in an academic environment.

Every good idea is a different idea. Even if someone’s success story involves copying others—for example, the social media platform Pheed, which is basically a repurposing of Twitter and Facebook— that act in itself requires divergent thinking. This is the sort of thing Kenneth Goldsmith was getting at: It takes a certain fearlessness to see the potential for difference in something that appears to be mundane. It may be the ultimate challenge creativity has to offer, and the number-one skill educators should foster in their students.

In the same study mentioned above, 91% of respondents believed there is more to success in school than focusing on course material. Again, it’s not what you know but what you can do with what you know. ■



PART 2

WHY THE CURRENT STRUCTURE DOES NOT WORK



WHY THE CURRENT STRUCTURE DOES NOT WORK

“The inclusion of creativity into educational policy documents is evidence of the fact that the focus on creativity is not merely a matter of paying ‘lip service’ to the concept,” says Robina Shaheen, part of the faculty at Open Universities Education and Language Studies Department (UK), “but rather that action is being taken.”

In fact, action has been in progress as early as 1999, when O'Donnell and Mickethwaite reviewed the curriculum documents of 16 developed countries (American, European, and East Asian), identifying the place of arts and creativity in education. They found that creativity was included at various educational levels, at least from early years through primary education for most countries, and beyond, up to higher education, for some:

In Canada “creative thinking” is outlined as one of the common essential learning(s) (p.8). In Kentucky, USA, one of the learning goals is to enable students to “use creative thinking skills to develop or invent novel, constructive ideas or products” (p.57). In Korea, the National Curriculum defines an educated person as “healthy, independent, creative and moral” (p.33). In Sweden the Government's National Development Plan for Pre-School, School and Adult Education (1997) stated that education should provide “the conditions for developing creative skills” (p.52). In France schools in lower secondary are expected to develop in children the “taste for creation.” (p.14). In Germany, the emphasis of primary education is placed on developing “children's creative abilities” (p.20). In Netherlands one of the principles on which primary education is based is “creative development” (O'Donnell & Mickethwaite 1999, p.38). In Florida (USA) one of the goals of restructuring the schools was to provide students opportunities “to learn and apply strategies for creative...thinking” (Treffinger, 1996). The second educational goal for young people in Australia is to “become successful

learners, confident and creative individuals, and active and informed citizens” (ACARA, 2009). In Japan the school curriculum has included development of creativity since the Second World War, outlining the development of creativity as the most important objective of education for 21st century (O'Donnell, 1999). In Singapore the aim of new initiatives, launched by the Ministry of Education, was to foster “enquiring minds, the ability to think critically and creatively” (O'Donnell, 1999)—created in response to leading industrialists and entrepreneurs indicating that staff in Singapore were more “conforming” than “independent” and “not curious enough” (Tan, 2006).

But at the 2013 ADOBE Education Leadership Forum, the findings of a study entitled “State of Creativity in Education in Asia Pacific” reflected a widespread shortcoming in creativity education. The study surveyed 1,014 educators (teachers, administrators, heads of institutions) representing 13 Asia Pacific countries with an aim to gauge the state of creativity across the region's educational landscape. Even considering ADOBE's business interests, the results are striking:

- > 43% of the surveyed educators feel the current education system is either outdated or restrictive.
- > The lack of resources, tools, and training are identified as the biggest barriers.
- > 62% felt they should be creative regardless of the subjects they teach.
- > When asked about the efficacy of the current education system in developing a new generation of innovators, educators rated it a mere 5.0 on a scale of 1 to 10.
- > In India 69% said they are hampered by an education system that is not geared towards creativity; 45% cited a lack of resource to support their efforts.
- > The surveyed educators, on average, spent 45% of their time last year fostering creativity

With so much standardization of assessment, mechanization of policy, and conformity of learning, it's no small wonder that education has been labeled a "crisis" in America.

skills in the classrooms while they wanted to spend 58% of their time for it.

"Timetable structures such as seven 45-minute periods from 8:30am to 3:30pm and up to seven different areas of unrelated content per day as well as rules like no access to smartphones in class heighten the disconnect between students and teachers," says Tim Kitchen, director of learning technologies at Strathcona Baptist Girls Grammar School in Australia.

Educators in the United States would likely agree that their own current model restricts their ability to address creativity in the classroom, especially since the Common Core Standards Initiative was passed in 2010. With so much standardization of assessment, mechanization of policy, and conformity of learning, it's no small wonder that education has been labeled a "crisis" in America. Math teacher and Stanford University fellow Dan Meyer describes today's curriculum as "paint-by-numbers classwork, robbing kids of a skill more important than solving problems: formulating them."

China's universities are highly ranked worldwide, but many Chinese students perceive their own schools and colleges to be focused on rote learning and not receptive to creativity and critical thinking. One international business student chose to attend an English language university, run by Britain's Nottingham University, specifically to acquire the "critical thinking" that her uncle says is lacking in Chinese graduates. A recent study of engineering students at three top Chinese institutes and Stanford University found that 22 percent of Stanford grads planned to start or join a startup, while 52 percent of top Chinese graduates plan to join the government.

But according to Shaheen, creativity has been an important component of Chinese education since 2001. Hong Kong's education policy includes creativity as a "higher order thinking skill," and there are educational reforms being carried out in preschool, primary, and secondary institutions throughout the country in which the development of creativity is being given "top priority." So what is the problem? If we all have good in-

tentions, why are we facing such great obstacles when it comes to creativity education?

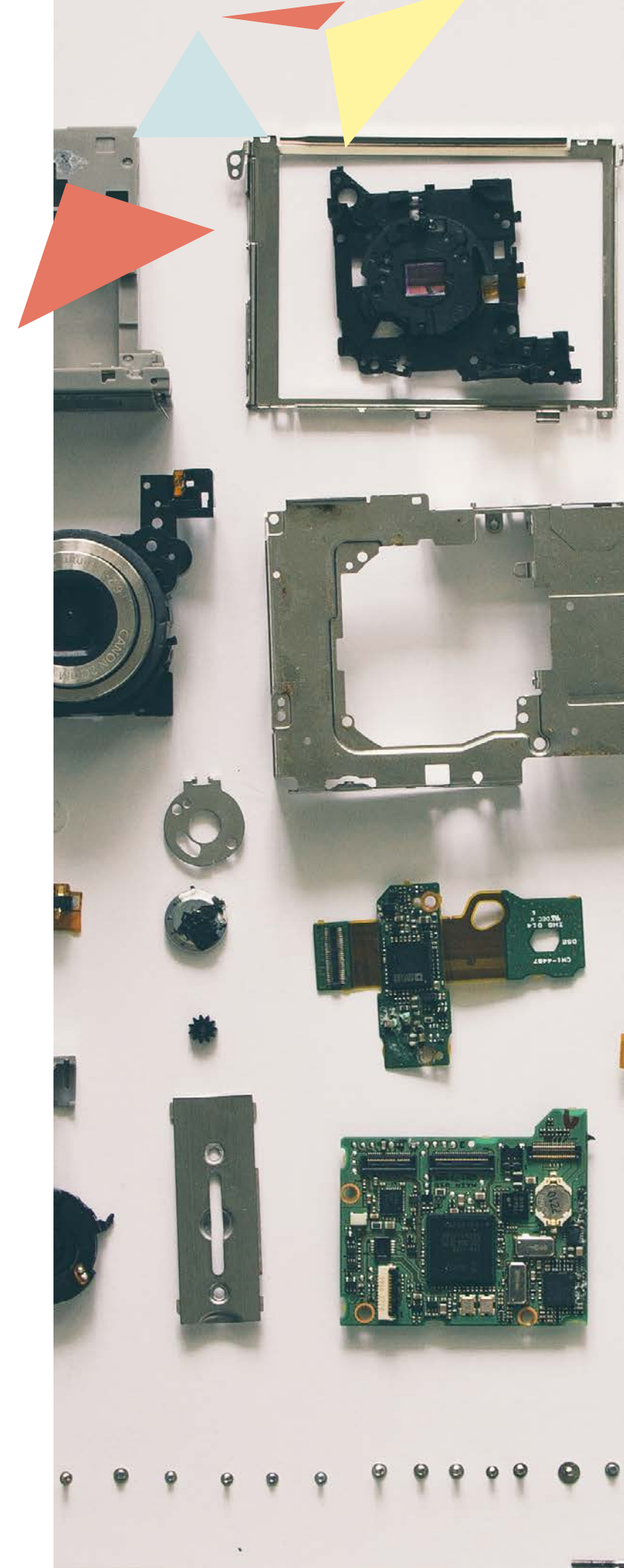
One obstacle that has received considerable attention lately is teacher training. The National Council on Teacher Quality (NCTQ) came out with a report earlier in 2013 exposing the shameful state of teacher preparation programs in the United States. The report has been criticized by the education community for various research methodology flaws, but Stanford professor of education Linda Darling-Hammond said the NCTQ accurately focused on the most important aspects of teacher education — candidate selection, preparation for teaching reading and math, and student teaching. The report ranked only four out of 1,130 programs as being worthy of their highest rating, concluding that poor quality teacher education programs are to blame for new, underperforming teachers and students.

The report's flaws aside, educators and specialists tend to agree that most of these programs do not adequately prepare teachers to design and sustain a creative learning environment. In a 2009 survey conducted by the European Commission, an average of 40% of teachers in Europe declared to have received training in creativity. But the figures varied widely between countries: Slovakia (66%), Estonia (65%), and Romania (62%) all reported to have received training, in contrast with France (14%), Lithuania (25%), Hungary (27%), the United Kingdom (28%), and Spain (33%), who received little.

Teaching may be a creative profession, but that doesn't mean that all teachers are creative.

Herein lies the trouble: in a world where opportunities for creativity are slipping between our fingers, we turn immediately to examining the classrooms when we should be examining something else—the teachers themselves.

Creativity specialist and professor Anne Bamford insists that insufficient emphasis is given to creativity in teacher education. "We must provide creative professional development and training



for all teachers and school leaders,” she says. Still, even the best-prepared teachers face challenges when it comes to implementing creativity in the classroom.

“Too many teachers and administrators are weighed down by the yoke of political influence,” says retired high school English teacher Dawn Hogue. “It takes educational anarchy to push out of the box these days, and it may simply be easier to do what one is told. I have known many teachers who are afraid to try something new. Some feel their jobs are at risk. Others just think trying something different will be too much work and they feel overworked as it is.”

As Sir Ken Robinson said in a recent article for The Guardian, “For creativity to flourish, schools have to feel free to innovate without the constant fear of being penalised for not keeping with the programme.”

Available resources can also dictate what an educator teaches and how. Not every school can afford the latest technology or an art kit for every student. But this is where creativity can come into play the most.

AP English instructor Shekema Silveri teaches at a Title I high school in Georgia called Mount Zion. Since Mount Zion can’t afford the latest technology, Silveri is forced to find creative ways to keep her students engaged. While some classrooms don’t allow cell phones, Silveri encourages her students to use them in order to look up definitions of words with apps like dictionary.com and conduct research for their assignments. She also believes her students write more when they’re allowed to blog and use Twitter. In 2011, Silveri was one of 11 educators in the state to achieve a 100% student passing rate on all of her standardized tests despite Mount Zion’s lack of resources. Silveri is not alone in her efforts. Countless educators across the globe are implementing creativity into their classrooms and inspiring students every day despite various challenges. And now, due to society-wide awareness of creativity’s growing importance, schools and governments are beginning to catch on as well. ■

WHAT’S BEING DONE ACROSS THE GLOBE

Reducing students’ fears and inhibitions around art while also getting them to think in new ways is part of what Marty Henton, a senior lecturer in the School of Art and Visual Studies, aims for in her course, “Pathways to Creativity Through the Visual Arts.”

In class, she often invokes a sense of childlike wonder as she explains the next assignment. “Even though I show you the path to walk on,” she says, “I want you to jump into the grass and play.”

Pairs of students sitting at computers select a digital image from the Internet and manipulate it in Photoshop at least 30 times, exploring different ways to make it unrecognizable. In other words, they develop their divergent-thinking skills. They then practice their convergent thinking skills by distilling their batch of 30 to a sequence of 10 images, which are supposed to start from the most-unrecognizable image and finish with the original.

Meanwhile, at the University of Kentucky, Ryan Hargrove, assistant professor of landscape architecture, describes a simple exercise to his students based on similarities. Start with a simple question, he says: How are an apple and orange similar? One might begin with the obvious: Both are fruits, have peels and seeds, and are found at the grocery store. But keep going and the associations start to become more unusual and personal. Perhaps you recall the time that an apple peel got stuck between your teeth, or the morning when you drank orange juice and the acid hit the blister on your tongue and made you yelp in pain.

Of the millions of possible associations, many people’s will be similar, Mr. Hargrove says. “The key to creative problem solving is making connections that are unique.”

At the Haig Girls’ School in Singapore, students

assess themselves and their peers by answering questions such as, “I am able to brainstorm multiple ways to reach a solution” (critical thinking) or, “I am able to connect ideas in an interesting and creative manner to create a unique idea” (creative thinking). Singapore is even considering doing away with the PISA—the national entrance examination that all students take at the end of primary school.

Individual schools, districts, and governments across the world are redesigning policy and curricula to meet the demand for a more creative student population.

Starting with the class entering in the fall of 2013, students at Stanford University will be required to complete two courses in aesthetic and interpretive inquiry, two courses in social inquiry, two courses in scientific analysis, one course in formal reasoning, one course in quantitative reasoning, one course in engaging difference, one course in moral and ethical reasoning, and one course in creative expression.

For years, the U.S. government has promoted so-called STEM education—science, technology, engineering and math. President Obama called for more STEM education in his recent State of the Union address. But at a recent conference, education advocates urged policymakers to acknowledge the importance of arts and design in STEM education, leading to a different acronym: STEAM, with an “A” for “arts.”

Various statistics presented at the event, based on a survey of 1,000 college-educated working professionals, supported this amendment to the program: 1) 71% said creative thinking should be taught as a course, like math and science. 2) 82% wish they had more exposure to creative thinking as students. 3) 91% said there is more to success in school than focusing on course material. 4) 85% said creative thinking is critical for problem solving in their career. 5) 78% wish they had more creative ability.

But at a recent conference, education advocates urged policymakers to acknowledge the importance of arts and design in STEM education, leading to a different acronym: STEAM, with an “A” for “arts.”

The survey demonstrated that these professionals maintain STEM studies are in fact “creative subjects,” with 59% saying that of math and 69% saying that of science. (Innovation specialists would say that every one of the four STEM emphases in fact demands creative thinking to fully excel.) Those same survey subjects, however, had 65% saying drama is creative, and 76% for music and 79% for art.

What is telling in those percentages is that those polled recognized that STEM subjects invite creative thinking, but also that art programs encourage it even more. So if we want more creative thinking among STEM students, why hope it will only come from their STEM teachers? Why not assume the exposure to creative processes they receive in their A (for art) classes will assist them in their STEM classes? Hence, the interdisciplinary power of STEAM—identifying and tapping into the creativity of each subject in terms of the others.

The European Commission is doing some notable things to promote creativity, launching a Youth in Action Program and a Culture Program to develop and sustain a creative workforce and to encourage partnerships between culture and creative sectors and youth organizations and youth workers.

Many schools are now offering degrees in creativity. To name just a few, ESCP Europe offers an MBA in Marketing and Creativity; Buffalo State University offers a Master of Science degree in Creative Studies, a graduate certificate program in creativity and change leadership, and undergraduate minors in creative studies and leadership; the University of Massachusetts Boston offers an online, on-campus, or blended MA in Critical and Creative Thinking; Limkokwing University of Creative Technology in Malaysia offers programs not only in the arts but also an MBA in Multimedia Management; and the University of Kwazulu-Natal, School of Applied Human Sciences, offers degrees in Media and Society, Social Work, Criminology, and Communications.

Perhaps the best example of deliberate action



towards greater creativity comes from Singapore.

Last year, Minister for Education Heng Swee Keat told the BBC that Singapore is moving away from high test results and towards something that cultivates creativity—what they term as “holistic education.”

“It’s less about content knowledge,” he says, “and more about how to process information.” He describes this challenge to innovate, which will prepare today’s students for the demands of the next 20 years, as being able to “discern truths from untruths, connect seemingly disparate dots, and create knowledge even as the context changes.”

This means that students will be spending more time outside the classroom, learning about the environment around them, and that schools will be under more pressure to come up with creative ways to teach the syllabus.

Singapore’s teacher preparation programs are a huge part of its educational success. High-quality teachers in Singapore are not an accident but rather the result of “deliberate policy actions,” said a report from the OECD.

Like many other countries, Singapore once faced a shortage of good teachers, due in part to the lack of prestige and respect for the profession, said National Institute of Education director Lee Sing Kong. This changed after concerted efforts were made from the mid-1990s to raise the image, providing training and better working conditions for teachers, he told a global round table discussion in March.

“But it does take time to really evolve the quality teaching force,” he said.

Singapore enhances its strong initial preparation and induction programs with a sophisticated per-

formance management system that articulates the knowledge, skills, and attitudes expected at each stage of a teacher's career and, based on careful evaluation and intensive supports, provides a series of career tracks that teachers can pursue. This allows teachers to become mentor teachers, curriculum specialists, or principals, thereby developing talent in every component of the education system.

In addition, beginning teachers in Singapore receive two years of coaching from expert senior teachers who are trained by the National Institute of Education as mentors and are given released time to help beginners learn their craft. "In Singapore," says Linda Darling-Hammond, an education specialist at Stanford University, "one of the things that is very impressive there is the ongoing professional learning and development of the career."

The story is similar in Melbourne and Toronto, she says, where education leaders believe that getting the right people into teaching, coupled with ongoing teacher training, is essential to improving student performance.

In Melbourne, the Victoria Department of Education and Early Childhood Development has launched a variety of partnerships with universities to transform pre-service preparation, focusing on longer-term clinical preparation around a set of Common Standards set out by the Victoria Institute of Teaching. "They're really deepening the preparation of teachers for the diverse learners that they have in Melbourne and in Victoria as a state," Darling-Hammond adds.

In Toronto, Darling-Hammond points to the very intensive work being done around the induction of beginning teachers. In addition to supporting the mentorship benefits put forward by Ontario as a province, the city of Toronto is providing training for beginning teachers for four years, including demonstration teaching, mentoring, and additional coursework geared toward customized instruction. These initiatives have resulted in a 99% retention rate of beginning teachers.

What all three cities have in common is that they "take the systemic approach," Darling-Hammond says. "They try to look at everything from recruitment through development, and so on."

There are creativity workshops around the world designed to enhance educators' understanding and potential for creativity. The Creativity Workshop, for example, is an organization based in New York City that has been holding workshops for teachers around the world since 1993. To help instructors access and develop their creativity, the workshop leaders have developed a progression of exercises and techniques that explore sense perceptions, free-form writing and drawing, associative thinking, mapmaking, constructive daydreaming, memory, collage, and photography.

From the workshop's webpage: "The Creativity Workshop is dedicated to helping teachers, K12 through University, develop and nurture their creativity and that of their students. The Creativity Workshop has developed a series of simple and effective exercises aimed at keeping the creative juices flowing both in the classroom and personally. The Creativity Workshop offers professional development courses for teachers from all over the world. This unique experience combines learning, global travel, CEUs, and association with peers from all over the world."

But creativity workshops like these should not exist solely outside of teacher preparation programs; they should exist within them as well. Teaching demands a new type of classroom relationship management to capture anecdotal notes and evidence of student growth.

Teachers must become disciplined and analytical about identifying students' strengths and skill gaps, continuously turning classroom data into a plan of action, and must also seek a greater connection and collaboration between current research and their own teaching. This requires creativity. We need standards because we need assessment of progress, but it's up to teachers to be creative in meeting those standards in ways that promote creativity in students. ■

IMPLEMENTING CREATIVITY IN STUDENTS

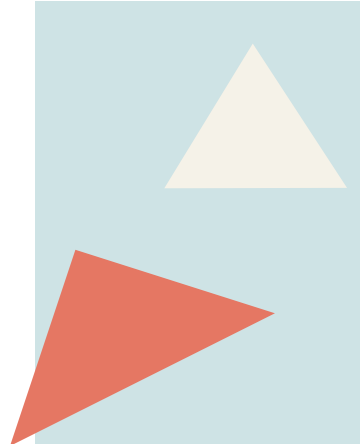
According to Torrance himself, the purpose of creative teaching is to create a "responsible environment" through high teacher enthusiasm, appreciation of individual differences, and so on.

During his time, he outlined the following ways of teaching children to think creatively based on 142 different studies:

1. Training programs emphasizing the Osborn-Parnes Creative Problem Solving procedures or modification of it.
2. Other disciplined approaches such as training in general semantics, creative research, and the like.
3. Complex programs involving packages of materials, such as the Purdue Creativity Program; Covington, Crutchfield, and Davies' Productive Thinking Program; and the Myers and Torrance and Torrance idea books.
4. The creative arts as vehicles for teaching and practicing creative thinking.
5. Media and reading programs designed to teach and give practice in creative thinking.
6. Curricular and administrative arrangements designed to create favorable conditions for learning and practicing creative thinking.
7. Teacher-classroom variables, indirect and direct control, classroom climate, and the like.
8. Motivation, reward, competition, and the like.
9. Testing conditions designed to facilitate a higher level of creative functioning or more valid and reliable test performance.

The most popular methods Torrance witnessed were complex programs involving packages of materials, the manipulation of teacher-classroom variables, and the use of modifications of the Osborn-Parnes Creative Problem Solving training program.

Torrance's contemporaries, Feldhusen and Treffinger (1980) and Davis (1991), also believed establishing a "creative climate" was important to stimulate creative thinking. Feldhusen and



Teaching demands a new type of classroom relationship management to capture anecdotal notes and evidence of student growth.

Treffinger (1980) provided several recommendations for establishing a classroom environment conducive to creative thinking:

1. Support and reinforce unusual ideas and responses of students.
2. Use failure as a positive to help students realize errors and meet acceptable standards in a supportive atmosphere.
3. 3. Adapt to student interests and ideas in the classroom whenever possible.
4. 4. Allow time for students to think about and develop their creative ideas. Not all creativity occurs immediately and spontaneously.
5. 5. Create a climate of mutual respect and acceptance between students and between students
6. and teachers, so that students can share, develop, and learn together and from one another as well as independently.
7. 6. Be aware of the many facets of creativity besides arts and crafts: verbal responses, written responses both in prose and poetic style, fiction and nonfiction form. Creativity enters all curricular areas and disciplines.
8. 7. Encourage divergent learning activities. Be a resource provider and director.
9. 8. Listen and laugh with students. A warm, supportive atmosphere provides freedom and security in exploratory thinking.
10. 9. Allow students to have choices and be a part of the decision-making process. Let them have a
11. part in the control of their education and learning experiences.
12. 10. Let everyone get involved, and demonstrate the value of involvement by supporting student ideas and solutions to problems and projects.

In 1996, members of the Association for Curriculum Development came up with a fantastic list of 25 ways to promote creativity in the classroom. The list includes tips like modeling creativity, building self-efficacy, questioning assumptions, encouraging sensible risks, tolerating ambiguity, allowing for mistakes, delaying gratification, finding excitement, and playing to strengths.

More recently, there’s been an explosion of resources and recommendations on education blogs, focusing on promoting creativity in the classroom. These recommendations include tips like recognizing and rewarding creativity, introducing limitations, talking to parents, using technology and blended learning, multiliteracies approaches, combining creativity with task appropriateness, promoting creative problem solving, fostering creative metacognition, establishing expressive freedom, being familiar with the standards, designing multidisciplinary lessons when possible, understanding that creativity is important to a student’s future in the job market, etc.

Most of these tips simply reiterate the older findings of Torrance and his colleagues, but here are some of my favorites, which also happen to be some of the more creative ones in the bunch:

1. De-emphasize context (The Science of Learning blog). In his book, *Lateral Thinking: Creativity Step by Step* (1973), Edward de Bono urges educators to de-emphasize context in order to teach students to think freely outside the box. In one example, de Bono describes how a teacher shows his students a photo of people dressed in street clothes wading through water at a beach. The teacher then asks the students to come up with interpretations as to what is going on in the picture. The teacher has de-emphasized the context; the crux of the activity is to develop the context using their imaginations. In this situation, de Bono says that students might respond by saying that the picture shows a group of people caught by the tide, or a group crossing a flooded river, or people wading out to a ferry boat which cannot come to shore, or people coming ashore from a wrecked boat. The fact that the photo is actually of a group of people protesting at a beach is completely irrelevant. The author stresses that the right answer is not important; generating as many interpretations as possible is. The teacher has created a safe, controlled environment and activity where students are encouraged to think outside the box and exercise creative habits of mind, free

from qualitative judgment. He even goes on to suggest that if a student comes up with a particularly unfeasible interpretation, the teacher should not judge, but continue to question the student until the context for the interpretation becomes clear, encouraging cultivation of the student’s creative skill.

2. Imagine your lecture room as a business (TeachThought). If you were an art director or innovation manager how would you inspire your employees? Use those same tactics in your class or lecture room.
3. Eliminate fear of failure.
4. Talk about creativity with your students.
5. Edutopia’s “creative time savers” include having your students rely on each other as resources; pairing your higher achievers with lower achievers; having students read one another’s writing to check for completion or suggest ideas before they come see you; using the Leap Frog Tag reading system to collect data; and having a “math problem of the day” journal to review skills in which your students scored low on assessments.

If you’re worried more about your own creative capabilities than those of your students, there are countless resources out there to help you. Microsoft lists creativity as one of its key Education Competencies—one in a set of complete functional and behavioral qualities that, when fully realized, can help lead to professional success.

Here are some tips from Microsoft (2006), intended to be used when interviewing educators, but equally relevant to educators themselves:

1. Generate ideas without initially judging them.
2. Ask more questions before attempting to craft solutions.
3. Define the problem. Ask questions and deter-

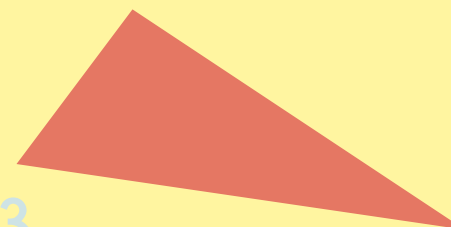
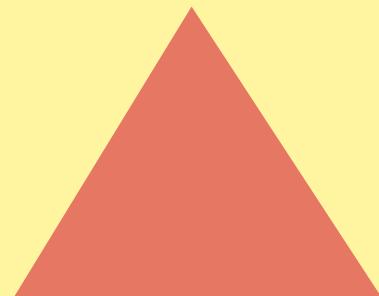
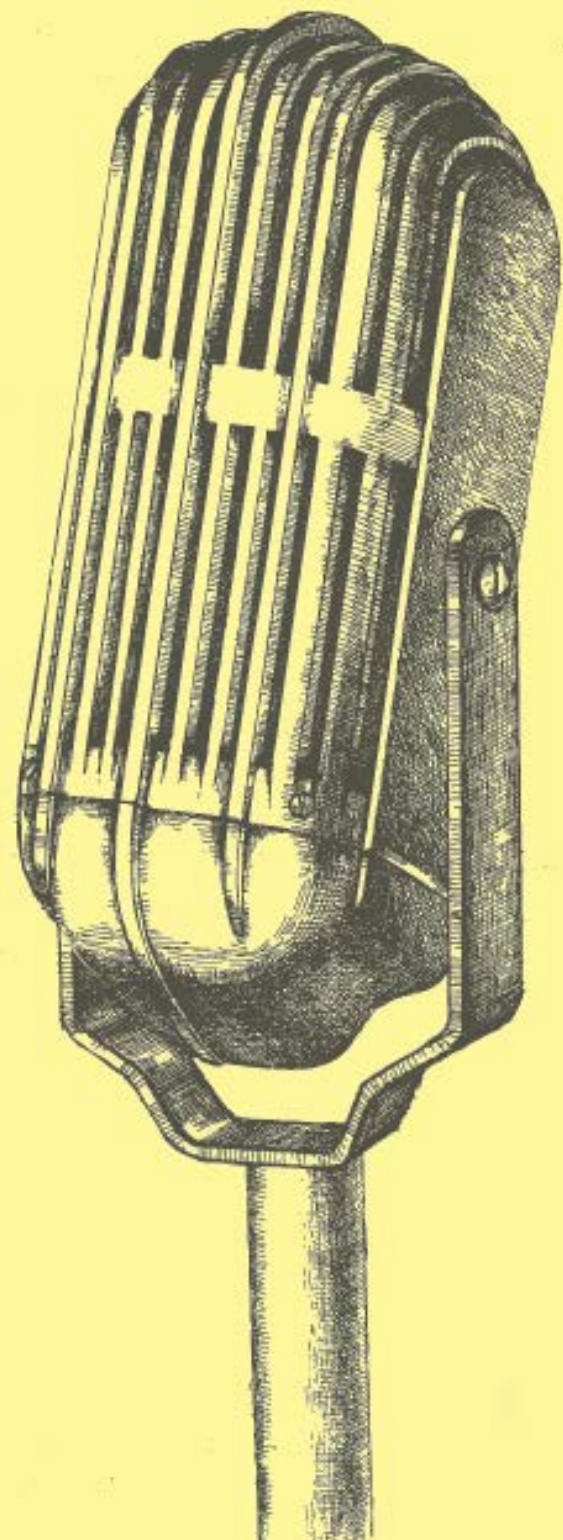
- mine the causes of the problem.
4. Seek fresh approaches from people from other organizations, functions, levels, and disciplines. Other opinions are always more insightful than you think they will be.
5. Take on a tough and “undoable project” that others have tried and failed at.
6. Break up your work routine when you are blocked. Incorporate dissimilar tasks, activities, and rest breaks when you come to a road-block.

To improve your creative proficiency, ask yourself the following essential questions on a regular basis:

- > What original ideas have I come up with lately?
- > What patterns do I see emerging in the information I have about a problem?
- > What is the least likely or oddest answer I can consider to solve my problem?
- > What specific analogies can I apply to a situation to broaden my perspective?
- > Do I employ brainstorming sessions to discover connections?
- > Whom can I enlist to be part of a broad, diverse, creative think tank?

The strategies presented here only scratch the surface of a huge repository of information from educators, business leaders, researchers, and specialists—just as the situation we’ve illustrated throughout this book can’t help but be oversimplified by an attempt at summary.

In the next portion of the book, we present the views of (NUMBER HERE) education bloggers and Informed fans on the topic of creativity education. ■



PART 3

INTERVIEWS WITH NEW MINDS IN EDUCATION



ANDREW BARNUM

Head of Faculty, Creative Industry,
Open Colleges

Andrew Barnum has more than 25 years of experience as a designer, educator and artist. Over the course of his extensive career, he has specialized in the areas of music, painting and poetics. He is well known for being passionately dedicated to social-connection, content creation and his passion for constructive adaptation to 21 century conditions.

Looking back at the cultural landscape of Australia in the 80s and 90s, Andrew remembers a time when the Arts were more one dimensional; when Arts followed a more predictable pattern.

"We've now moved from linear learning to work outcomes, to a much more uncertain, non-linear set of expectations," explains Andrew. "The key for educators and future practitioners is learning to adapt to, and flourish in, this new context. Learning that you need to be continuously growing your abilities and skills so you can jump-into roles, projects, collaborations and contribute successfully."

One of this educator's missions is to develop students through an expressive and productive conversation that acknowledges the value of a creative, cultural economy.

He says, that as an artist today, "...part of your currency is constantly challenging and discovering the learning that's required to maintain a livelihood."

Was this always the case? A generation ago, was the Art scene different?

"The previous 'age of print' had fixed pathways based on industry convention and production," explains Andrew. "In the 'post-typographic or Creative Age' that we are now experiencing, we are all re-inventing how we build, consume and distribute content 'live.'"

How we deliver a product, be it an artistic product or not, is one of the major things that has shifted, says Andrew. "We are now in a streaming, constant flow of media production and immersion that requires a different learning approach that is evolving as we speak. The sites of production don't close at sundown. The factories (us) are perpetually open and responding to inputs." Time and content has sped up.

Educators towards the year 2020 have lots to consider. Studies have shown that creative thoughts can often arrive at less predictable times than logical thoughts. Does adult "class time" need to be more responsive to moments when students may get a creative urge?

Should we be able to "down tools" when we get an idea, to seize on it? Andrew thinks that this does need to be considered. "The 'idea' moment is a product of our consistent process," he explains.

"The sparks are squeezed out through the process of immersion with the problem at hand, and with your most trusted colleagues. It's a searching process that is hard-wired into your being through your experience," Andrew says.

"The hatching of ideas is connected to this reality. Ideas come through contact and interaction; ideas are less tested in isolation. The class of today should be creating a 'creative circle' that challenges and tests ideas. (This should be) an iterative process-space with clear signposts towards problem-solving," the educator says.

Often, people who teach highly creative students in creative disciplines find that these students

“You don’t necessarily need ‘creative’ parents,” Andrew explains, “... you just need parents who are switched on, looking for evidence of the child’s truest inclinations and confirming them through teachers and trusted friends.”

Andrew Barnum

learn differently. Anecdotally, and as highlighted in various studies, some educators say that creative people are more highly strung, reactionary and sensitive. But is this always the case?

Andrew mentions that he has met and taught many sensitive artists and students in his lengthy career. “The life of the professional ‘creative’ is a complete vocation,” he says, “not a pastime or a by the hour contract where you step in and out of the process loop.”

He says, “It demands complete immersion in the coursing flow of projects and outcomes. It needs by definition to remain empathetic, reactionary and sensitive. You need your radar tuned to the issues within the problem so you effectively transform the problem at hand into re-defined action and outcome. That’s really what creativity is about.”

Often when thinking about their students’ creative minds, educators look back to what they were drawn to as young children. Does Andrew remember himself to have been a creative child?

He says, yes: “My talents seemed to manifest themselves in visuals and music,” he explains. “And this helps to explain creativity. It’s not a personality trait. Creativity is all about identifying evidence of a person’s passion and ability to tackle and express their ideas, whether it be visual, musical, science, fashion etc. Your first true collaborators are your parents as they identify what you’re naturally ‘drawn to.’ Having parents that are open to ‘seeing you as you truly are’ is your first step to a creative future.”

How essential then, is it for children to have creative parents in order to thrive? Is it essential to have parents who understand the importance of creative expression?

“You don’t necessarily need ‘creative’ parents,” Andrew explains, “...you just need parents who are switched on, looking for evidence of the child’s truest inclinations and confirming them through teachers and trusted friends.”

So, how has the creative’s position in the world

shifted and changed?

“Creativity has gone through a re-definition in recent years. In a world where ideas and innovation have become a key currency for individuals and organizations, understanding and harnessing creativity and creative people is a ‘must-have.’ We saw the rise and passing of the information age and the knowledge economy. We are now in the Creative Age where ideas rule!”

Many educators lament the fact that all over the world, standardized testing has become more and more prominent. There are claims that children today are more stressed out and more overscheduled than ever before.

Does this affect our ability to be creative? Andrew thinks that this could be something to consider.

“Standardized testing of literacy and numeracy is a basic benchmark,” he says. “It should be seen as a part of measuring a population’s place in standard’s measuring. More complex, qualitative methods could effectively ‘de-stress’ students if they know there more than one measure of their ability. A broadened approach should deliver a broader view of ability.”

When asked to name the main creative tools he makes use of in everyday life, Andrew came up with an understandably eclectic list.

“Firstly,” he explains, I would say a pen or pencil, as I write in a personal notebook as habit every day.”

“Secondly, my digital camera. I use either an iPhone or a DSLR. Thirdly, I would say my Google Chrome browser. I use this for email, social media, news sites, blogs, projects, research and shopping.”

Lastly, I use the Adobe Creative Suite. This includes the programs InDesign, Illustrator Photoshop and all the myriad tools from Creative Cloud.”



When asked to name a major creative influence, Andrew Barnum mentions Poetics in Song. "In art," he explains, "there are only three pillars that hold up all the disciplines of the creative arts: painting, music and poetry. My influence mentioned contains two of them simultaneously."

So, is creativity under threat?

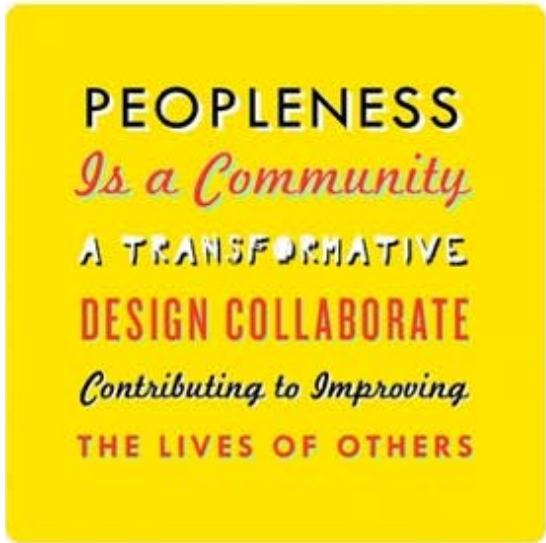
Some educators are saying that "kids today" are often stumped by a creative task, as they are looking for the "right" answer, which doesn't exist. In Andrew's opinion, is Generation Z missing out on some of the things that gens Y, X and the Boomers got as kids? Andrew does not think that this is the case.

"The current generation gap has been seriously underestimated," he says. "This latest generational divide is like nothing we've ever experienced before."

"Kids today, are operating in a completely different context than the previous two generations did. Their habits and impulses have been shaped by new media communication technologies, the internet's 'dark everything', and the behaviors that have followed. Gen Y and Gen "i" are running as fast as they can to cope with the changes they've been born into as digital natives."

"They learn 'live', there is little or no separation between learning and living. They are also 'mobile-connected' at all times, managing numerous interactions, transactions, emotions, successes and failures with channels of people and platforms. Life and learning is more interconnected than previous generations. They are ahead of the mainstream curve, impatient, dissatisfied and distracted by way too much stimulus and their own random passions and affections. 'Missing out' is a far too sentimental approach to an age where literally everything has changed through a technologically driven age of creative possibility," Andrew says.

"For some, the new generations' experience appears like a 'parallel universe' that is hopefully destined to dry up and blow away. It won't. The youth is hell-bent on a subtle re-invention of the world and its problems through interactivity. Expressions like 'all good' and whatever' are a type of armour to help them remain productive and engaged within the headwinds of an age of persistent change." ■





ANAMARIA DUTCEAC SEGESTEN

Inside Higher Ed

Anamaria Dutceac Segesten writes for Inside Higher Ed and is currently a research fellow at the Center for Modern European Studies, University of Copenhagen, Denmark. She has experience with both American and European higher education systems, and reports regularly on the future of the university and the use of technology and social media in teaching social sciences and the humanities.

We asked Anamaria why she thinks creativity is important in education and whether or not she has noticed it declining amongst her students. “The benefits of creativity,” she says, “include independent thinking and adaptive problem-solving, and success when meeting new and unexpected challenges. Creativity is also a key prerequisite for academic research: it drives scholars to asking new questions and finding innovative answers. A creative learning environment fosters the freedom of thinking in participating students (and teachers) and stimulates the combination of different elements in new and unexpected, interesting and useful ways.” So are learning environments churning out fewer and fewer creative students? According to Anamaria, it depends on which age group you’re talking about.

“I speak from a European perspective that may diverge from the US trend, but I cannot say that I see a decrease in the creativity of my students,” she says. “I observe a constant trend: in their freshman year students are not creative, and look for standard ‘correct’ answers to the questions teachers ask. The more time they spend at the university, the more liberated becomes their imagination. So I would say that there is a constant lack of creativity at the high school level (but not necessarily earlier in pupils’ life), and a constant stimulation of the imagination at the university level. Students are encouraged to think outside the box, to criticize existing theories, to find their own data. This fosters creativity.”

When we asked her what teachers can do to reverse the trend for high school students, she said, “It may be that schools can find ways to engage students with the matters of study outside the official classroom time,” Anamaria says. “Homework that is not based on memorization or repetition can be a solution. Excursions and hands-on learning can be another. In general, learning by performing a variety of tasks is to be preferred. I always thought that taking students outside the classroom has positive effect on their learning. I have not tried changing the time of the day when they are having lessons, but this type of variation may also work.”

Connecting with parents and families of your students is another important strategy.

“A family environment predisposed to encourage education is a great factor in helping children get the most out of school,” says Anamaria. “The same goes for creativity. As sociologists (e.g. Bourdieu) have discovered, there is a kind of cultural capital that is transmitted within families. I suppose this is the same for a ‘creativity capital.’ Famous artists more often than not come from creative backgrounds. Bach’s father was a composer and so was Mozart’s. In our times, think, for example, of Norah Jones, whose father was Ravi Shankar. Having a positive reference in the near family circle can do nothing but foster creativity.”

As Anamaria’s specialties lie in political science, we asked her about the larger picture of implementing creativity education into schools and how much power really lies in the individual’s hands.

“There is a lot in the educational system that is not connected to the individual educators,” she says. “I think education policy—the goals set by

“At the level of individual educators, creativity is a matter of personal interest and of available resources. It takes time to rethink some classroom routines, to learn new technology uses, devise new examination forms, etc.”

Anamaria Dutceac Segesten

governments and by other financiers of educational programs— are often a bigger obstacle for creative thinking, an obstacle that cannot be overcome by individual teachers.

“So first we need an educational policy focused on creativity (i.e. less standardized entry exams, less focus on grades, more choice/variety in curricula). At the level of individual educators, creativity is a matter of personal interest and of available resources. It takes time to rethink some classroom routines, to learn new technology uses, devise new examination forms, etc. Educators should ask for more resources dedicated to their own training. And then, finally, they should not be afraid to experiment. Not all experiments succeed but all are a source of learning.”

Anamaria acknowledges that rote memorization has its place in the classroom, but isn’t the end-all-be-all of a quality education.

“Historically, learning has been a lot about repetition. If we go back to Ancient Greece all schools involved memorization and repetition as the first step towards knowledge. But to this element of repetition we need to add the requirement of application to concrete empirical cases. This is where academia and work life meet, and this is where creativity plays a major role.”

“Academia should be better at helping students practice this applicative understanding while in school. I think the difference you present in this survey is explained by the difference in expectations. In school, knowing the theories and having the right answers were often considered the measures of educational achievement. In the work life, the application of theories to concrete cases and the demand of problem-solving redefine achievement. So, for example, academia should include more problem-solving exercises.”

As for the role technology can play in this game, Anamaria says, “Technology is a tool. It can be used both for and against creativity. Universities should (and most actually do) educate students not only by providing new information but also by teaching students how to identify their need for new information and how to obtain it. This

is formally part of our course syllabi. Teachers must keep themselves abreast with the latest technology developments to prevent technology-facilitated cheating and to show practically how technology can be used in learning. I am personally a technological optimist, who believes that technology more often than not helps creativity.”

Can creativity be measured? Anamaria believes it can, as the Torrance tests demonstrate. “But there is an inherent tension between creative thinking and standardization,” she says. “Creativity can be systematically measured but I do not think that it can or that it should be standardized. There is a huge variation in other factors (culture, access to education, income, class, etc.) that prevents a proper standard test from being implemented and thus from being useful.” ■

ANNE BAMFORD

Centers for Research on Creativity

Professor Anne Bamford has been recognized internationally for her research in arts, education, emerging literacy, and visual communication. She is an expert in the international dimension of education and through her research has pursued issues of innovation, social impact, equity, and diversity. A world scholar for UNESCO, Bamford has conducted major national educational impact and evaluation studies for the governments of Denmark, The Netherlands, Belgium, Iceland, Hong Kong, and Norway. She has received awards for Best Educational Research, the National Teaching Award in the UK, and was a runner-up for British Female Innovator of the Year. Currently, she teaches at the University of the Arts London and co-manages the Centers for Research on Creativity (CRoC).

We were curious to hear Anne’s thoughts on the current “creativity crisis” and whether innovative tendencies are declining in today’s youth, or whether reporters have simply been spreading rumours and perpetuating myths.



"It is argued that this is the case and perhaps it may be true," she says, "but there is little verifiable research to show this one way or the other." Her feeling is that if creativity has indeed been reduced, it is due to one or more of the following factors: 1) Children have less unstructured play time; 2) Children are less likely to engage in imaginative play with natural materials; 3) The school curriculum has become more narrow; 4) The arts have been marginalised in many schools; 5) Insufficient emphasis is given to creativity in teacher education; 6) The prevalence of high stakes exams in schools has increased; or 7) Timetables and teaching methods have become more rigid and limit creativity.

What about technology? Does it make students less creative when they can find instant answers to questions with a quick Google search?

"When we look at what a lot of young people do on technology, it is very creative," she says. "For example, making movies, mixing music, sharing poetry. So I think technology can be very creative.

"My concern, though, is that technology uses a lot of time and so people are not exploring different forms of technology. Also, particularly for young children, I think they need unstructured play and imaginative play using a range of 'hands on' materials."

When asked why she thinks creativity is an important quality to cultivate in today's youth, she said, "I think the value of creativity in terms of employability is very underrated. In a study of graduate attributes I conducted in the UK, creativity was the major thing employers looked for when selecting someone (along with communication and collaboration skills – which can also be gained through creative activities, especially in the arts)."

So how can teachers promote creativity and imaginative play in their own classrooms?

Bamford has a host of ideas:

1. Have a creativity corner in the classroom where there are a range of unstructured materials that encourage open ended creative problem solving
2. Give questions rather than answers and encourage the pupils to take a 'research orientated' approach to learning.
3. Integrate learning (e.g. try putting science and music together or mathematics and art)
4. Have partnerships e.g. include museums, industry artists in the classroom or take children from the classroom to these places.
5. Encourage risk taking.
6. Have flexible times for learning (rigid timetables limit creativity).
7. Provide plenty of chances for pupils to 'perform' their learning in exhibitions, concerts, speeches, games, online and so on.
8. Provide creative professional development and training for all teachers and school leaders.

When asked whether she thinks creativity can be measured, she says, "Yes and no. It is possible to measure both creative behaviours and creative outputs, but the type of 'testing' you might use is not very conducive to standardised forms of testing. For example, creativity is more likely to be evident in a drama production than in a test paper."

Bamford is a strong believer in the effects of a student's environment on his or her behaviour. "Creativity does not occur in a vacuum. You need a rich environment and lots of creative people working in proximity to create a creative energy. "I think all people can be creative if given the right environment and stimulation to encourage creativity. Creativity is primarily a behaviour, and like all behaviours it can be enhanced or stifled through reinforcement, modelling, and constructivist sharing.

What about a student's home environment? "[Students] do not need creative parents, but there is evidence to suggest that the higher the education level of the mother, the more likely the child is to be taken to interesting places and

given encouragement to engage in the arts and tend to be more creative.

"I think it is vital that the arts and creativity form a vital part of compulsory education so that all children are exposed to the potential of creativity regardless of the inclinations of their parents. That is why it has to be part of compulsory education (not only in after school experiences)." Bamford also believes that negative early experiences in childhood can stunt creativity—for good—making it vitally important for early education teachers to focus on creative learning.

"In my own international research (Bamford 2004, The Wow Factor), around 28% of all experiences have a negative impact on a child's creativity," she says. "There is a lack of research as to whether a child can 'recover' from an experience that is negative in terms of the creativity. My personal opinion would suggest that once a child's creative learning is stifled, it is quite difficult to reignite it." ■

ANYA KAMENETZ

The Narrow Bridge

Anya Kamenetz is a Pulitzer-Prize-nominated journalist for Fast Company in New York. Her blog, The Narrow Bridge, is about the future of education. As a reporter, Kamenetz casts a keen eye on the higher education landscape, fielding the current discourse on policy and practice, student loans, alternative learning paths, technology, and more.

In 2011, Learning, Freedom and the Web and The Edupunks' Guide were published as free e-books by the Mozilla and Gates Foundation respectively. Generation Debt (Riverhead, 2006) dealt with youth economics and politics; DIY U: Edupunks, Edupreneurs, and the Coming Transformation of Higher Education, (Chelsea Green, 2010) investigated innovations to address the crises in cost, access, and quality in higher education.

Kamenetz was named a 2010 Game Changer in Education by the Huffington Post, received 2009

"What about technology? Does it make students less creative when they can find instant answers to questions with a quick Google search?"

Anne Bamford

and 2010 National Awards for Education Reporting from the Education Writers Association, and was nominated for a Pulitzer Prize in Feature Writing by the Village Voice in 2005.

When asked whether she thought creativity was declining in students she said, "It's a pretty general question, which makes it hard to answer. My guess would be that we're simply much more aware of the growing need for creativity, which makes us more conscious of an apparent lack of it."

But what about the way in which, say, technology provides us with instant answers to questions, thereby aborting any wondering or creative musing younger generations would do well to pursue?

"Again it all depends on the situation," Kamenetz says. "Technology is a tool that can enable tremendous creativity. The work that goes in to designing and operating our digital world can be incredibly creative. I think to the extent that students can experience tech as something that is plastic and hackable it will become a creative medium for them. To the extent that they are using it to make routine or boring things easier, it might still pave the way for creativity. In the example of Google, looking up pictures of shoes you like is not particularly creative, but trying to create a "Googlewhack" (a phrase with exactly one result) could be very creative. Playing Geoguesser, the Google Maps game, is somewhere in between."

Kamenetz strongly disapproves of the way countries like the United States go about standardized assessments, especially since they leave little room for measuring creativity. "My next book is about how to do them better, and I think assessing creativity may very well be part of that, but it certainly won't be with a Scan-tron or multiple-choice items."

"We must be clear that this is not a content area like science or Spanish. It's a practice. Creativity is a way of being in the world and imparting that has far more to do with how school is organized than any particular set of thoughts, readings, games, etc."



So how can teachers promote creativity in their own lecture rooms?

"One suggestion is for educators to bring three and four year olds into the classroom to interact with older students. This is an age of inventive-ness that's not tied to rulemaking but the sheer pleasure of the mind's ability to invent. That, and getting out of our kids' ways to enable more time for unstructured play and imagination."

However, Kamenetz recognizes the challenges teachers face, such as time constraints and behavior management dilemmas. Finding a solution may require viewing things from the student's perspective, she says.

"Speaking as a kid who was always daydreaming in class, reading books under the desk, writing stories, drawing pictures, working on little projects, and otherwise getting distracted, I think it's fine for teachers to stick to a general plan for how the class is supposed to be organized. The trick for a kid like me is to be able to keep up with the phonics lesson while carrying on your own creative affairs."

And by "carrying on your own creative affairs," Kamenetz doesn't mean letting the student do whatever she wants for fear of squandering sensitivity. "Sure, I understand the stereotype of the highly sensitive person. But in the world I live in it's important to be kind and to know how to take care of yourself and others. A 'creative' kid shouldn't get a free pass to be neurotic."

In her book *DIY U: Edupunks, Edupreneurs, and the Coming Transformation of Higher Education*, Kamenetz urges students to take their educations into their own hands, which requires, among other things, enormous creativity. In Part One of the book she charts the history of how college-for-all became part of the American Dream and why tuition is caught in a cost spiral. In Part Two Kamenetz discusses creative ways

of changing the future and cites open content; virtual-reality classrooms; free and open-source education; and vocational, experiential, and self-directed learning as possible options. Near the end of the book, she provides an index of resources for students who want to “hack” their own education.

“People can thrive under all sorts of circumstances,” says Kamenetz, “but it’s good for kids in this generation that there’s more awareness of different possible paths besides the predictable, pre-professional ones.” ■

BRANDY PANAGOS

Creative writing and multimedia teacher

Brandy Panagos teaches creative writing and multimedia design and during her teaching career, she has taught English as well as fine arts, broadcasting, advanced broadcasting, creative writing, and literary magazine. Currently, she teaches creative writing, literary magazine, and multimedia design.

When we asked her whether she thought creativity was declining in students, she said, “I’m in a classroom and teach subject matter that lends itself to creativity and problem-solving,” Panagos says. “Because of the pressure to prepare students for standardized tests, most teachers of traditional subject matter don’t feel they have time to engage in these activities. They’re also unaware of how to incorporate creative activities within their curriculum in a way that prepares them for assessments. Since the students take multiple-choice and essay-prompt assessments, they feel that this is how they need to prepare them. Other teachers feel that creative activities are just ‘fluff,’ and if they aren’t done with purpose and design, that can be true.”

She adds, “It’s important to note that we live in a consumer society. We spend so much of our time and energy consuming material that we don’t take the time to create material. We need

to shift our engagement level from passive consumers to active creators.”

In her own area of expertise, Panagos says students squelch their ideas before even attempting to execute them. “Most students, even bright academic overachievers, have had little practice executing an original idea,” she says. “They’re afraid that it won’t be good enough or that it has to be perfect. I spend a week or two just getting students to be comfortable with their own voices and the concept of experimentation, drafting, revising, and possibly even scrapping an idea.

Shifting the focus from the final product to the process during those first few weeks of class gives students the opportunity to experiment without the fear of failure.

“In multimedia design, my biggest challenge has been securing funding for equipment to give each student adequate time to not only learn the skills but to also apply those skills to their own unique projects. In the past, we had to work in small groups and rotate between stations. Students had enough time to complete assignments but not enough time to apply the skills to their own unique projects.

I’ve also been in school environments in which the principal expected a certain order to the classroom. Creative projects often require that students collaborate with one another, that they film outside the classroom, that they use headphones as they’re creating the soundtrack for a video, and that they use their cell phones and/or social media to share their projects with the world. These activities can make traditional principals nervous.”

Panagos urges her fellow educators to ask themselves the following questions: How are professionals in fields related to your subject matter being creative or innovative? How are they solving problems within their field? “Incor-

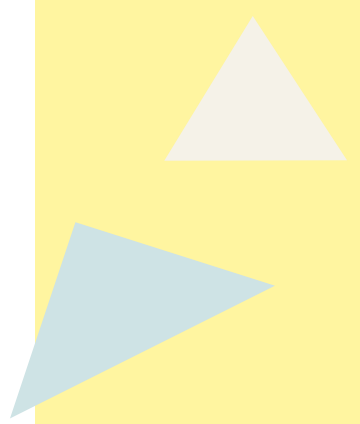
porate these activities into your classroom,” she says. “Instead of teaching students history from a textbook, have students become historians and engage them with primary documents. Have them draw their own conclusions about an event using source material.”

She adds, “There are times when the class needs to veer from the syllabus,” she says. “For example, we lost a teacher to melanoma this year. My students wanted to raise money for Relay for Life in her memory. They researched various types of skin cancer, created a website, a public service announcement, traditional and social media marketing campaigns, and networked with local media outlets. They raised over \$1000 in two weeks. I hadn’t planned to do this, but it was such a great learning experience for them.”

When we asked her about the role of technology in creativity education, Panagos said, “Technology is a tool. It allows us to research faster, to collaborate with ease, and to share our creations. It really comes down on to how it’s being used in the lecture room. Are students using it passively or actively? Are they consumers or creators?” Panagos says creativity is something that can be fostered, but she’s not sure if it’s something that can be measured. “It is something that should be addressed in all classrooms, but it will look different in different subject areas,” she says.

Background and home environment are important factors that should be taken into account, but it doesn’t mean that parents have to be musicians or artists. “There’s as much creativity in mechanics or software design. Parents just need to involve their children in real-world discussions and provide opportunities for them to create and to problem-solve.

“In addition, I feel there’s a certain resourcefulness and ingenuity that arises out of hardship. It usually comes down more to confidence or a lack thereof. The more students have the opportunity to create and problem-solve, the more confidence they will have.” Panagos says she thinks this is true for all students-- not just students with creativity-challenging experiences during their childhood.



“There’s as much creativity in mechanics or software design.

Parents just need to involve their children in real-world discussions and provide opportunities for them to create and to problem-solve.”

Brandy Panagos

Finally, Panagos adds, "If we want to see more innovation and ingenuity in the workplace, we have to foster it from an early age. If not, our workforce will stagnate. Though we need students to master fundamental skills, they need to be applying it to new problems."

BRIAN BARRETT

Tendring Technology College

Brian Barrett is currently a teacher of Psychology at Tendring Technology College in England. He is American by birth and moved to the U.K. to get some experience in a foreign education system in order to help develop both personally and professionally, and is currently looking into completing a Master's degree in Creative Curriculum Development.

Creativity is one of Barrett's primary focuses in teaching. He has been involved in creating and delivering workshops for the entire school as part of a creative curriculum group, mentored colleagues on creative lesson solutions, and prides himself in always finding new ways to teach lessons. He spends time researching the current trends on creativity in the classroom across many education systems, and has written a few articles about creativity as a catalyst for challenge within lessons as well.

Barrett feels that creative expression has declined, and that a majority of children are not exposed to creative opportunities.

"Why would a student need to be creative if the environment they are in does not require it?" he says. "All too often in education, students simply need to memorize information and recall said information on an assessment or standardized test. As every student has the capacity for creative thought processes, it is essential that they are in an environment that fosters those brain regions to most effectively develop.

"I feel the main cause for concern is that students, more and more, are not being taught in stimulating environments. I feel both educational

and domestic environments are paramount in stimulating creativity, and are the cause for lack of creative expression in students." We asked Barrett whether he thinks technology is also a cause for concern.

"Technology itself does not reduce creativity," he responded, "but the over-reliance on technology to do the thinking for students does negatively impact creativity. Think about the last time you saw a cashier calculate your change in their head and tell you without the register. I recently had this experience in a bar and I gave the bartender a tip. Think about how impersonal and disjointed learning math is as a result of the dependence of calculators. All you need to do is punch in some numbers and the device thinks for you. You then write down an answer with no understanding of how you got it.

"I see this on a daily basis with students in my lessons. Students constantly say they are not creative, but if they had more opportunities to develop those skills they could be. This is where technology can increase creativity. Since creativity is the result of a mosaic of cognitive processes, as long as these are developed a student can be creative.

"Technology can play a crucial role to help students display that creativity in a multitude of ways. Technology allows students to access a large quantity of information quickly, which helps them assess and contrast arguments which allow them to begin the process of problem solving. Even when students use Google, they still need to know how to search for relevant answers, and how to refine a search and make it efficient." We then asked Barrett what advice he might give to educators looking to cultivate creative habits in their students.

"I would urge teachers to implement research-based problem solving projects that force students to incorporate all aspects involved with creativity," Barrett says. "I give my students a question they are going to be assessed on. For instance, 'Devise and carry out a study into a topic in social psychology.' Leaving it open to each student's individual interests enables engage-

ment and motivates them because the teacher is not rigidly telling them what to do."

Barrett says these types of projects and questions help students learn in a more organic and natural process, one that enables them to succeed across the disciplines.

"I know of teachers who have implemented this strategy in multiple subjects, including math, English, history, psychology, and economics. "With history, for example, giving students critical thinking and problem solving opportunities can develop key components of creativity. I show my students a picture of Japan dated 1930. Next I give them X amount of time to find out 5 key facts about Japan which have to cover several issues: economic, geographic, cultural, social, and militaristic. I then ask them what problems Japan is going to have to deal with in the next 5 years, 10 years, and 15 years. Students also need to think about how Japan could solve these issues in a realistic way. In discussions, students have described the Invasion of Manchuria by Japan, which is a topic on their exams. Think of how different this method is compared to simply reading or watching a video or lecturing. It is this level of activity I would urge teachers to implement in their classrooms. The rewards and confidence students develop is inspiring."

So, assuming you are appropriately fostering creativity in your students, can you measure your progress as an educator?

Since creativity is more of a "mosaic of cognitive processes" than a single brain function, Barrett says, it can be assessed and should be the focus of curricula.

"Assessments need to focus on evaluating a student's ability to perform various cognitive processes, including problem solving, critical thinking, assessing, making judgements, assimilating new information, pattern processing, comparing and contrasting ideas, application of evidence, risk taking, adaptability, perseverance and reflection," he says. "An assessment focused



on these issues would be more in-line with what employers continually say they need in future employees.”

Barrett believes a creativity assessment platform needs to be developed that is rigorous, unpredictable, and accessible for all students, and measures how well students are prepared to face a future that has yet to be defined.

“I once asked a lead history examiner why there was not a more creative assessment for students in England,” Barrett says. “He replied, ‘It will be too difficult to standardize it and it would cost too much money and time to develop it. The government wants a reliable quick way to measure how well it is doing in regards to improving students results.’ How can we expect anything to improve when governments cannot accept that things need to change or refuse because it will cost too much money? The definition of madness is to do the same things over and over and expect different results. It is time to change the way we assess students.”

Creativity is paramount to anything the current education systems in the United States and England, among others, have developed. The focus in these places is on results. If a certain percentage of students do not achieve a set grade, the learning institution is failing. How can such a shallow focus and measure prepare students for anything but taking tests? How often in a job does a boss ask his employees, tell me all you know about the League of Nations? I am reminded of a cartoon I recently found. In the picture there is a job interview for a business job with a recent college graduate. The interviewer asks, “What life skills do you have that will help with this job?” The student responds, “Tests...I can pass tests.” I think this epitomizes the current climate and culture that over emphasizes the importance of said tests. I understand the need to have assessments but it is essential for the future of societies that people are able to be creative in ways that appropriately prepare them for life, being taught and assessed on creative skills then we would see a different kind of world. With regards to the barriers I have encountered with creative teaching there are two key issues.

First and foremost students are simply spoon fed in other classes so when they arrive in my class and have to think for themselves they find it a struggle and resist and withdraw. I takes a few weeks before they get used to it and deal with the frustration they feel about how I answer questions with questions. I try to help them appreciate the uneasiness they feel and embrace it. I know I am not the only teacher who finds creativity essential, but the majority of teachers in my school usually refer to the second key barrier to creative education: exams.

In order for creativity to thrive we need to have a complete educational paradigm shift in how we stigmatize creativity and regard it as an ability for the arts that has no place in core subjects such as Math, English, and Science.

In order to promote creativity, Barrett urges, education needs to be more organic and free flowing. “How free are students when they have to be herded around by a bell? Why not let students go between classes as they see fit or do away with rigid schedules and let them learn at their own pace? What if a group of students want to learn more about photosynthesis—could they not stay and talk more with their teacher?”

Barrett says class time could be structured in a more “elementary fashion” in which learning through discovery enables students to develop creatively.

“It is amazing how much resistance I get when I bring my class outside to help them understand a topic. I was told it was not conducive to learning. Excuse me? Why not? Maybe other teachers need to be more creative and take risks.”

Adult students were at one time, children. Could it be essential to foster creativity very early on in life? “It has long been understood that the most important factor in student achievement is parental involvement,” he says. “Parental involvement is as essential to academic success

as vitamins are to the body. This holds true for creativity.

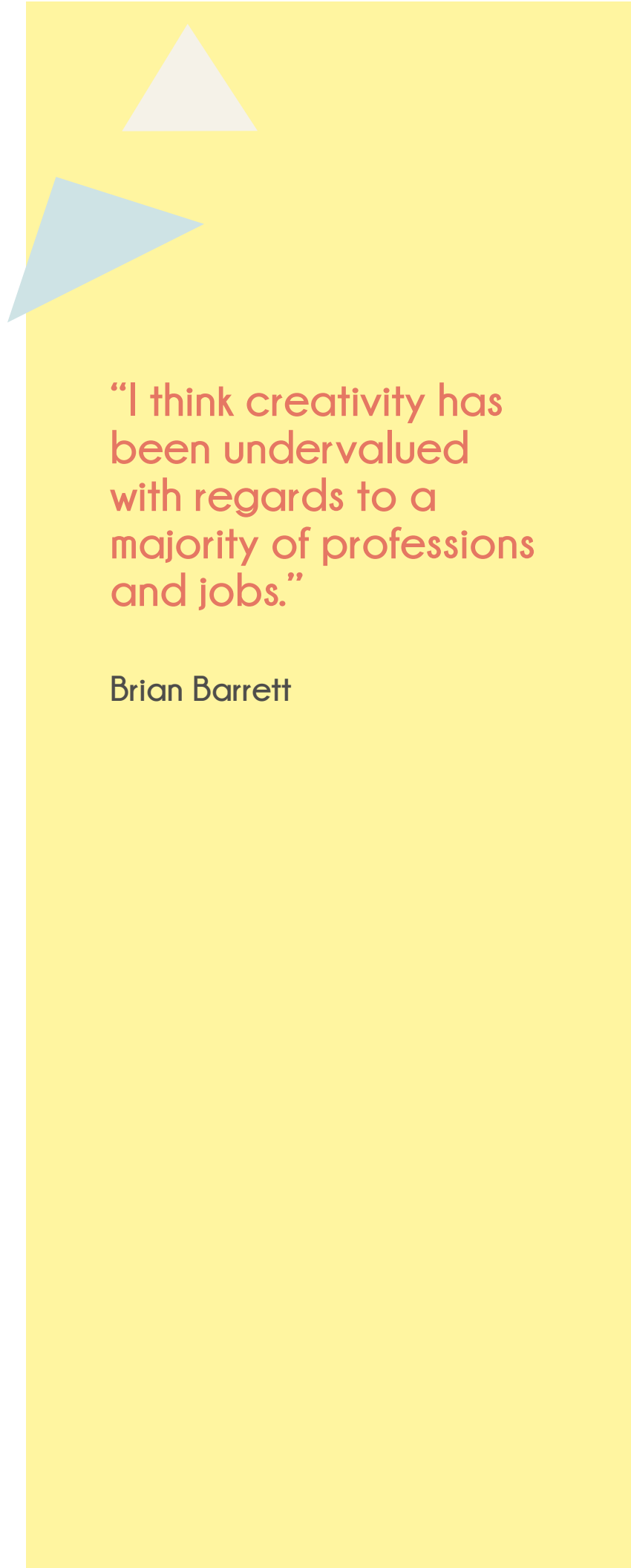
“I have some friends who have two children. They have decided to limit his use of technology and promote his own independence and interests in the arts. They focus on educational toys, musical instruments, art sets and just discovering. They only let him watch television for an hour a day and are actively involved with him. They read to him often and help promote his imagination. He could speak clearly and intelligently six months earlier than other children, and his mom tells me his confidence is such that he easily approaches other kids and makes friends. His level of imaginative play is what many children need to develop, as imagination is a key component of creativity. Parents need to understand the importance of getting children to have imaginative play, discover, and make mistakes.”

Lastly, Barrett spoke about the value of creativity in a person’s educational and professional careers.

“I think creativity has been undervalued with regards to a majority of professions and jobs. People sometimes are creative and have no awareness of how or why they are creative. All academia is focused on is about grades and statistics that tell everyone you are smart.”

“The focus on academic success is not conducive to societal progress. Innovation and patents are stalling at a time when our society needs to develop something the world needs. The world needs to view and create something that will help preserve our planet, how can that happen if all students leave college with is the ability to pass tests?”

“I am afraid this is not shifting; if anything, it is shifting more towards the assessment side. In the United Kingdom, a new curriculum is being introduced by 2015 that focuses on rote memorization and being assessed after a two-year course by a timed essay exam. All a student needs to do to pass these courses is Google facts and regurgitate them. Many education institu-



“I think creativity has been undervalued with regards to a majority of professions and jobs.”

Brian Barrett

“If I were a K-12 teacher I would speak about teaching to the test and how students grow up, say, wanting to be a doctor and thinking creativity has no place in that.”

Brian Croxall

tions in America take this route of standardized tests that dictates the evaluation of the school and the teacher.

“Until our society gets over this attachment with having to quantify every aspect of learning, we will lag behind nations like Finland and fall behind the world with innovation and discovery.” ■

BRIAN CROXALL

ProfHacker blog

Professor Brian Croxall contributes to The Chronicle of Higher Education’s ProfHacker blog and serves as Digital Humanities Strategist in the Robert W. Woodruff Library and Lecturer of English at Emory University. He is currently working to establish the new, Mellon Foundation-sponsored Digital Scholarship Commons (DiSC). Along with developing and managing digital scholarship projects in collaboration with faculty, graduate students, librarians, developers, and more, Croxall teaches a new undergraduate “Introduction to Digital Humanities.”

We talked about the various ways digital resources have changed English students and whether they blunt or facilitate creativity.

Croxall says he has not noticed a decline in creativity amongst his students. If anything, he says, students are more creative as a result of access to new digital resources.

In the fall of 2011, Croxall required his Introduction to Digital Humanities class to read Virginia Woolf’s *Mrs. Dalloway*. Some students, he says, had already read the book three or four times, and expected nothing new to ensue from another class discussion or essay assignment. They could analyze the plot, the characters, and the themes of the book in their sleep.

But Croxall had something up his sleeve. After finishing the novel, students were required to use Google Earth to map the journey of each character. Students appreciated the opportunity to think differently—and creatively—about a

familiar subject, and to discuss new ways of, well, discussing a text. Most students had not been given such opportunities in the past.

Croxall says he first became interested in the digital humanities when he read a book by Stanford professor Franco Moretti called *Graphs, Maps, Trees*. In it Moretti argues that literature scholars should stop reading books and start counting, graphing, and mapping them instead. In place of the traditionally selective literary canon of a few hundred texts, Moretti offers charts, maps and time lines, developing the idea of “distant reading” into a full-blown experiment in literary historiography, in which the canon disappears into the larger literary system. Charting entire genres—the epistolary, the gothic, and the historical novel—as well as the literary output of countries such as Japan, Italy, Spain, and Nigeria, he shows how literary history looks significantly different from what is commonly supposed and how the concept of aesthetic form can be radically redefined. Croxall says the book blew his mind and inspired him to view his own work in a similar way: Instead of working with ten novels, he could work with 300,000.

There have been fears of proliferation of the written word since Plato, Croxall says, but, ultimately, “having more information is a boon to creativity, an opportunity to experiment and play with what we had before.”

Inevitably, “playing with what we had before” requires repurposing old material in new, creative ways, which smacks of plagiarism in many cases. But this is where it gets interesting.

Another English professor Croxall knows, Paul Frise, teaches a class on Victorian fiction in which he assigns his students a novel and then bans them from reading it. Instead, students are required to use digital resources, parsing techniques, and online analysis tools to achieve

some semblance of understanding of the novel through the work of basically anyone but themselves. Croxall says this exercise inevitably leads to some very creative interpretations. “Remixing is a creative endeavor. Plagiarism can be a creative endeavor— but only if the student intends it to be.”

So why don’t we see students making more of the digital humanities in this way? Maybe it’s not the students who are at fault, but rather the system.

“It’s not that students aren’t creative,” Croxall says, “it’s that they’re rational.” When students learn all semester how to structure an academic essay and then are asked to be creative, they get uncomfortable. When they spend their lives being told not to plagiarize and then learn it’s part of the new digital literacy, they don’t necessarily jump at the opportunity to use it. What’s worse, often we don’t realize the value of creativity until we’ve been out of school for half a career.

“If I were a K-12 teacher I would speak about teaching to the test and how students grow up, say, wanting to be a doctor and thinking creativity has no place in that. You study to pass the MCAT, and when you are put on the spot and asked to be creative, you don’t like it. It’s only once we are in the real world that we see creativity as something to be valued. It’s not so much that creativity has been undervalued in the past but that it is undervalued in our past.” We then asked Croxall what sorts of strategies he uses to promote creative thinking in his own classroom.

He says he likes to have his students look at a variety of digital products, whether it’s putting materials online and archiving them digitally or using new software to create a presentation. It’s a useful way to help students identify the approach they want to adopt for their own projects. “I always use the same silly analogy,” he says, “about going to the hair dresser and flipping through catalogues to get an idea of what kind of style you want.”

At one education institution for adults, graduate students are required to turn in PDF copies of their dissertation; paper versions are not accepted. The traditional written dissertation still has its place, he says, but it is no longer the only option. “I don’t think that the dissertation is broken so much as it is broadened. Just as in, say, the 1970s we embraced critical theory, and queer theory in the 1990s, now we are embracing a different kind of thinking behind the dissertation.”

In response to our question about time spent indulging creative impulses in the classroom, Croxall says it depends on the structure of the course. “When I teach my survey of American literature, and I have only thirteen weeks to cover 1860 to the present, I use the lecture format. But for most of my classes, I almost always use the discussion model.”

We asked him if he noticed a difference in the quality—read: creativity— of work produced from students in lecture-based classes and students in discussion-based classes. He said he did, but it mostly had to do with the kind of assessments used in each class. In his survey on American Literature, he administers exam essay questions and far fewer papers in order to test big-picture ideas. “I try to get students to regurgitate major concepts,” he says, since the volume of material covered is so high. In his discussion-based classes, students are asked to write more papers and to spend more time exploring topics in depth, which requires more creative thinking. So, in a sense, the type of assessment students expect determines the level of creativity they will strive for. ■

CARRIE WIBLE

Professional Music Teacher

Carrie Wible is an educator, writer, musician, and mother. She has a B.A. in music from Kent State University and a Master’s in Teaching and Learning with Technology from Ashford University. Carrie has been teaching music lessons and has taught in the classroom for a combined total of 25 years.

Wible gave her opinion on whether she thinks creativity is declining in students.

“I agree that creativity seems to be halted or stifled in many students,” she says. “As a teacher, I found that students were more worried about the ‘right’ answer (the one they thought I wanted to hear) rather than the answer they truly wanted to give. I believe education systems and curriculum often stress ‘one answer is right’ as opposed to thinking outside of the box. This is baffling considering many of the aptitude tests require students to do just that. While video games and television may have a causal explanation for the lack of creativity, the opposite could also be true of these outside interests.

Many younger students I have taught will act out scenes from their favorite shows and expand upon the dialogue allowing them to be creative, but with an outside starting point.” As far as technology is concerned, Wible believes it has already made a positive impact on creativity:

“Technology allows students to take their imaginations in places it couldn’t just a few years ago. In my classes, I would always incorporate some sort of technology into a unit. For example, one of my classes was learning about popcorn. I took them to the computer lab where they were to find clip art or draw a picture of why they thought popcorn popped. They already knew the real reason, so they had to use their imagination to show me. This was especially great for those students who were not artists. I had a range of answers and pictures of alien popcorn creatures hiding in kernels to a firecracker being hidden inside.”

To her fellow educators, Wible would advise, first and foremost, to not shy away from teaching creatively. “For me, what worked was asking the students to do something for me. If I broke a heel (more times than one would imagine), I would exasperatedly ask them to invent something to keep it on, or design a shoe that will never lose a heel. When I got a new puppy (and brought her in for the students to love on) I had my class work in groups to design the perfect doggy

house. I found that when I ask them to help me they were more eager to impress me and outdo each other than if I wrote on the board: ‘Design a dog house.’”

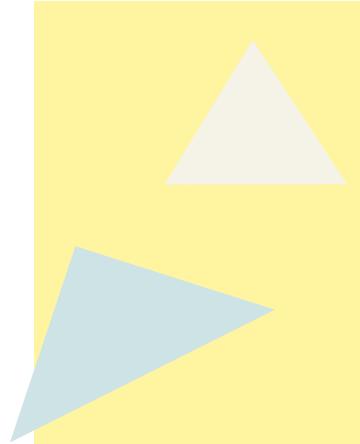
“In my opinion,” she adds, “students (especially when adults) need to be able to relate things to their lives when it comes to being creative. I would try to stimulate their imaginations with small things such as asking what they ate for breakfast and how would they make it better, or what ice cream flavor they would love to be made. They were usually general ideas, not too specific, so that every student had a chance to succeed.

“But challenges would arise if a student drew a blank and withdrew. Occasionally, a student would become upset that others were making ‘better’ projects, and did not feel they could keep up. This is when I decided to always give my students a choice when it came to small fun projects to allow their own style come through. I would ask they write, draw, create, or orally explain their thought processes.”

We were curious how Wible divides her class time between structured, assessment-targeted lecturing and allowing students to indulge their creative impulses.

“I definitely agree that class time should allow more room for students to nurture their creativity, rather than a large chunk of the day be on hard facts,” she said. “All of the different subjects thrown at students during the day should be enough to stimulate something in them.”

One thing that gets left behind, once the measuring begins, is creativity. “I do not think creativity is measurable,” Wible says. “Being creative is not something that should be forced out of students. While I have told students in the past to be creative, what I mean is they should strive to go a different direction than what they would normally do. For example, if I asked students to draw



“For example, one of my classes was learning about popcorn. I took them to the computer lab where they were to find clip art or draw a picture of why they thought popcorn popped. They already knew the real reason, so they had to use their imagination to show me.”

Carrie Wible

a bear in the woods, while a bear and woods would be correct, it isn't creative. Students adding clothes, a cabin in the background, or a U.F.O are being creative."

"I would worry if it were part of standard assessment, and cannot imagine how large a rubric would need to be to even begin to grade creativity. I asked for a picture of a bear in the woods.

Should Andrea get an 'A' because she added Goldilocks, while John gets a 'B' for only drawing what I asked? Also, what I think is creative another teacher may criticize. I think Goldilocks was a great addition, but Mrs. Smith might be annoyed because she only asked for a bear in the woods." Students in high stress personal situations need extra help to promote their creativity when learning, Wible says. "A teacher needs to realize that although Susie is the same age as her peers, she is not developmentally at the same level as her peers, and I will need to adjust the activity adjust for her. Susie is going to need to learn social and emotional cues, if she hasn't had them at home, and will need to be taught to use her imagination. The teacher should be cognizant of

Susie's abilities and lower the expectations while she gains an idea of what her mind can do." Even when we are adult learners, we began our journey as children. Wible says that the creative process really begins there. While having creative parents is wonderful, she says, not all children are blessed with them. "My own husband, while a great dad, is not very creative when it comes to relating to children," she says. "He can imagine building an underground movie theater using our basement as an access tunnel to walk the 500 feet to it, but when my 3 year olds hand him a plate of plastic food he is stumped at what to do. He often teases me about my ideas, but probably because they are more relatable to children."

It's up to educators, then, to pick up the slack.

Finally, we asked Wible about the role of creativity in her own area of expertise—music. Her re-



sponse may come as a shock to those who view music as an inherently creative subject:

"In college, I was a music major, and being creative was acceptable, but only in certain cases. Those musicians that took matters into their hands to showcase their talents were fine in a recital, but annoying at best during orchestra practice. Understandably, when playing in an ensemble you wouldn't want the oboe player to play forte when the music says pianissimo for the sake of creativity."

When it comes to teaching, though, Wible says creativity is a must. "While there are guides and workbooks designed to aid teachers with lesson plans, it is up to the teacher to make them interesting and fun. When I look back upon my K-12 schooling, I realize my favorite teachers were the ones that were creative and inspired others to be so."

CHARITY PRESTON Organized Classroom

The Organized Classroom's blog has so many creative ideas for the common things teachers have to teach to their students. Charity Preston has become renowned for her creative, clever and individual methods of teaching simple things to her students with creative methods. Recently, Charity put together an article on how to teach students about 'elapsed time' providing some creative 'clock' resources. Charity is passionate about teachers sharing creative ideas with each other because of her background.

"When I started teaching (which was just in the last decade), the internet didn't have the amount of teacher blogs or social media resources that we do now, so it was usually a teacher only being able to get new ideas from fellow teachers, the occasional workshop, or from a very expensive resource at the local teacher store."

Times have changed for Charity and her readers. "Now, with the web, teachers are being able to connect on so many levels and so many plac-

“As a parent of a child currently in high school, I can say that she is far less enthusiastic about learning than ever, and some of that might be due to the fact that much of the day is spent in a lecture setting”

Charity Preston

es that the ideas are overflowing and practical strangers are able to build on creative ways to teach the same concepts from one another, which not only helps the students of course, but it also keeps teachers fresh and excited to teach the same skill year after year.”

Charity believes that classrooms today are quite different from when she was a grade school child, and yet certain elements will always be the same. “As a child, I do feel (children of my generation were) given more time and freedom to be more creative with projects, creative writing, and the like. Today it seems as though teachers have far less in the way of time or freedom even considering how to teach a concept. This applies when teaching adults as well as kids, she explains.

“Many learning institutions require a specific text series and will not allow teachers to stray from it at all,” says Charity. “In my opinion, this definitely limits how creative students can be. But, as always, the best teachers find ways and time to sneak in creativity in everything they do. I think it can be done, but must be intentionally embedded within the lesson plans daily.”

There are always new methods being employed to teach students. Often teachers teach younger children things by playing games with them (for example, Charity invented a ‘wordaround’ game to teach vocabulary). However, by the time children reach high school and later adulthood, there seems to be less interest in game-playing. While some educators think there may be scope to reintroduce more game-playing for older grades and even adults, Charity is quite realistic about the attitudes of teens and adult learners.

“As a parent of a child currently in high school, I can say that she is far less enthusiastic about learning than ever, and some of that might be due to the fact that much of the day is spent in a lecture setting,” Charity says.

As adults, this is how we go on to interact with our workplace. “On the other hand,” says Charity, “most places of employment don’t allow for ‘game playing’ during the work day (nor in adult

education for that matter), so I can also see how secondary educators are also preparing teen students for the real world ahead too. I do feel that the retention of the materials at hand could be better learned by some students if there was more differentiation involved.”

So, how does organization relate to creativity? Often, teachers and students alike think of creativity as “disorganized, intuitive, haphazard or uncontrollable”. Can there be such a thing as organized creativity? Charity believes so.

“Organization and creativity can live in one space. How creative can you be when you are organizing? Many teachers employ this very tactic when they are attempting to maximize student learning space when the space they have to work in is very tiny or oddly shaped. Even very creative thinkers usually have some sort of organized system for getting those creative thoughts from their mind onto a tangible workspace. Creative problem solving is a skill we should hone. In order to function the best in society, thinking outside of the box, while also knowing the organized logistics and history of the problem at hand, will make for the best solution finders”. There is a not-new but re-emerging theory that lecture and study time should be more responsive to moments when students may get a creative urge, but Charity believes there needs to be limits on this, for example, class time should be flexible, but only if the time allows for it.

“There are times where it is not in the best interest of the entire class for one student to allow the rest of the students’ thought processes to go out in left field.

While I am definitely known for taking advantage of “teachable moments” and encouraging learning about specific student interests that have been expressed in and throughout a lesson, there will also be certain times when creative thinking is not appropriate to have a full blown-out discussion over. Of course, encouraging

students to write down those thoughts to have a discussion about at a later time is always a great idea, and one that should always be encouraged”.

Adult learners were once children and many adult students have children of their own. There are the parents’ roles in harbouring creative expression in their children too. Even if a child’s parents are not creative themselves, Charity feels parents who understand the importance of creative expression can benefit their kids’ creative minds. This later will benefit them as adult learners.

“Just because students don’t have highly creative parents, doesn’t mean they aren’t able to successfully be creative. They may have to adjust how they express that creativity if it is stifled in the home, but truly creative students will find a way to express that creativity in other ways or places (even in non-positive ways). While we would like to hope that parents would be supportive of creativity in their children, not all will understand or value it. Parents that are supportive about anything their child is or does will always have a better situation than those that do not, whether we are talking about creativity or any other qualities that specific child possesses”. How can creativity be encouraged in a student that is displaying this sort of impingement?

Charity believes it’s just like any other skill. “Creativity can be encouraged and practiced. Having teachers and caregivers who cultivate creativity in a supportive way will help to strengthen it in students. Playing creative games, using lateral thinking, etcetera, is a perfect way to get learners thinking creatively, and discussing possible solutions for those types of games, word plays, and so on, is the key to getting students to begin to think creatively on their own.”

Structuring effectively is the key, says Preston. “The teacher should always model first, then use scaffolded practice, then ask the students to model for them, before finally asking students to demonstrate their thought processes on their own. With enough practice, the creativity becomes intrinsic and students feel more confident

in their own creative abilities as well.”

Some teachers are suggesting that creativity been under-valued in the past, with a focus on academic performance over creative achievements. Charity feels that perhaps this is shifting.

“I believe there is more emphasis on academic performance over creative achievements. This is evident when academic institutions are making cuts in arts programming, in favour of high-stakes testing in core academic areas. Unfortunately I don’t see it shifting in a positive way. There are even more cuts coming in the way of gifted education as well, where creativity is also honed. It is obvious that creativity is an important workplace skill, yet our current system of standardized testing actually focuses on lower level recall skills”.

In the United States, the new National Common Core State Standards claim that they are more rigorous and focus on higher level thinking skills. Charity says that this all remains to be seen as the new assessments come out in the next several years.

“Creative thinkers are the key to finding new solutions to old problems. They will be the students who go on to cure cancer, figure out a way out of national debts, and hopefully ease the violence that seems to be so prevalent these days. By nurturing those creative problem-solving skills, we are encouraging our students to make the world a better place for us and for future generations. Hopefully we can start making the transition towards that emphasis in learning institutions as well.” ■

CHERI EPLIN

Living in the Moment

Cheri Eplin is a teacher in the San Francisco Bay Area, working in education management. She is also a freelance writer and has spent time as a principal and has also worked as a corporate wellness manager for Quantum, a global specialist in backup, recovery and archive. Cheri has

spent years teaching in classroom situations and has witnessed the creative thought-process first hand in her students.

She says, “The minute my mom gave me pencil and paper, I never imagined a life without writing. The ultimate goal for me is to write about the things people care about most. Learning about people and discovering new places are two inspirational subjects that pull me to my computer and keep my fingers tapping on the keys. I live in Danville, California with my two amazing boys and am grateful to love what I do and do what I love: be a mom, teach, write, and constantly learn.”

Cheri has chosen to share her thoughts on education and creativity. It has been said that creative thoughts can arrive at less predictable times than logical thoughts. Does this teacher think that class time should be more responsive to moments when students may get a creative urge? Does this apply to adult learners too?

Cheri says, “Absolutely.” She believes that this is key, particularly when hiring good teachers. “Certainly, it’s important to train teachers and give them a strong foundation for being effective leaders of change in technology and general curriculum, but it’s the inquiry-based learning that’s key, those ‘teachable moments’ that are longer lasting than mastering rote facts.”

So what were things like when she started teaching 20 years ago? What would have been the definition of a ‘creative’ activity or class back then? Cheri says that times have certainly changed.

“Ha!” she says, “creativity would have meant getting students out of rows and into cooperative groups. The truth is, it’s still a small part in looking at what can facilitate a creative classroom.” In today’s world, what does Cheri think the current definition of a ‘creative’ activity or class might be? Cheri says, ‘technology’ is a tool that keeps coming into focus for her students, whether they are adults or younger.

“When looking at ‘creativity’ now, technology

is the biggest factor in the equation,” explains Cheri. “Allowing students to integrate technology into the creative solution, for example, rather than a written report on ‘Fly Fishing as a Future Career’, the student may use the internet to gather facts, find whose key in the field, contact the person, get all the info needed and then present a ‘prezi’, for example, an interactive ‘power point on steroids’ storytelling tool that shares collected ideas in a virtual context.” There have been studies that indicate that creative people have a tendency to over-react to stimulation. Does Cheri agree? If so, has she noticed this in children and teens when compared with adult learners? Cheri confirms that she does not notice this particular trait.

“I don’t agree. Creative people - in my opinion - filter out the stimulation and find what fuels their fire, what works for them. There’s an intensity involved with creative people that can either be fostered and can flourish or be stifled, depending on the educational leader and the values of the educational environment.”

Does Cheri believe that it is essential for students to have creative parents when they are children in order to thrive? Do children that have parents who understand the importance of creative expression benefit creatively from this?

“Supportive parents are key,” explains Cheri.

“I think it may be more natural for a child of creative parents to thrive and feel good about his or her pursuit of creativity but I have seen plenty of ‘outliers’, children who are creative without creative parents and if parents seek to understand, it can be wonderful. However, if parents do not understand, it can provide plenty of stress for the student. This is true as with a high-performing school or district can be a major stumbling block for those who don’t fit in because their intellect is in the arts (for example) rather than in traditional studies of math and science.”

This can then affect learning as adults as not every student has an ideal childhood. It has been

“I think it may be more natural for a child of creative parents to thrive and feel good about his or her pursuit of creativity but I have seen plenty of ‘outliers’, children who are creative without creative parents and if parents seek to understand, it can be wonderful.”

Cheri Eplin

“I think as we learn that we cannot yet prepare for future careers - as many have yet to be developed, what we can do is look at the present successes of people in the technology industry, such as Steve Jobs, Bill Gates and Mark Zuckerberg.”

Cheri Eplin

indicated that negative early experiences early on can stunt creativity. How does Cheri suggest that creativity can be encouraged in someone who is displaying this sort of impingement? “A student’s environment can be the key in encouraging creativity. Once a student experiences some sort of “success” in creative expression, it is one more loop in that belt of imagination. As a student becomes older, peers play a bigger role in development as does the relationship/experiences with school and teachers. This is where teachers can have a huge impact on those students adversely affected.

Some teachers have stated that creativity has been under-valued in the past, with a focus on academic performance over creative achievements. Others feel that this is shifting, but perhaps not fast enough. Cheri says that she is a firm believer in developing the skills of those who might feel that their talents are left of centre.

Cheri says, “I think as we learn that we cannot yet prepare for future careers - as many have yet to be developed, what we can do is look at the present successes of people in the technology industry, such as Steve Jobs, Bill Gates and Mark Zuckerberg.”

Cheri believes that these innovators all had one thing in common. “The common denominator is that all these individuals (and even those not named) were creative thinkers who often thought outside the box.”

Cheri believes that “there’s this huge trend in equalizing opportunity for creativity by implementing ‘Common Core’ standards. I think the ticket is combining both academic strides AND creativity. As we see our international competitors and feel a squeeze that we are starting to ‘fall behind’, the realization is that we have not spent enough time in the classroom to allow students to do genuine ‘problem solving’ and to think on their feet as ‘real-life problems’ present themselves.”

So, was this previously undervalued? Cheri says yes. “I do think this is where it was under-valued

in the past as we were erroneously led to believe that our highest academic achievers would do the job, but that wasn’t the case. Those that break out with their own businesses (whether it be the Candace Nelson, founder of Sprinkles Cupcakes or Oprah, who created an empire with HARPO) we see the value of creativity as a catalyst for success and great contribution to our society. Yes, cupcakes count!”

So what about the rise of standardized tests? Cheri is not a particular fan of them, a stance she shares with many contemporary teachers.

“Put the test to rest,” says Cheri. “It is only one of many ways to assess students. I think it’s fine for baseline testing for certain skills pertinent to succeed. It just doesn’t measure many types of intellect, mainly someone’s capacity in their heart to give and contribute in ways that help everyone. It can provide immense stress and actually kill creativity for many individuals so I think there’s a delicate balance and depending on the district, college or school, some are way out of balance while others are insisting on balancing the scales of justice by maintaining funds or creating funds through foundations to include art, P.E., Science labs, and other hands-on programs that teach and facilitate ‘Learn by Doing’ skills.”

Does this teacher consider herself to be a creative person? “Absolutely,” says Cheri. What does she think the key to her creativity is? “Get to know your students. That’s the bottom line,” is Cheri’s direct response.

“Know where they are, what makes them tick as individuals, and help them grow academically and as a person. I create many opportunities for my students to try their hand in real-life situations that will only help them gain confidence and put tools in their toolbox of life skills.”

Cheri goes on to give a range of wonderful suggestions for classroom activities. She suggests

putting on a TEDx event at a learning institution, for example. She explains, “At our place of learning, the TED customer portal helped with public relations. They provided us with spreadsheets, meeting and greeting speakers, and schooled us on everything it entails to put on an event.”

Cheri goes on to list some other ideas for teachers and classes: “We do a ‘Lingo Lounge’ where the students get on the microphone at a local Starbucks and reads poetry, we read about and get involved in local and national news, learning about what goes on in the world and how we can help, etc. We do “problems of the month,” with real-life math problems and together, they work in groups to create solutions and understand that there may be more than one answer.”

Does creativity come in rhythms, in Cheri’s opinion? What could a student (adult or child) do when they have to complete a creative task and they have no inspiration? What has Cheri found success with in the past?

Cheri says, “What I find most successful in the recipe for creativity is to first be sure that the Maslow’s Hierarchy of Needs are met. It’s imperative that basic needs are met first. Then, it’s key to stay connected to the project.”

She explains that there is always a natural ebb and flow. “Yes, there will be rhythms of enthusiasm and frustration, etcetera but as a class, students can learn that this is part of the process.” Cheri explains that considering what is still to happen is important when explaining the creative rhythms. “Working with others, working on those relationships, beginning with the end in mind and realizing that that may just be the beginning,” says Cheri. “I always talk to the students about the word ‘yet’.

I explain that they may not know something yet but will if they work hard on wanting to get there they eventually will.

Cheri has a couple of creative acronyms she uses in her classroom. “Also, sometimes it’s about POP and BIC (pencil on paper) and (bottom in chair.) Sometimes it takes work ethic, hard work

and determination, mixed with all the good ideas that bring good results.”

What else can teachers do? Cheri says, “It’s also important to understand that others (other people) and your environment can always provide inspiration when needed, if open minded to understanding that sometimes the more complex and satisfying projects require more than just yourself. The most successful way to complete a creative task is to start with a shorter task and experience the satisfaction of completing that task, experiencing success of beginning to end, then you can create longer tasks and increase endurance and stamina.”

CHERYL JUDD ALLEN

Teacher in Jackson County,
Cainesboro, Tennessee

Cheryl Judd Allen is a 27-year veteran of the classroom. She earned her B.S. in Education, with an emphasis in English/Language Arts, from the Tennessee Technological University. Allen is the chairman of her English department and loves to incorporate creative assessments into her classroom with hands-on projects.

Allen, for one, firmly believes that creativity has declined in students. “I believe easy access to the internet, gaming, and lack of real, in-depth reading has caused this to happen,” she says.

Technology is a good tool, Allen says, if not taken to the extreme. “I feel that students are less creative because it is so easy to access whatever they need or want on the Internet. Old fashioned digging for information is almost a thing of the past when there are so many ‘easy’ answers available at the touch of a button.”

To reverse what she sees as a downward trend, Allen advises fellow educators to promote creativity and innovation by using “more hands-on projects like one sees in the workforce,” and not just something that can be put together “too easily” by the click of a computer button.

She would also advise teachers to be flexible in allowing students to indulge their creative impulses, especially when it comes to writing narratives or creative writing.

“I like for my students to imagine being in the time period we are studying to get a feel of what it would have been like to live in an age where one didn’t have everything instantly,” she says. “It is so hard for young students to imagine a life without computer access, but one can find print materials that can show them what life was like years ago without going to the extreme. I feel that students should use what they know and learn about to be creative in responses to essay questions. The hardest challenge now is to incorporate it in with the Common Core State Standards, which seem to filter creativity out of the picture.”

She adds, “Patience, and understanding where the learner is coming from, are two pluses for educators even though lesson planning and individual assessment are almost non-existent in the way teachers teach today. Take time to smell the roses, and don’t get so caught up in having to accomplish too much at the expense of a student’s understanding and creativity.”

When we asked Allen if she thought creativity could be measured, she said, “Creativity is measurable because students either have it or not. It can be cultivated with hands-on learning to the point where students can feel comfortable using the skills they have mastered. I feel it should be a routine part of assessment because sometimes words are not enough to get one’s point across.” Allen agrees that teachers have a responsibility when it comes to creativity education, but she also recognizes the influence of a young student’s home environment. This can later affect their learning in adulthood.

“Creative parents are a plus but not necessary for a student to be creative,” she says. “Parents should foster individuality and creative expression in each student’s sphere of understanding.” Academics have downplayed creativity for some time and will also be stifled when the Common Core State Standards come into play, she adds.

“Individualized learning should be taken into account instead of making every student proficient at test taking and ‘going by the rules.” ■

DANIEL WILLINGHAM

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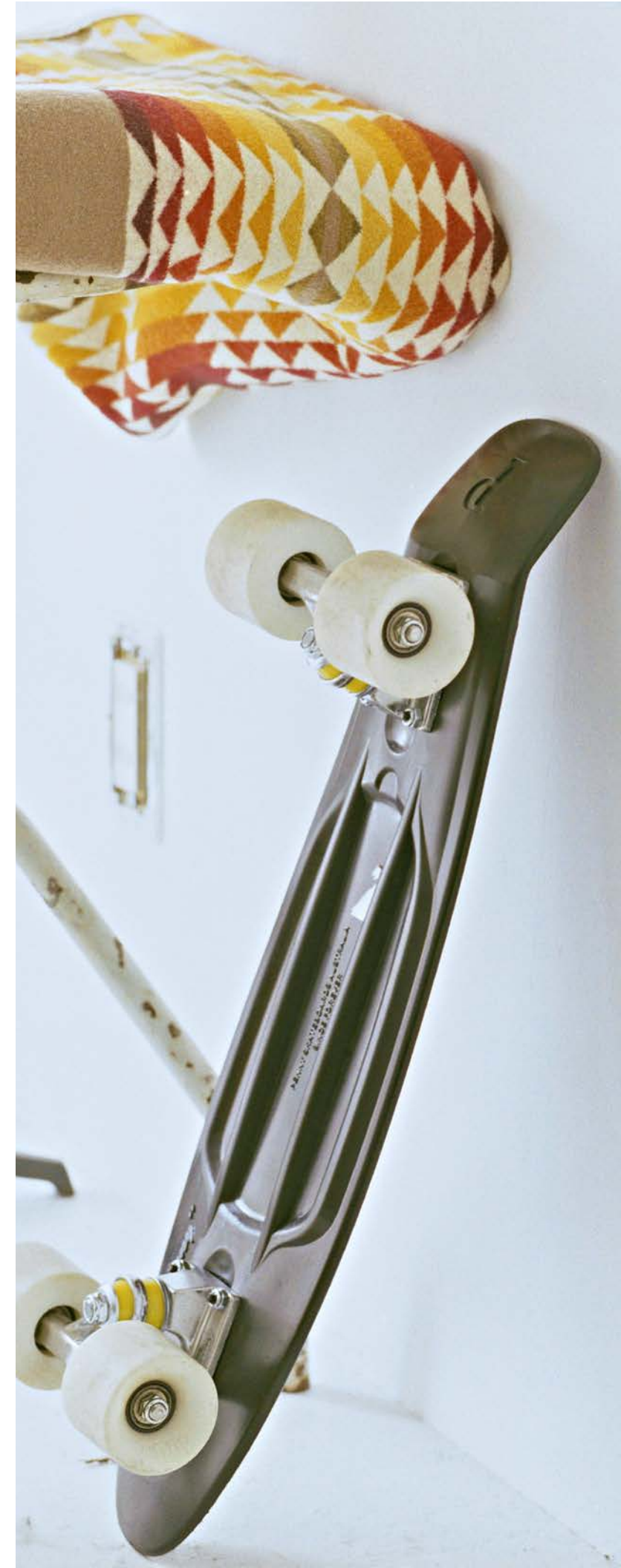
Daniel Willingham earned his B.A. from Duke University in 1983 and his Ph.D. in Cognitive Psychology from Harvard University in 1990. He is currently Professor of Psychology at the University of Virginia, where he has taught since 1992. Until about 2000, his research focused solely on the brain basis of learning and memory. Today, all of his research concerns the application of cognitive psychology to K-16 education. He writes the “Ask the Cognitive Scientist” column for American Educator magazine, and is an Associate Editor of Mind, Brain, and Education.

He is also the author of Why Don’t Students Like School? (Jossey-Bass) and When Can You Trust the Experts? (Jossey-Bass). His writing on education has been translated into eleven languages. You can read his Science and Education blog here.

When we asked Dr Willingham whether he thought creativity had declined in students across the globe, he said, “I don’t see any reason to draw that conclusion. I know that there was a recent report saying that students today are less creative, but I think measures of creativity are still pretty rough. I’m not persuaded that we can measure creativity with enough accuracy to make that judgment.”

Willingham doesn’t believe science will necessarily provide us with the secrets of fostering creativity any more than good teaching programs will, but he does think it’s especially crucial to promote “tasks that are open-ended, a spirit of playfulness and curiosity about ideas, and, most important, a sense that failure is normal and part of the learning process.”

To teachers he adds, “Make time for it because there are a lot of tasks in learning institutions



“Thinking that we can identify an array of these tasks--logical thinking, language, math, and others--that all depend mostly on one hemisphere seems a little far-fetched.”

Daniel Willingham

that don't lend themselves to a lot of creativity. That's probably appropriate. But you'll find more opportunities for creativity than you first think you will, if you're on the lookout!"

But Willingham acknowledges that, in principle, it's very hard for teachers to devote precious class time to indulging their students' creative impulses. "A student's creative impulse might inject a lot of excitement into a lesson, or it might send a lesson off the rails. It's very much up to the judgment of the teacher as to which it's likely to be."

A good influence at home makes a big difference, Willingham says, but he recognizes that not everybody has the time or know-how to help students thrive creatively. "I guess it depends on what one means by 'thrive.' I hate to think that teachers, professors or even parents would feel pressure to be creative or feel that they are failures! Understanding the importance of creative expression in students seems part of a larger attitude I associate with good parenting--namely, supporting the student, showing interest in his or her pursuits."

In 2010, Willingham wrote an article for The Washington Post about new research claiming that creativity is not especially a right-brain function. "In fact," he wrote, "two of three broad classes of creative thought that have been studied seem not to depend on a single set of brain structures."

"What we call 'creativity' is so diverse that it can't be localized in the brain very well," he explains. "In the usual mythology, the left hemisphere of the brain is logical, ordered, and analytic, and it supports reading, speech, math, and reasoning. The right hemisphere is more oriented towards feelings and emotions, spatial perception, and the arts, and is said to be more creative."

"We have known for at least 30 years that this characterization is incorrect. Thinking that we can identify an array of these tasks--logical thinking, language, math, and others--that all depend mostly on one hemisphere seems a little far-fetched. More to the point, we know it's inaccurate."

But Willingham says a majority of the population still finds the inaccurate, left brain/right brain theory— namely, that the right hemisphere of the brain is more responsible for creative thought than the left—so convenient that they can't let it go. This is especially true for teachers.

"This idea is used in education in two ways," Willingham says. "Sometimes the left brain/right brain distinction is offered as an account of differences in ability, much as in the casual (and harmless) way I described. But when offered as a more scientifically weighty theory, people start to call for university, school or college to be more 'right brain oriented.' Sometimes this call is pitched in terms of fairness; the right-brain students seem to be at unfair disadvantage."

Sometimes it's pitched as common sense: we're ignoring half of students' brains!

"Other people treat the left brain/right brain distinction not as a distinction of ability (what students are good at) but as a learning style (how students prefer to learn). Left-brain learners will understand a concept best by talking about it, for example, but right brain learners will want to draw a diagram."

This kind of misguided thinking can change not only the way teachers treat individual students but the way they operate entire classes. "In both cases," Willingham says, "prescriptions are given greater weight because of the apparent neuroscientific basis of the recommendations."

"Students who have trouble with reading, math and science are at a disadvantage at college or university', sounds obvious and unimpressive when compared to 'right brain dominant students are at a disadvantage at college or university'."

Willingham's work suggests that educators need to stop thinking of creativity in terms of a single, isolated part of the brain that some students have and others don't. Otherwise, we may actu-

ally have a "creativity crisis" on our hands, and teachers will be the ones to blame. ■

DARREN KUROPATWA

St. James-Assiniboia Division

Darren Kuropatwa is a Curriculum Coordinator for Digital Learning in the St. James-Assiniboia School Division in Winnipeg, Manitoba. For many years he taught mathematics and worked to employ technology into his lessons. Darren's blog, A Difference, documents not only his own keen insights into technology and learning, but also five years of interactive class blogs reflecting his students' views on their own learning experience.

Kuropatwa, for one, believes that creativity is alive and well, and that digital media has only helped it grow.

"No, I wouldn't agree that there is a decline in creativity. Human evolution doesn't happen that fast." He says technology has been key in narrowing the distance between purpose and play. We now live in a world where the same tools we use to create memes and update our friends on what we ate for dinner can also be used to benefit the greater good. "If you actually want to anecdotally look around the world today, you have people who start off with something like LOLCats and end up with Ushahidi. People create through play and then make a contribution."

Ushahidi, which is Swahili for "testimony" or "witness," is a non-profit software company that uses the concept of crowdsourcing for social activism and public accountability purposes. In 2007, in the aftermath of Kenya's disputed presidential election, the organization collected eyewitness reports of violence sent in by text or e-mail and placed them on Google Maps. Ushahidi was also used to benefit victims of the 2010 earthquakes in Haiti and Chile.

True, there are fewer people developing resources like Ushahidi than using them, Kuropatwa

says, but at least those people who are making them are creating something. And the same goes for people who create LOLCats.

Obviously, not everything people create is useful, funny, or even trustworthy. But what's less obvious, and what Kuropatwa calls a crucial part of modern literacy, is that, "in order to be critical consumers of media, students need to know how to create it as well."

Kuropatwa told us a story about an email he received a few years back, informing him that, according to an online education database, his blog was among the top 100 education blogs on the web. After a little research, he found out that the claim was only one person's opinion and the database was really a marketing website to try to attract more traffic.

This is the kind of thing students need to protect themselves against, he says. "You have to know how a message is put together and conveyed, how to filter information and read the grammar of the internet." The best way to understand how any tool works, of course, is to use it yourself." That's why Kuropatwa helps learning institutions implement digital technology into their classrooms and lecture rooms. As new tools are used, creativity can flourish in unforeseen ways. Creativity had big place in his own classroom when he was teaching math. For one assignment, Kuropatwa had his students use Flickr hotspots to take pictures of everyday objects—window curtains, a slice of pizza, a bouquet of flowers— and chart the trigonometry of the objects' planes and curves.

For another project, Kuropatwa asked his students to create six original math problems over the course of a semester.

The result, he said, was that students recalled their lessons much better once test time rolled around. Creating math helped them retain it. As far as measuring creativity is concerned, Kuropatwa says, "What we value, we measure. But lots of things we value can't be measured." Creativity may be one of those things. In his own classes, Kuropatwa assigned bonus points for

creative projects. His students supported him in this decision, agreeing that, since it can't easily be measured, creativity should only be a small part of overall assessment.

Kuropatwa firmly believes that you can't measure creativity on a black-or-white, have-it-or-don't scale.

"We don't have to foster creativity, we have to allow it," he says, suggesting that perhaps the data showing a decline in creativity is skewed since creativity is difficult to measure in a standardized fashion in the first place.

The "crisis," he says, is the growing acceptance of a paradigm that treats creativity like a skill. "Just because there's an area in which you don't excel doesn't mean you're not creative. We're creative in our own ways."

Measuring creativity accurately is tricky, if not impossible. Surely standardized tests are not the answer. But perhaps we shouldn't worry about measuring it, for now. Creativity is recognizable; we know it when we see it. So how do we "allow" it?

"Every teacher should see their classroom as an excellence incubator," says Kuropatwa. "The job of an educator is to help students get from where they are to where they want to be." Creativity will follow. ■

DAVID WARLICK

2 Cents

David Warlick blogs on his site 2 Cents, a platform devoted to sharing ideas and new concepts in education. Recently, David said, "Every year, there are fewer teachers who have known the experience of confidently entering their classrooms with creativity, passion and the freedom to replace their textbooks with learning experiences that are unique, personal, powerful and authentic."

Does he believe the classrooms of 2013 are be-

coming too prohibitive and strict because of the pressures of preparing students for 'high stakes' tests?

David has strong feelings on the matter. "With scattered exceptions, teachers in my country are no longer encouraged to be creative, and in instances creativity is discouraged – and this is largely the result of an accountability system based on high-stakes testing. For years, scientific research-based teaching strategies were coin of the realm, where teachers had to be able to point to research findings that supported the learning activities that their students were engaged in."

So, has this lead to a lack of creativity in the classroom, or less of a focus on creative activities? David mentions that, "There have been teachers who have devised creative ways to improve their students' test performances, but where is the inducement to imaginatively accomplish the goals set by unimaginative people?" Are some creative teachers being "punished" for thinking outside the square? David believes that this certainly does happen from time to time.

"I know of teachers who have been urged by administrators to scale back their creative practices because other teachers were complaining. That's rare, but it does happen."

David is highly passionate about new technology in the classroom, saying in a recent blog post, "I think that our students have every right to expect that their teachers will teach more from today's information landscape." (You also said) "Current students grew up with computers and the internet. They become so accomplished with these tools because it's play for them." So, what difference does he perceive in the way teachers and students are viewing technology for learning?

David says, "It's a good question. However, I

think it would be fairer to characterize the perceptions of a rising education technology industry that seeks to use computers to automate schooling. The primary focus is data, generated by students' performance and used to refine teaching strategies. In and of itself, this is not a bad thing. I mean it's what teachers have been doing for decades. But just because computers can do it faster and more comprehensively, does not mean that it is the best use of the machines. "Our students use technology to empower themselves, to extend their presence and perception beyond the world that they can see and touch. We've always want that. It's why children pretend. It enables them to form community and empowers them to work playfully. I've watched my children play their video games and to me, it looks like work!"

So is this becoming second-nature for the younger generation? David is really not so sure, quoting a Marc Prensky (an American writer and speaker specializing in learning and education) piece from 2001 called Digital Immigrants and Digital Natives.

David says, "It was a useful observation at the time. But I believe that using the technologies at hand are second-nature to all of us, regardless of age. As adults have had more access to computers and the internet, and especially with the advent of touch-sensitive tech like iPhones and iPads, we have devised incredibly creative ways of using them to accomplish our goals.

"These new technologies have threatened many people of my generation (I'm 61). It is because of the uncertainty that they imply about our future, and there is truth in this. However, what a future of uncertainty brings is a future of opportunity. I am increasingly replacing phrases like 'the 21st century' and 'the digital age' with 'The Age of Opportunities'.

So, should teachers be using technology in more creative and unconventional ways to teach conventional and core subjects? David thinks they should.

"Yes! But (and this may surprise you) part of

the problem are the conventional/core subjects. In my years, there is one thing that I am certain about, that we are living in a time of rapid change. When so much around us is changing, what our students are taught becomes less important, because the answers to the test questions are changing. It's 'how' they are taught that has become important – or more to the point, "how they are learning to teach themselves" that is important.

"A time of rapid change necessitates what I call a 'learning lifestyle'. Higher learning should be focused on helping students learn to be tenacious and resourceful learners. In fact, I am also increasingly replacing the term 'literacy' with 'learning-literacies'."

David recently expanded on a concept mentioned by blogger Carla Beard, stating that, "The most important thing to remember about technology in our classrooms is that it's not about the technology". David recently asked teachers to supply the answer to the question, "What is it about?" He received some very interesting replies from his audience of teachers and educators.

He says, "Most frequently I hear that it's about the learning or it's about the students. I would agree with both. But I suspect that when they say that, "It's about the learning," they are referring to what they are learning, not how they are learning.

"I believe that it should be about how they are learning and what they are learning to do with what they are learning. Rigour is an adverb that is used quite often in the U.S. to describe where teaching needs to be going. But what is meant is that our students need to be learning more stuff. To me, rigour is not how much they are learning, but what they can do with what they are learning.

There has been some interest worldwide with making class times less structured and more responsive to creative opportunities. Does David think that class time should be more responsive to those moments when students may get a creative urge?

David agrees that this could be a good idea. He says, "I believe that class time should be more conducive to the 'creative urge', not just responsive to it. Creativity should be an integral part of what makes the class work, not just an unpredictable by-product. Students are rarely shown novelty and even more rarely invited to play with it. Teaching should become more playful." It's thought that creative people have a tendency to over-react to stimulation. Does David agree? If so, has he noticed this in students of various ages?

"I am not sure what is meant by "over-react" or "over-reactive." Sounds like A.D.H.D. to me," says David. "As an adult who has been clinically diagnosed with Attention Deficit Disorder (not hyperactive), I believe that what many see in me, that looks to them like creativity, is simply the highly random way that my mind works. I come at things from a different direction, because nothing lines up on my brain. Does that make sense?"

How essential is it for students to have creative parents in order to thrive? Or at least parents who understand the importance of creative expression?

"Wow!" exclaims David, "That's a tough one. Personally, I do not like our reliance on the term, creativity. Too many people think about art and music when they see or hear the term. I prefer to talk about inventive or resourceful strategies for accomplishing a goal."

"That said, I do believe that we come to be creative by being around other creative people. It's why I think it is so important that teachers be given permission to be creative and encouraged to make mistakes. The best teaching might happen when the teacher says, "I made a mistake yesterday and this is what I learned from it."

There has been some reporting that negative early experiences in childhood can stunt creativ-

ity. David has a few ideas on how creativity be encouraged in a student that is displaying this sort of impingement. He says, "...we learned to be creative in the sandbox, and that our formal learning environments should come to have the qualities of a sandbox. It should be a place that the learner has a certainly amount of control over, and that control empowers them to do things that are bigger than they are."

A recent statistic indicated that 78 per cent of people say that creativity is very important to their careers, but only 57 per cent thought so when they were in college or university. Does David believe that creativity has been under-valued in the past, with a focus on academic performance over creative achievements?

He says, yes, "Academic performance is considered more highly than creative achievements. But some colleges and universities are starting rethink their purpose and practices. There is a much lauded list of eight hundred colleges and universities (all appear to be US) that no longer require S.A.T. or A.C.T. test scores for admittance. There are schools of design and engineering that are taking on a studio approach to learning in contrast to their old classroom lecture models."

"But much of this comes from our notions of what teaching is and what a teacher does. Teachers believe that they are content experts, and that their job is to effectively convey their expertise to their students. Anything other than that, and they are not doing their jobs. I recently saw a keynote address where the speaker (Superintendent of Philadelphia Public Schools) said that we do not need content specialists today nearly as much as we need context specialists."

David has a very novel way of kicking off his talks. He explains, "I always begin my presentations these days by sharing something that I didn't know yesterday. I try to help teacher come to believe that they should become master learners." ■



“There is a tangible malaise in colleges, schools and universities, too. So much angst. It’s like everyone has to be there and no one wants to be.”

Dawn Hogue

DAWN HOGUE

The Polliwog Journal

Dawn Hogue runs The Polliwog Journal, a blog about teaching English and integrating technology into the classroom. She taught English from 1990 to 2011 and instructed students in a nationally recognized web-based English class called CyberEnglish for eleven years. The goal of The Polliwog Journal is to help educators embrace technology in their places of learning.

Based on her teaching experience, Hogue cites a number of factors that she says detract from creative learning in today’s learning institutions: standardization, fear of trying new things, budget cuts eliminating talented-and-gifted programs and extracurricular clubs; lack of vision and leadership at the district or institutional level; and poor teacher training. She even goes so far as to suggest there may be a creativity crisis among teachers, not just students, mentioning several teachers she had in the 1970s who were far more creative than her contemporary colleagues.

Also, she says, “there is a tangible malaise in colleges, schools and universities, too. So much angst. It’s like everyone has to be there and no one wants to be.”

Hogue does not consider technology a hindrance to creativity; in fact, she has spent her career proving otherwise.

“In my classroom, having one-to-one access to the internet and to creation tools (photo editor, web and blog editors, all the Web 2.0 tools) was a big deal,” she says. “I tried to engineer projects where students were not only free to explore ideas but also to express their knowledge in creative ways. Not everyone did the same assignment. It was fun for students to realize that what they were learning/creating was going to look different from peers.

“That process creates a sense of ownership that teachers don’t often see. If I’m researching something I’m passionate about and using my talents

to create something I’ll publish on the web for the world to see, I’m going to care a lot more about that than I will care about my answers to ten questions about a story.”

During many of her classes, Hogue required students to publish their work online, an unintended result of which, she says, was that they were “providing models of excellence for each other.” “I’d hear things like, ‘Wow. That’s cool. I didn’t know you could do that.’ They would get creative ideas from each other in that way. It wasn’t my job as the teacher to suggest all the ways they could learn or show their learning.”

As for tools like Google, which some educators say stifle curiosity; Hogue says that if an answer can be arrived at so easily, the students are asking the wrong questions.

Hogue is a big believer in trying new things, and believes some level of fearlessness is crucial if educators want to inspire creativity in their students.

“Toss out the textbook!” she says. “Toss out the “one size fits all” standards movement. Allow—no, not allow, expect students to choose the topics for their own learning. What is it you want to know? How will you learn? Not everyone needs to be learning the same thing, reading the same books, or creating the same product or evidence that they have learned. It takes confident teachers secure in their role as coach/facilitator working in environments where administrators are progressive and truly interested in fostering a lively learning environment.”

In addition, Hogue says she thinks class time should be more open and less teacher-directed. “If classrooms were more relaxed places where students were engaged in long term project-based learning, there would naturally be time for inspiration to both happen and for students to act on the impulse.”

But many of the teachers Hogue knew during her career either didn’t share her attitude or couldn’t seem to rise above their reservations. “Too many teachers and administrators are

weighed down by the yoke of political influence,” she notes. “It takes educational anarchy to push out of the box these days, and it may simply be easier to do what one is told. I have known many teachers who are afraid to try something new. Some feel their jobs are at risk. Others just think trying something new/different will be too much work and they feel overworked as it is.”

Even if all teachers did have the confidence, and were prepared to try new things, how would they measure students’ creative progress?

“I think you can see creativity in action. When a student (anyone) presents an idea or a point of view so uncommon or new that it turns heads, that’s evidence of creative thinking. I imagine there is no accurate rubric or measurement tool for creativity. Plus, what’s creative and what’s not is somewhat subjective, so I would hate for it to be too entrenched in standard assessment. I’ve seen rubrics that refer to things like ‘uses creative approach’ or ‘shows divergent thinking,’ but I’m not sure those markers are meaningful.”

As far as challenges are concerned, Hogue is aware of many, including the influence of a student’s home environment on his or her creative potential.

“We’ve all known students who seem to defy their genetic material; that is, they seem alien in their own homes. Some people will thrive no matter what. But environment is HUGE, at a place of learning and at home. Parents who allow messy exploration and encourage unstructured play will probably help their children’s creative instincts – this later influences adult learners. But students won’t thrive alone. Educators might need help with techniques to help their students develop creative thinking and expression. A house with no art or building materials, for example, isn’t going to help.

“To encourage students impacted by negative experiences, places of learning should establish

safe, positive, playful environments that stimulate native desire. A lot of the work would be in mending broken trust and building self-esteem.” Another challenge lies in society’s attitude toward creativity in general.

“Most of the college and university students I’ve known are overly concerned with earning a grade and subsequently their diploma so they can get a job and make money. That is probably the message they get from their parents, too. In that case, thinking of a place of learning as a primarily creative environment won’t happen.”

There are few colleges and other institutions where creativity is valued over the acquisition of knowledge, she says, but now, with the Common Core Standards in place, “the scope of what is achievable in a classroom will likely be diminished. It’s not a good time for creative students.” Still, Hogue’s optimism rises to the top of every issue, especially when it comes to the role of digital platforms in saving creativity.

“In my teaching career, creativity was valued only if the idea could be implemented without adding to the district’s budget. Or there were times when we’d get the message to ‘create, be risky, explore,’ but it ended up being only lip service (a checkmark on a principal’s to-do list, perhaps). Without administrative backing, teachers can only go so far.”

Despite the constraints imposed by administration, Hogue says, it was the online community she turned to that ultimately renewed her hope. “When I began blogging about teaching and learning, I realized that what I did in my classroom resonated with other teachers. I started getting comments and other feedback from readers, and I saw that blogging was more than personal reflection. It was a public conversation, an alive thing that helped everyone see what teaching could be.”

Teachers could learn from each other. By engaging in online communities, the uninspired or misguided could connect with the energized and creative, and in that way “mitigate the impact of a stifling local environment.”

“I’m not sure that it’s a creative thing to publish one’s writing in a blog, but the process of sharing what we know adds to that public conversation and gives us a foundation for doing creative things.”

Creative teaching not only benefits students but rejuvenates educators as well, in turn benefitting students further.

“I have always said that what I love most about teaching is that it allows me to be creative. It’s so energizing to invent a new project-based unit that integrates a variety of learning levels and offers students a huge range of choices,” says Hogue.

“Not only is it a kind of malpractice to use an old unit over and over again,” she adds, “but teachers who fail to re-imagine their lessons and methods from year to year are stifling their own creative faculties.” ■

EDNA SACKSON

What Ed Said

Edna Sackson is a Teaching and Learning Coordinator at an IB PYP school in Melbourne, Australia. She is an E-mediator for the SOLEs and SOMEs project, interacting with students in disadvantaged settings in India. As well as this, Edna is the co-organizer and initiator of #pyp-chat, a fortnightly global Twitter discussion for PYP teachers. She is a consultant, workshop facilitator and presenter on inquiry learning, global connectedness, promoting creativity, integrating technology, concept-driven learning as well as learning principles.

Does Edna think that class time should be more responsive to moments when students may get a creative urge? Edna says that she does think so. “I’ve surveyed students to ask them what conditions encourage their creativity,” she says. “A surprising number said they have creative ideas when they are bored in class! I think the best learning conditions are when students have ownership of the learning. The more students

are encouraged to lead their learning, the more opportunities for creativity. I don’t see creativity as something teachers should try and control. It’s more about giving learners time, space, encouragement, opportunity... and letting them fly.”

The video What is Creativity? is uploaded onto Edna’s blog What Ed Said. She has written several posts on this topic, including 10 ways to give students control and 10 ways to encourage students to take responsibility for their learning. Edna also recently posted on the topic of “provoking curiosity”.

Does she feel that curiosity feeds a student’s learning? Can curiosity be provoked by creative exercises? For example, creative games as opposed to book-learning?

“Curiosity feeds everyone’s learning,” says Edna, “so we need to find exciting and engaging ways to provoke curiosity. I don’t think ‘exercises’ are the way to do this, rather authentic, real life, complex issues, situations and experiences. I’m a proponent of inquiry learning, where students are encouraged to question, wonder, explore, experiment, find and solve problems. It comes back to student ownership again. I am a fan of Project Zero’s Visible Thinking strategies to promoting a culture of thinking in the learning space. Once learners are aware of thinking, what it is, how it works and how to make it visible, it becomes a habit.”

Another of Edna’s recent posts demonstrated students in Australia connecting with students in India via Skype. The post mentioned that they connected especially via music (in this case, a shared love of international artist Shakira!) Does Edna believe that teachers need to come up with more creative ideas like this to connect their classrooms with the world?

“That was a wonderful interaction and some of the students involved still connect via Facebook



“That was a wonderful interaction and some of the students involved still connect via Facebook several years later. The kids’ reflections here say it all! ”

Edna Sackson

several years later. The kids' reflections here say it all! Recently we had a group of younger students Skype with kids in Japan to inquire into inter-connectedness for a geoliteracy unit. When the teacher stepped back, they too connected through music and did a Gangnam dance together!"

Edna continues, "Taking learning beyond the classroom makes it engaging, purposeful and real and provides opportunities for all the so called 21st century skills, for example collaboration, creativity, communication, self direction, problem solving, global awareness."

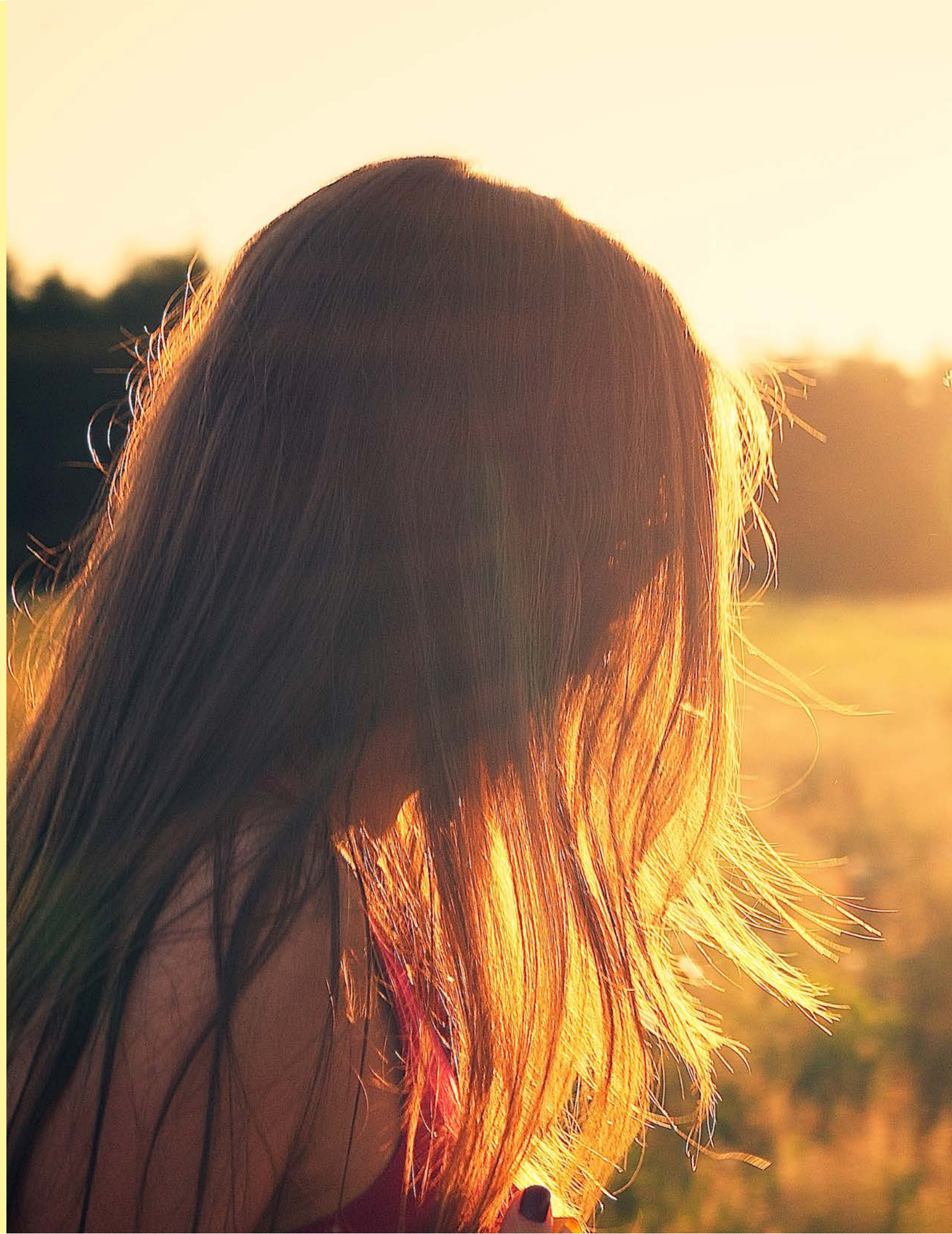
Does Edna believe that creativity has been under-valued in the past, with a focus on academic performance over creative achievements? More importantly, does she think this attitude is shifting?

"It's definitely undervalued," says Edna.

"My daughter is incredibly creative, but most of her high school years were less than pleasurable as she struggled to fit in with the expectations of the school system."

"I don't have recent experience of university, but it doesn't seem to be a context where creativity is encouraged to flourish. Especially in those large undergrad classes where students are expected to largely listen passively, work through excessive amounts of prescribed reading, then sit an exam at the end, with no space for creative thought (or authentic learning.) No matter how much it is shifting in primary and middle schools (and it is!), the higher end still seems to be less about creativity and more about compliance to achieve grades."

She continues, "A teacher I know told me he struggled to get students thinking creatively because they continually worried about what was in the exam. One student complained about



this teacher because he tried to engage his class in creative thinking instead of focusing on exam prep!"

What are the top 'technology' tools that Edna could recommend to a teacher who might be unsure of how to integrate more creativity into their classrooms?

"Social media," is Edna's simple answer. She jokes, "Can I say social media three times?" "I've learned more through blogs, Skype and Twitter (and as a result found more triggers, ideas and opportunities for innovation and creativity) in the last five years than through other means in the preceding 25 as an educator. Why is it not the same for our learners? Here are some students' reflections on the benefits of blogging, for instance."

Recently Edna wrote a post on learning as an adult. Does she believe that adult learners are different from young learners?

"Not in my experience," says Edna. "These days I work more with adults than with kids. Common misconceptions about how kids learn make people think that adults learn differently. In most cases, the old style, conventional model of school does not promote the best learning. (I'm back to more ownership again.) Once you crystallize your beliefs about how real learning takes place, you find there's not much difference between the desired conditions for young and older learners!"

Geraldine Smythe

Culturebooster

Geraldine Smythe is the former owner and operator of an art school called Abrakadoodle. Now she is focusing on a program called culturebooster, a curriculum and integrated crowdfunding platform with a back end suite of teacher tools to teach business and career skills to various students in different age categories.

A high achiever, passionate about getting tools to other teachers, Geraldine is now getting ready

to publish a report called “Failing Fast: the key to cultivating a 100% captivated classroom” which aims to keep creative skills at the forefront for helping students to learn to generate skills that will serve them for a lifetime, in the face of changing job and technology opportunities. Geraldine has spent a lot of time thinking about how creativity impacts the classroom, so does she think that class time should be more responsive to when students get a creative urge?

“Yes,” says Geraldine, “but not in the traditional classroom and that’s what’s really the problem I think right now there is a revolution going on (at least in the US) in terms of ‘how teaching should happen’ we are definitely trying to be at the forefront of that. We spent the last seven years delivering curriculums to students and seeing how that works in our classes. There is a structure to it that is enquiry-driven and right now the primary structure really is more of a lecture-based classroom. I think that’s a big problem.”

This teacher is not a huge fan of immovable lesson plans either. She says, “With a lecture-based, pre-distilled lesson plan the teachers feels they need to ‘get out’ information to the students. They have a rigid outlook on how their time is structured and they don’t allow for a lot of creative output, or any input for that matter; it’s really just a ‘broadcast’.”

Geraldine’s current program is called Boosting Creative Communities Using Innovative Educational Tools. Previously she worked on a program called Abrakadoodle which provided art classes as a secondary program to learning institutions. This allowed her to be a guest (a contractor) at several places of learning where she was able to watch how the employed teachers engaged their classes, and also how the administrators expected them to behave.

She explains, “Even at the earliest level, teachers were coming in, having planned a lesson, and wanting to ‘tell the lesson’ to the students. The teachers who were more playful and more creative did much better with the students, and that’s because they were more in line with how students really learn – in other words, students

really learn by asking questions and by interjecting. It is very easy to get off topic, so it is important to have a certain structure, a classroom flow that will be successful for an enquiry-driven classroom.

“I do think it’s incredibly important that there’s more time allowed for creative thought than the current teaching method allows. Our current teaching method is in line with the ‘broadcast’ method of communicating information that the baby boomers grew up with. They grew up with information being broadcast to them by a ‘boob tube’ and they simply had to absorb it, not being able to react back to it. Now we are in this age of the internet where you do interact with it, and lots of our classrooms haven’t kept up with this.” Geraldine mentions a few apps that she finds useful that might be resources that other teachers might enjoy using. “A current program I speak about is called culturebooster. It is all about providing a free curriculum for the teachers to help them give real world job skills to students by giving them a classroom structure where they can talk about and work on projects that are going to directly benefit their community. This program is a platform, but has a backend suite of teacher tools too. This is a great way for teachers to get business education and project management education into their classrooms.

“In terms of other useful programs, we tend to use a lot of the Google suites. Our team is all over the country and we work together through Google Hangout we use Google Drive to share our documents and to edit them, both on the marketing side and the curriculum side. We also use the Google calendar-sync when we are going to have meetings. So we find these very effective tools.

Geraldine mentions that there are so many new tools being created every month that teachers might be able to utilise and share.

“Another tool that I particularly love as a teacher who likes to put my thoughts into place and

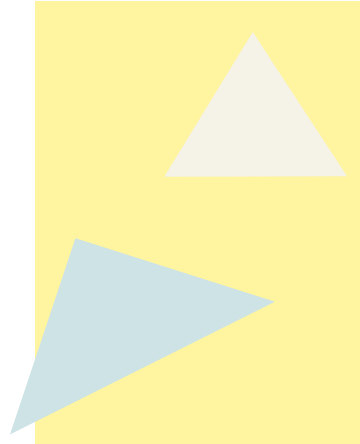
that’s Evernote. There are veracious levels of user-ship from free through to paid, I use it as a free application on my Android phone (again, I have a Google-based smartphone that syncs everything) so Evernote is a really great way for me to be able to collect thoughts when I’m ‘on the fly’. It acts like a little dictation machine or it can capture pictures, so if I see something that might be useful to help teach a concept to somebody I can snap a shot and then edit it with a caption and notes. I can even record lectures and conferences on Evernote and type notes in business meetings.”

Geraldine continues, “A tool which takes things one layer deeper would be Dragon Naturally Speaking. It’s a learning curve to get it to work well, and in the US it cost about \$60 to get a home edition and I use it to write all our reports and books. Over time, it trains to your voice so it starts typing things according to context, so it gets used to the ways that you speak as well – not just the individual words. It will even put your words into proper sentences for you.”

“There’s something about seeing things in writing which makes things feel a bit more ‘real’ so when you are ‘talking your thoughts out’ it suddenly starts to feel a bit more important. This makes you think more carefully about how you put your thoughts together. The program also allows you to edit on the fly – it’s a very quick way to gather high-quality written materials. Teachers could use it for simple, one sheet lesson plans, or for putting together reports. People even use it for their email responses! It’s not free, but I highly recommend it.”

Project-based learning is a buzz-phrase that is being discussed in many online (and other) forums. Geraldine has some ideas about this trend, moving forward.

She explains, “Project-based learning is all about experimenting. We are in this interactive world now and things have sped up so much because people are now able to get immediate feedback. In the classroom a student will write a paper, hand it in by the deadline and then it’s the weekend. The student might have other thoughts



“That was a wonderful interaction and some of the students involved still connect via Facebook several years later. The kids’ reflections here say it all! ”

Geraldine Smythe

“The thing about project-based learning is that the student is learning in real time. If they attempt to do something and it doesn’t stick and nobody is interested in it (such as in the business world) that is very real, very immediate feedback. This says to the student, “something didn’t work.”

Geraldine Smythe

about that paper that they want to add, but can’t, because the deadline has now passed.

“If the student had the chance to have a discussion with their teacher about the paper to gain their perspective on certain sections, it would probably not be for a week, or even longer! By then, it was usually just an arbitrary grade the student would get back, with maybe only one or two sentences of commenting here and there. This was not a particularly effective way of learning because the student was in the moment when they were writing the paper, and quick feedback would have been more helpful to their learning process. That way, the student can more quickly assess whether their thinking is clear or accurate or inaccurate.

“The thing about project-based learning is that the student is learning in real time. If they attempt to do something and it doesn’t stick and nobody is interested in it (such as in the business world) that is very real, very immediate feedback. This says to the student, “something didn’t work”.

The student then has to go back to the drawing board to figure something else out. It might just be that the product is fine, but the business forgot to tell people about it, or they didn’t get it out to enough people. Or maybe they didn’t get the product out to the right people. Project-based learning allows the student to go back and identify the exact spots where the problems lie and isolate where they think they have failed. Based on this immediate feedback, the student can quickly improve what their actions are.

“That ability to experiment is so far removed from today’s classroom it’s depressing. Right now in the US there is this horrible trend of ‘teaching to the test’ – it’s all about making sure students get the right answer but in the real world, there are multiple right answers. It’s a very different thing to be prepared and achieve an ‘A’ in a classroom than it is to be prepared and hit a home run with a product in the marketplace.

We are training people in learning environments to do the opposite of what is actually needed in the marketplace, so the result is that we are get-

ting a huge disconnect with students coming out of college or university and not having the right skills to be able to perform in the real world, in the jobs that they would really like to be in.” Geraldine is very armament on one thing. She says, “It is extremely important to be able to experiment and teaching to a test is reducing students to ‘one answer’ rather than allowing them to experiment.” Geraldine was one of the co-founders of a project called Failing Fast, a system that aims to give teachers the responsibility to make sure their students are given every possible chance to succeed in this rapidly evolving culture of technology and change.

This teacher mentions how she used to express her creativity as a child. She says, “I used to love playing dress ups and role playing! I didn’t know that’s what it was called at the time, of course. I really enjoyed the theatre of it.” So have times changed? With the focus on technology and social media now, are we failing our kids in terms of basic creative pursuits?

Geraldine says maybe. “It’s even more fundamental than that. Students are not allowed to ‘play’ anymore. They are ‘scheduled’ to play. That doesn’t help; that’s an adult schedule. Scheduling play-dates, scheduling piano lessons or painting after school, or French classes – there’s no open play time! I know that in our neighbourhood seven years ago, we moved specifically thinking that there would be a lot of kids there. As it turns out, there are only two other children living in the area who are allowed to go ‘out and about’. It seems to me that all the other parents in the area are freaked out by having their kids outdoors and playing.”

Child learners grow up to be adult students, but many adults feel that children today may have less avenue than ever to express themselves the way they did decades ago.

“When I was a kid, we used to go out in gangs!

There would be 15 or 20 of us and sometimes we’d spilt up into two groups because somebody didn’t want to play ‘cops and robbers’ and somebody else didn’t want to play ‘Charlie’s Angels’ or whatever the game was at the time. So one group would go off and do its own thing. We had so much playtime! We had hours and hours of dress ups and role playing with all of the other kids who lived in the neighbourhood. Everybody was outside, and now I can see none of that going on. I live in Texas and it’s hot, so people can be outside but every parent is very worried about safety. I feel this is an adult-driven thing, not a kid-driven thing. How do the restrictions placed on contemporary (Gen Z) children affect them as they grow into adult learners?

“The kids are still kids. I think they have been relegated to smaller, indoor spaces and so now as a result the most entertaining thing they come across is the computer. So, it becomes a real effort to get them off the computer. Our son loves his computer and we are constantly trying to get him to do other, more physical things and to get outside and play with his friends. It is tough. I feel it’s a societal thing at this point, everybody is a bit over-sensitive to this sort of stuff.” So does Geraldine believe that it’s important for creative students to have creative experiences early in life in order to express their talents properly and to thrive?

“Personally, I don’t think it’s essential that parents be creative but I definitely think it’s important that they understand that it’s really more about them having a respect for the different personalities that students can have. So, as long as they give their students space to be able to have some free time to ‘play’ (whether adults or children) and are open-minded about letting their students take that ‘play’ to its natural end. I think that’s far more important than the parents being creative themselves. I think that everybody is creative in their own way. Some people might think “I am not creative” because they think that ‘creativity’ is being able to paint, or something very narrow.”

Geraldine continues, “However, creativity can

come in so many forms. It could mean great communications skills with people, but perhaps that person may not be able to draw a picture. Creativity comes in loads of different forms. Teachers just really need to be conscious of the differences in their students' personalities and to know that their students are individuals. Teachers just need to give their students the space to express that." ■

James Catterall CRoC blog

James Catterall is Professor Emeritus of UCLA's Education Department. He has a Ph.D. in Education Policy Analysis from Stanford University and co-manages the Centers for Research on Creativity (CRoC) project with Professor Anne Bamford and runs the CRoC blog. His research interests include arts and human development; arts and neuroscience; evaluation of the arts, especially in joining the visual and performance arts with academic subjects; education policy implementation; and issues related to children at risk of school failure. Catterall is also an expert in creativity in science learning and STEM programs. In response to our question about the "creativity crisis," Catterall said his own research hasn't reflected such a phenomenon.

"We don't know whether such a decline has occurred through any research evidence. The relevant teaching population [my team] might study is 50 million in any teaching year - even more if change over time is the focus. The sampling would be herculean. That would be way beyond NAEP sampling and the efforts of NORC for NELS, ELS, and other national surveys that probe up to 25,000 students.

"However, what the learning institutions are demanding in the way of language arts and mathematics proficiency as measured by standardized tests is not promising for creative thinking nor includes any measures of the same. This suggests that responsive teachers would not want to waste much time on creative elements within their subjects. Their institutions' test scores

could suffer, and in the post- NCLB era, their teaching evaluations and job security would also suffer.

"The new Common Core standards pay at least lip service to critical and possibly creative thinking. Whether or not these will be measured in tests that map to the CC standards remains to be seen. Don't hold your breath."

Catterall has a few ideas on how teachers can foster creativity in their students.

"First, I'd say doing this well would be very worthwhile. Second, I'd say that students simply like to be creative and are creative in many ways much of the time. In a learning environment, students benefit from reasons to be creative (for example, encouragement by teachers) and opportunities to be creative (for example, being allowed time during instruction to explore ideas and make connections to what they are learning).

"I use the terms Means, Motive, and Opportunity when it comes to spawning more creative thinking in a classroom or lecture hall. The means for being creative can be as little as one's mind, but it also includes tools and workspaces. Motivation can be simple intrinsic, natural curiosity, or chances to perform, and various extrinsic rewards, such as winning a design competition or earning high marks in chemistry. And as for opportunity? Space and time to play."

Catterall would also advise educators to spend time being more responsive to moments when students may get creative urges.

"Creative thoughts often come from novel associations. We are making associations to language, events, people, and things in our environment all the time. Most of these are subconscious. They depend on awareness, understandings, and to great degree, on behind the scenes connecting. Prompting for associations through instructional designs is important, and at the same time difficult, for teachers who are held accountable for

language and math test scores. And on tests that don't reward creative thinking much."

He adds, "Creative students can disrupt instruction in classrooms because they inject ideas that teachers have not anticipated, and that prompt events that interfere with curriculum coverage plans. But often, creative students (in turn) stimulate their classmates (and we hope their teachers) in positive ways, and teachers could take advantage of this."

Catterall also believes in the importance of recognizing all types and levels of creativity in the classroom. In his new book, *The Creativity Playbook: A Guide to our Creativity Debates*, contains 29 short chapters, or briefings, on topics that are in active circulation these days. "An important point I make in the book is that focusing on extraordinary creativity (Leonardo Da Vinci, Steve Jobs, the inventors of the Swiffer or Post-it) blinds us to the creativity so important to all of us in our regular lives. And where technological invention is concerned, we would best focus on our using technologies in creative ways, no so much on inventing the next block-buster gizmo. Billions participate in the first, a thousand in the second."

When we asked Catterall how he and his team measure creativity, he said, "Creativity is defined in different ways by different people, which presents issues for those who want to measure creativity in any global sense. But underlying most definitions is the idea that creativity involves the production of novel ideas and designs that have some value.

"Our work starts with basic cognitive development that benefits from hatching ideas that contribute to learning -- therefore ideas novel and valuable at a personal level. Individual capacity and motivation for coming up with novel ideas that have value is measurable, although measures in one domain may or not predict creative tendencies in another.

"The standard traditional instrument that goes after creative thinking skills is the Torrance Test of Creative Thinking, which appeared in 1964. It



“First,” he says, “we are bombarded with technologies that do both mundane and important things in our lives. And they keep coming, like brooms attacking the Sorcerer’s apprentice.”

James Catterall

relies mainly on subjects’ answers to questions probing their self-beliefs about the fluency and originality of their thinking, and the flexibility of their approaches to problem solving. Measures on the resulting scales have been tested for external validity with positive results, but quite some time ago and with few actual studies.

“The Next Generation Creativity Survey (Centers for Research on Creativity, Los Angeles and London U.K. www.croc-lab.org) builds on the Torrance Test to add performance on actual creative tasks -- not just self reports, and enlists humans to score students’ creative products. The NGCS also measures motivation and attitudes related to creativity; creative self-efficacy, collaboration skills, empathy orientations. The Walt Disney Company commissioned us to create the survey (or test) and we piloted it during 2012-2013 with about 1,200 students in 9 programs across the nation - in art, science, graphic design, theatre, musical theatre, makers programs, and even an elementary school leadership program. Results are beginning to tumble out, and we’ll post updates on the CROc website.”

We then asked Catterall what factors he thought contributed to creativity or stifled it. As far as technology is concerned, he says there are two main relationships between technology and creative development in children and youth.

“First,” he says, “we are bombarded with technologies that do both mundane and important things in our lives. And they keep coming, like brooms attacking the Sorcerer’s apprentice. So a vision emerges -- we may all aspire to dream up, build, and market the next technologies that will keep our economy going and ourselves rich. Fair enough.

“But few of us in any sense will be involved with creating the next generation tablet computer, or audio enhancement for our cars, or devices to keep track of our devices. What most of us are in fact involved in is using technologies to get along in the world, to meet our needs and preferences, and to solve problems. This is where technology and creativity are linked for most of us: using technologies to invent, to design

things that are new and valuable, and to solve problems. And we are always thirsty for better technologies to do these things - which of course keeps the technology inventors busy.”

With regard to home environment, Catterall is not convinced that children need creative parents to be creative themselves, simply because he has not seen any studies of it. “My instincts say that creative parents are helpful, though,” he says. “They can contribute to the means, motives, and opportunities their kids have to be creative. And modeling creative behavior almost certainly spawns creative thinking.”

He also doubts that negative early childhood experiences can stunt creativity, again based on lack of evidence.

“We wrote the preschool learning foundations and curriculum frameworks in the visual and performing arts for the State of California a couple of years ago. We presented a great amount of evidence, along with professional advocacy, on the benefits of play and creative engagement at these ages. I would love to see work on links between creative development in preschool and children’s beliefs, orientations, and behaviors five or ten years later. My instincts are that we would find important long term effects of early creative development.

“But negative experiences in childhood is a vague descriptor. If lack of opportunities to be creative is meant, that may stunt creative orientations in later life. I can’t take on the host of possible negative experiences in childhood for this question. I’ll plead lack of experience and expertise.”

Finally, Catterall spoke on the value we place on creativity at different points in our lives. He says

he’s not so sure that contrasts between value placed on creativity during college and later on, in the workplace, is a hugely important issue. “I think a main issue here is the role of human creativity in our economy. I think creativity enters in the many ways we put ourselves to work that are under-realized and under-appreciated. Again, creativity in the workplace is not all, or even principally, about inventing new products.

It’s solving problems that come up frequently for most of us -- eliminating workflow bottlenecks, mediating disputes in the customer lines at McDonalds, helping with an on-the-job injury, scheduling staff to keep people productive and happy, organizing the executive suite to avert jealousy or to place leaders where they perform best. Creative problem solving can benefit these and thousands of situations at work. And in home and community of course.

“The college or university years contribute to this capacity in two ways: much of developing between age 18 and, say, 24 involves advancing your knowledge about how the world works.

This sort of knowledge helps us anticipate and solve problems and contributes to the means, motives, and opportunity for creativity discussed above. The second way is through experiencing and learning the potential and real importance of creativity in learning and in the ways of practicing scientists, artists, and humanists. If you don’t learn to be creative as you study physics, anthropology, or writing, you will never be a physicist, anthropologist or writer.” ■

Jeffrey Davis
Connecticut State University

Jeffrey Davis teaches in Western Connecticut State University’s MFA in Professional and Creative Writing Program. His blog posts at Tracking Wonder have been featured in Psychology Today, Poets & Writers, and more. As a creativity consultant and President of Center To Page, LLC, he works with best-selling and aspiring writers, creative entrepreneurs, organizations,

and schools to cultivate creativity and wonder in one's work and personal life. He is Fiction Editor at the literary journal Tiferet and author of

The Journey from the Center to the Page: Yoga Philosophies and Practices as Muse for Authentic Writing (Penguin Putnam 2004; Monkfish updated ed. 2008).

Davis began teaching when he was 22 years old and spent 12 years teaching high school and college students full-time. He has worked with students in Talented and Gifted programs in both the public and private sectors. In all his years teaching, he has not witnessed a decline in the creative expression of his students. "I respect Dr. Kim's work, I respect Torrance's work—and even used to use his model— but I have not noticed a creativity crisis. I think we're witnessing a creativity explosion."

"But let's assume there is a creativity crisis," Davis says. "One obvious culprit would be the schools, and I agree that many schools do not create a climate that fosters creativity."

But while most creativity specialists and educators agree with Sir Ken Robinson's claim that schools are killing creativity, Davis has another view.

"Robinson scapegoats schools as killing creativity," he says. "I think this is simplistic."

Robinson's new book, *The Element*, is full of stories about how artists became famous despite their school systems, Davis says. That's the premise of the whole book. But Davis makes an interesting point, suggesting that it might be possible that certain human beings become creative "not despite these adverse conditions but because of them."

"We know that people flourish under limited circumstances," he says. "Solving a problem or making something with a box and few tools requires more creativity than having countless resources at your disposal."

Blaming the system and playing out fantasies

of the perfect school are a waste of time, Davis says, because "humans aren't that simple." "Schools don't exist in a cultural vacuum. Choices are made based on the cultural attitudes of communities and nations."

As an example, Davis mentions the United States' current fetish with big data and measurement. Especially in the past ten years, he says, it seems that nothing is valid unless it is measured. You can slap at headline on a news item and people will believe it, as long as it sounds like the claim is supported by research.

And herein lies the trouble with blaming education institutions for a "creativity crisis," Davis says: "You could assign blame to education institutions for being test-happy and measuring everything, thus stifling creativity, but the reason education institutions measure everything is because our culture is obsessed with measuring!"

We even try to measure creativity, which, by the standards of more than a few experts, is immeasurable. But even if creativity is immeasurable, Davis says, "it doesn't mean we shouldn't keep trying." It's just that, measures like the Torrance Tests are outdated and possibly inaccurate. "It would be valuable to measure conditions that allow creative ideation and insight to occur," Davis Says, noting that it could help teachers to better design their classes.

He proposes a series of "creative strength assessments" for teens and young adults which would inform them of the ways in which they are strong creatively. Instead of a black-or-white, have-it-or-don't assessment model, Davis's model would help students identify their innate potential and leverage their strengths to create individually and in collaboration with others. The assessment might measure things like problem solving ability, interpersonal intelligence, and communication skills.

In addition, "the report would mirror back to students one or two 'dormant' qualities," Davis says, emphasizing the distinction between dormant and absent, "along with suggestions for balancing or compensating for them."

If our culture must measure everything, it should at least try its best to respect the nuances of what it is measuring.

Another common scapegoat, besides education institutions, Davis says, is technology. Even though its very existence reflects an explosion of human creativity, technology has been blamed for a reduction in critical thinking and problem solving skills.

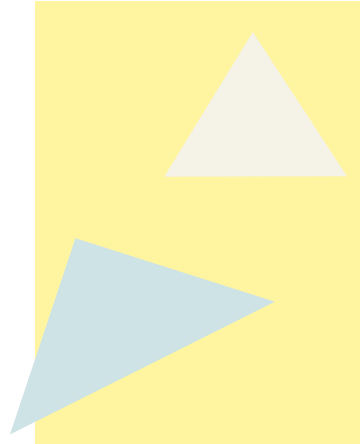
"Digital technology is a set of tools," says Davis, and, like any set of tools, "it depends on how it's used." One difference Davis noticed in the students he taught in early 90s versus the students he taught five years ago, he says, is "the assumptions about what it means to research critically." The advent of the Google-Wiki mindset can actually short-circuit problem solving skills and dull one's ability to filter information critically.

It's the job of educators, then, to ensure that students remain digitally discerning.

Davis's primary view of technology is that it fosters creativity, but he has a few caveats, especially concerning younger students.

Davis's own 4-year-old daughter spends no time at all in front of the computer. She watches no TV or videos, and has seen only one movie in her short life (*ET*). She is utterly absorbed in her imagination and in the outside world, Davis says, and shows signs of heightened creativity as a result.

"The parents of children in Silicon Valley send children to Waldorf schools, where they learn to craft and make things with their hands without the presence of digital technology," Davis says. This helps the children develop cognitive abilities related to creativity that they wouldn't have developed if they'd been immediately exposed to tablets and computer games. Davis's own daughter attends a Waldorf school.



"Digital technology is a set of tools," says Davis, and, like any set of tools, "it depends on how it's used."

Jeffrey Davis



Wary of programs that allow first graders to interact with iPads, Davis says technology should only be implemented in the classroom when students are cognitively mature enough to discern how it can and should be used.” He says future research in early child psychology will inform and support this view.

Once the “creativity crisis” discussion was out of the way, we asked Davis about creativity in general, and how he thought it manifested itself in people with different personality types. Davis defines creativity as “the application of useful, imaginative ideas in the form of problem solving, collaborating, products, even startup businesses.”

“I don’t know all research,” he says, “but I suspect that there are children who grow up more sensitive to an internal world of feeling than others. Children who are more inwardly focused quite often will flourish creatively sometimes despite—or because of— limited circumstances.

“Children who grow up more outwardly don’t tend to innovate as much. Perhaps because they might grow up thinking they’re not creative. Extroverted people can be creative, but they often grow up receiving a sense of self-worth based on other people’s approval, and then perceive themselves as not being creative later in life.”

As an expert in helping people communicate and sell their creative ideas, Davis alludes to the responsibility teachers have not only in fostering creativity but in helping students communicate their ideas. “Creative people generally have a hard time communicating the value of their ideas to the people who are looking to buy their products.”

Davis believes we can teach ourselves to become more creative and intelligent despite environment, genetics, and other factors. But sometimes the most “creative people,” even those who know they are creative, can be held back due to lack of motivation. Davis has witnessed this in his own students.

“I was teaching teens who had been identified

as Talented and Gifted,” he said, “and one kid, who came to me at 16, had been contacted by NASA when he was 13 because of his theories on wormholes. The boy’s father was in prison for a white collar crime, and the boy liked to brag about his ‘prisoner pen pal’. He was very bored and distracted in class.

Eventually I recognized where he flourished, and that was linguistically. He could distill ideas in physics into brilliantly articulated essays. Well, at this time rap music and slam poetry was on the rise, so I got him involved in a performance poetry team. He positively thrived.” Even more interesting is that Davis says the boy became very motivated in other facets in life, and was even motivated to go to college for the first time.

Students need mentors, Davis says. They need someone to challenge them, even if they think they can’t be challenged. For a fragile 8 or 9 year old, a good teacher provides “healthy mirrors” to children.

“A lot of kids tend to get negative frames; I try to give them positive frames instead,” Davis says. Give kid a project based on his interests and curiosity, or pair him with an older child, and that student will learn to be motivated internally. He will pursue learning for the sake of learning, will master his subject for the sake of mastering it. “As long as a student’s motivation isn’t too attached to performing for an authority,” Davis says, it will take him to great places.

I know it’s hard for educational institutions to pull off creativity education because of limited resources and too many students,” says Davis, “but I admire anyone who tries. And I think people are trying.” ■

Jon Bergman Flipped Learning

Jon Bergman and Aaron Sams are considered two of the pioneers in the Flipped Class movement. They co-wrote the book on the ‘Flipped Classroom’ and Jon received the Presidential Award for Excellence for Math and Science Teaching in 2002 and was named Semi-Finalist for Colorado Teacher of the Year in 2010. He also serves on the advisory board for TED-Education. At the time of publishing, Jon’s second book had just been finished.

He says, “We decided to lead the new book with this statement: We believe that education is the intersection between content, curiosity and relationship.”

Jon expands on this notion, “Let’s think about curiosity as it relates to creativity. Students have their own passions, their own interests, whatever they are interested in – and what we tend to do in many educational institutions is, ‘we’ve got our content that we intend to teach’ - and then there is no room for the students to bring in what they are interested and curious about.

“I really believe that we need to provide space for curiosity. In the book, we actually talk about a lot of teachers in the ‘Flipped Classroom’ are starting to do a ‘genius hour’ or a ‘20 per cent rule’ where they are giving students 20 per cent of the time back to explore topics that they are interesting to them. This is a huge deal for us.

“A lot of very thoughtful people have been thinking about what students need to know but I think we are teaching too much content and we need to allow this space for students to explore what they are passionate about, but in the context of a curriculum, so a science teacher will cover science topics or whatever it might be.”

So does Jon think that creative people need to be nurtured in different ways to more analytical people?

He says yes. “Every person is different – that is

clear. We need to be sensitive to the needs of each student. One of the powerful things with The Flipped Classroom is that it allows you to personalise the learning for each student. The subtitle is, “Reach Every Student in Every Class, Everyday.” Teachers are able to talk to each student each day and in those conversations they get to know the learners better and to figure out ‘what makes them tick.’ As they did this, they were able to personalise the experience for their students – and some people do need more TLC – it may be because they are artistic or maybe they are needier for other reasons.

“We’ve moved our institutions towards standardisation and I believe we need to move more towards ‘personalisation’ of the learning experience for each student. At the moment, curriculums are trying to fit everyone in the same box, learning at the same pace. That’s not the way life is. Students are different and we need to treat them as individuals not as a collective.

Jon goes on to give a description of what a Flipped Classroom is.

He says, “Let me give you two definitions. What is commonly understood as the Flipped Classroom is what we are now trying to call Flipped Class 101. In that class, the students typically (but not always) watch a video at home for their direct instruction, their ‘lecture’ if you will, and then they do their homework in class.

According to a major San Diego publication, “The model has been embraced by some local instructors who say it gives them more time for meaningful learning encounters, which pays off with students who are more involved and knowledgeable.”

Jon says teachers are finding success with the concept. “We find that after maybe a year, all the students watch the same video on Tuesday night they all do the same activity on Wednesday and it’s not a whole lot different except you change the place where the instruction takes place.

He further explains, “In Flipped Learning – teachers do the Flipped Learning for about a year and

then they jump to something else. We are calling this a ‘second iteration’ and they move to, say, a ‘mastery classroom’ or possibly a ‘project-based classroom’ or even an ‘inquiry-driven classroom’.

There really is a second step – we want teachers not to stop at the Flipped Classroom but to go through it to these deeper learning strategies. “For example, in the second half of the book we do talk about our first foray into flipped learning (we call it the Flipped Mastery Model) the students don’t all watch the same video on the same night – they watch the video that’s appropriate for them and they move through the content at a flexible pace. When they get to the end of the unit they take a test, but in this case, instead of just taking the test and getting what they get they actually have to show that they have mastered the content by scoring a good score.

“If they don’t, they have to stay there until they learn it. This is particularly useful for us because it’s very ‘building’. Let’s look at chemistry as an example, if you don’t learn ‘A’ then ‘B’ is hard and ‘C’ is impossible. So in this case, if the student doesn’t get the content then they tend to get lost. However, in a mastery class, they stay until they actually learn it. So, that’s what we call ‘second iteration’ in our flipped learning environment.

Jon also participates in a radio show called The Flip Side Radio Show on BAM radio. Does Jon think that more teachers should be looking at multi-media opportunities like this to share information and ideas?

Jon explains, “The idea behind the radio show was to tell the story of the Flipped Classroom. I was sitting at a pub in England after we keynoted at a very big conference last January, and I was chatting with this Scottish gentleman who was a big-wig in Scottish education at one point and

we were just talking about what my role should be. One of the complaints about our book is that we only cited two people, me and my co-author, Aaron Sams. It was just our story. Some people said that the book was not a sufficiently academic book, that it had no validity.

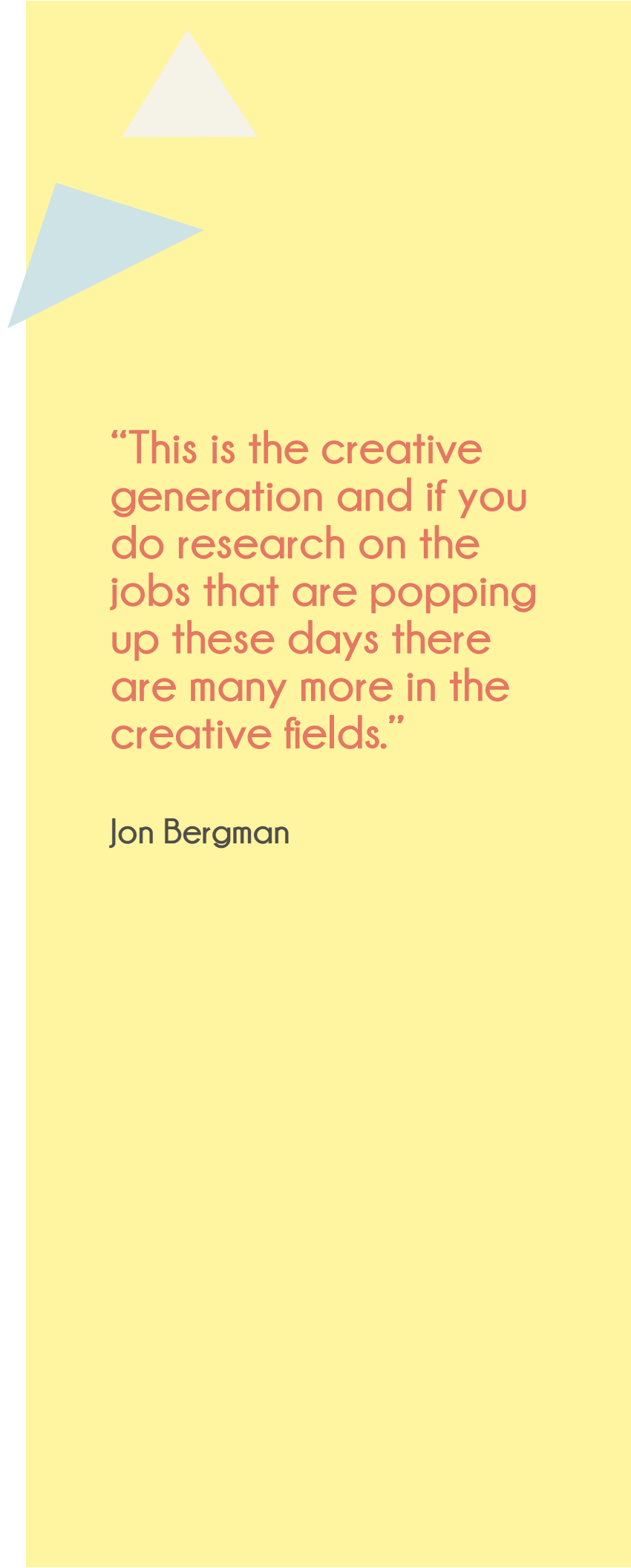
“Part of me thought that there was some truth to that. We are not academic. We are a couple of teachers with a good idea. This new contact said to me, “Jon, don’t worry about that. What you need to do is be the story teller.” So when I was asked to do a radio show, I quickly said that what I want to do is tell the stories, so now I am just trying to find people who have a good story to tell about the Flipped Class.

“I ask them to basically tell me how they gone through this transformation. Eventually I want to get some students on. I’ve heard so many amazing stories. I heard one yesterday about a teacher who is teaching in a rough situation and her students have been crazy successful with her flipped math class.

“In terms of other people having multi-media avenues like that, the radio show was really good for me, and I think good for a lot of people. Teachers really need to step up and put themselves out there and say whatever it is that they need to say. If you’ve got a message you should share it! I think you owe it to the bigger educational community.

So, does Jon believe that adult students should be engaged in more ‘creative play’ when learning?

Jon says, yes. “I think so. This is the creative generation and if you do research on the jobs that are popping up these days there are many more in the creative fields. It used to be, “Art student? Good luck getting a job!” Now, if you are an art student you are in high demand because of the design elements of websites and apps now. Jon was recently in Iceland, giving talks on Flipped Learning. Does he believe that some countries may be more ‘ahead of the ball’ than others when it comes to creative learning strategies?



“This is the creative generation and if you do research on the jobs that are popping up these days there are many more in the creative fields.”

Jon Bergman

“Yes,” says Jon. “It seems like certain parts of Europe are actually a little behind. In their educational field, they seem to have a textbook, it’s rote learning. Recently, however, I was in Iceland and this was very much discussed. In Iceland, they are really valuing creativity and so I do believe that there is something cultural about that. I am no expert on culture but I think there are things culturally that allow for more creativity. I’m not sure that I could say, “This country is ahead of that country” but some cultures value different things. Cultures that do not appreciate the creative aspect may be left behind.”

Dr. R. Keith Sawyer

Creativity and Innovation

Dr. R. Keith Sawyer, a professor of psychology and education at Washington University in St. Louis, is one of the country’s leading scientific experts on creativity. His new book *GROUP GENIUS* shows us how to be more creative in collaborative group settings, how to change our organizations for the better, and how to tap into our own reserves of creativity. After receiving his computer science degree from MIT in 1982, Sawyer began his career with a two-year stint designing videogames for Atari. From 1984 to 1990, he worked as a management consultant on innovative technologies; clients included Citicorp, AT&T, and U.S. West. He has been a jazz pianist for over 20 years, and spent several years playing piano with Chicago improv theater groups. His research has been featured on CNN, Fox News, TIME Magazine, and other media. A popular speaker, he lectures to corporations, associations, and universities around the world on creativity and innovation.

In Sawyer’s view, the “creativity crisis” has less to do with a decline in creative thinking than a growing demand for it.

Our learning institutions were designed a hundred years ago, when most workers would take factory jobs that valued consistency, standardization, and subservience to authority, Sawyer says.



These institutions teach students how to follow instructions to the letter, and how to get the right answer -- what psychologists call “convergent thinking.” This means that the most successful students are the ones who do the best job of avoiding mistakes. And yet, creativity researchers have demonstrated that mistakes and dead ends are essential to the creative process.

“The world is changing more quickly. 18-22 year olds used to find a job and stay at it for 40 years. Now people switch jobs multiple times over the course of their lives. And with so much automation, the jobs that don’t require creativity are going away.”

Sawyer also cites the outsourcing phenomenon as a reason behind the growing demand for creativity. Jobs that were once available at home are now being forced overseas.

It’s time for places of learning to catch up. “I would agree that there’s a mismatch between the way today’s learning institutions are designed and the growing need for creativity,” he says. “We need to move not slowly and incrementally but more radically towards fostering creativity.”

The first issue is defining and measuring creativity. Sawyer doesn’t believe in a general quotient like the Torrance Test CQ (creativity quotient). “The most appropriate way to teach and assess creativity,” he says, “is in specific domains.”

Creativity research shows that you get the best results when you teach creativity within the context of a specific discipline (rather than teaching one “general creativity” course). This means that if you want creative physicists, then your physics department classes need to be changed; if you want creative computer scientists, then

the computer science curriculum needs to be changed. If you just add a three-credit creativity course, but then students get the same old memorize-and-regurgitate curriculum in their STEM classes, the creativity course won't be able to overcome the uncreative STEM teaching. Creativity assessment, Sawyer says, should be tailored to each subject.

Sawyer also believes there's no such thing as an "uncreative" person. Everyone has innate potential. Even students whose parents don't value creativity are somewhat immune from zombification.

"Children are quite resilient," he says. "It's impossible to squash creativity completely, and it's never too late to cultivate it."

Sawyer, a father of two, is a good creative parent. He considers himself part of a generation of parents who were taught to be encouraging and to foster their children's creative impulses. "There's a common accepted wisdom," he says, "to praise your son or daughter instead of saying, 'That doesn't look like a drawing of a cow to me.'" He understands the challenges many parents face, though. "My son is at a summer camp learning video game design," he admitted, "but, you know, we had to pay money to send him there."

Less affluent parents may not be able to expose younger students to creative programs and resources. This is why it is so important for places of learning to do their part. "It's up to public schools," Sawyer says, "to close the creativity gap."

He fully supports the "creative expression" requirements currently being enforced at a growing number of institutions across the U.S. Stanford and Carnegie Mellon, for example, require creativity courses as part of their curriculum starting this fall.

Some disciplines, however, may be left behind in the push for creative and original thinking.

"What about musical performance? You're taught to memorize sheet music and perform well. Where's the creativity in that?"

Above all else, creativity is hard work. "People who are successful creators have a lot of energy." They also tend to be more aware of their surroundings than others, more mindful than on autopilot.

The role of technology, Sawyer says, is "neutral," meaning it depends on how it is used. Just because we no longer solve complex math equations by hand doesn't make us any less creative. In fact, it makes us more creative. "When we have computers to automate things, we spend fewer hours on the boring, mundane things, freeing up more time for creativity." In his new book, *Zig Zag: The Surprising Path to Greater Creativity*, Sawyer explores the notion that the creative process is so unpredictable that, were you to chart the career path of someone today, it would resemble a sort of zig-zag pattern. He mentions the work of Stephen Tepper, who researches and writes about creative careers.

"It's not that people shift from being a comedian to a physicist," he says. He then tells the story of a conference at Vanderbilt University where he listened to comedian Lewis Black talk about his career. Black had studied to become a playwright at Yale Drama School, and then, at forty years old, decided to become a stand-up comedian. "There's coherence to it. It builds upon itself." You can read more of Keith Sawyer's work on his blog, *Creativity and Innovation*. ■

Michael Smith Principals Page

Michael Smith is an educator who blogs on his popular site, the Principals Page, where he shares his thoughts on education and teaching

to a wide international audience. Like many other teachers, Michael believes that class time should be more responsive to students' urges to learn.

He explains, "I think for this reason and many other places of learning need to be more open and flexible on the use of class time. This goes for the individual class period as well as the length of school days. We have got to get away from 45 minutes for every subject. Some things take less time and some take more. I hope we are headed towards a time where individual student's needs are the priority and it's not about wrapping the lesson up before the bell rings for next period."

Recently, Michael wrote a post about wanting to be a professional ball player, where he admitted that he never dreamed of becoming a school administrator! So, does he think it's important to tell younger students to 'live their dreams' and 'do what you love' or should teachers be telling them to 'do what you're good at' and 'hone in on the career you will be successful in'?

Michael believes that it's still important for younger students (and older ones) to follow their dreams. He says, "Yes. Everyone should do something they love and not something for a pay check. This is easier said than done, but it should be every young person's dream."

There have been studies that indicate that creative students (and creative people in general) have a tendency to over-react to stimulation. The 'sensitive artist' stereotype is one that most people are familiar with. Michael has said that he has encountered these types of learners before. He says, "I think as educators we do a much better job identifying those students and promoting their growth than we did 20 years ago. I believe we do a much better job at recognizing individual strengths than we did when I was a kid."

Recently, David was invited by Discovery to take part in a forum on digital textbooks, where he mentioned that some believe these are the wave of the future.



“We need to get rid of penmanship, keyboarding, memorizing state capitals, and cutback on spelling”

Michael Smith

Michael explains, “Textbooks are a huge expense for educational districts. They also don’t update in a timely fashion. Digital textbooks look and act like what students in 2013 are used to seeing and working with. I think during my career we will see the death of textbooks as we presently know them.”

Some students are born into creative families where their mother and father might indulge in creative activities all the time. Often these students progress to become creative individuals themselves. How essential is it for young people to have creative parents in order to thrive? Or at least parents who understand the importance of creative expression? David says, “Very.”

“As much as we may not like to think about it, students are a reflection of their family members. Creative students come from creative parents. Like any skill, it must be developed and encouragement is a huge part of this. Whatever the endeavour, if it’s important at home it becomes important to the student.

Staying with childhood, some say that negative early experiences in our early years can stunt creativity. How can creativity be encouraged in a young student that is displaying this sort of impingement?

David says, “I think places of learning and teachers can almost always act as a second resource for students. If a young person is not getting the proper encouragement at home a single teacher can make a difference through their words and actions. I see this all the time in the arts. Music and art teachers can have a huge impact on a student who may not be getting the same type of support at home.”

So has creativity been under-valued in the past, with a focus on academic performance over creative achievements? Is this shifting? David believes that creativity is “terribly undervalued” and goes on to say, “I think it’s getting worse with the emphasis on high-stakes testing. In education, the pendulum always swings back so I hope I see the day when creativity is valued to the extent it should be.”

Controversially (for some!), David believes that “we need to get rid of penmanship, keyboarding, memorizing state capitals, and cutback on spelling”. David has said that these old skills need to be replaced with more relevant ones. He says, “If we can Google it we no longer need to memorize it. Typing is important, but no in the same way it was in the 1950s.”

So was Michael, himself, creative as a young student? He says that he was best at art and drawing, however he points out that these are “skills I sadly never use today.” ■

Ron Zawacki Educator in Southwest Texas

Ron Zawacki is an adjunct instructor in the English Department at Southwest Texas Junior College. He has a B.S. in Education from the State University College in Buffalo, New York, an M.S. Ed. From Sul Ross State University in Alpine, Texas, an Ed. D. (Curriculum Development & Systematic Change) from Nova Southeastern University in Fort Lauderdale, Florida, and has pursued post-graduate studies in Theology, Gifted and Talented Education, and Psychology.

As literacy specialist, classroom teacher, and college instructor, Zawacki says he’s had the opportunity to expose a wide range of learners to creative e-thinking and promoting creativity in the classroom and beyond.

“While I am not entrenched in relying on technology to promote creativity, it is a tool in gathering information and organizing potential sources in promoting a project among learners. Creative thinking and problem solving are my area of interest in literacy, research in the field of social sciences (e.g. educational pedagogy and psychology), and elementary sciences.”

But he recognizes the challenges confronting not only his own efforts to promote creative thinking but those of his entire nation:

“First and foremost,” Zawacki says, “the struggle to promote creative thinking or creativity in public schools seems to hinge on (1) budget cuts affecting the arts – music and art – at the earliest stages in education; (2) the pervasive use of state-mandated testing tied to school performance and teacher evaluation are too critical in promoting creativity – again, including music and art – in contrast to ‘drill’ and test preparation for the exams; and (3) a matter of social focus (e.g. electronics replace outdoor play, manipulative toy play with blocks, Legos®, and Lincoln Logs®).”

He advises teachers to “de-program” learners to step out of a “multiple-choice frame of learning” and accept the idea of risk-taking. Early instructional activities include genuine use of Bloom’s taxonomy to stimulate prior knowledge, reduce likelihood of disengaging learners, and lay a foundation for central concepts in the content presented. But teachers must encourage students to take risks by “integrating the ‘skill n drill’ instruction with extended activities that support creativity, and promoting creative thinking and problem solving through authentic learning – projects that have an outcome of applicability to the learner’s real world of present.”

Also, he says, the use of personal diaries or an ‘idea’ or ‘suggestion’ box in the classroom (reviewed weekly in “an open-court, using a Socratic approach”) would be useful in promoting creativity.

“It also may be a source to promote wider class participation and fulfill the needs of a student’s affective domain,” he says.

Positive reinforcement—such as valuing the learner’s contributions to creativity, problem solving, and product— can make a difference, too. “Encouraging parent-education and involvement, such as the parents’ presence at school functions... are steps that do not require any special equipment, programs, or exceptionally qualified personnel.”

While Zawacki believes that having a creative parent can be an asset to a younger student, he doesn't think it's necessary for that student to thrive creatively on his or her own.

"I don't believe it to be essential to foster creativity in the child," he says. "If it was the standard, then students whose parents, for example, never graduated high school, would stand to reason the student is a 'lost cause' prophecy in the making.

"On the other hand, parents can be supportive and allow the levity in their young student's play, pursuit of curiosity and provide common resources (e.g. public library visits, quality television programming, engage the child in adult-household management) that contribute to developing creativity. Parents need not be the expert; they merely need to be a facilitator of opportunities for the student in the home setting." Zawacki says creativity is both measurable and should be routinely integrated into lecture room instruction and assessment. A number of years ago, he says, the State of Texas field-tested a performance-based science assessment for fourth grade of which he was a part. "It was a productive and insightful experience for teachers and students," he says.

"There are some areas that we can observe experiencing a paradigm shift toward eclectic assessments that include the use of multiple-intelligent measurements," Zawacki adds. "We need to promote the paradigm shift on a broader scale; change at the earliest of education experiences is necessary to insure a society of creative thinking, problem solving, and agents of change." ■

Sandra L Cameli
State of Hawai'i
Department of Education

Sandra L Cameli is a Teacher Leader and Accreditation Coordinator at a Konawaena educational facility in Hawai'i. She has been teaching for 28

years and has been a writing and literacy coach at different educational levels as well as a field supervisor for pre-service teachers.

Sandra is an Accreditation Coordinator and Visiting Committee Member for Western Association of Schools and Colleges and is also a coordinator and lead teacher of an at-risk program for disenfranchised youth. With decades of experience, does she feel that classrooms need to be more responsive to moments when students get a creative urge?

"Absolutely!" says Sandra. "Traditional learning, unfortunately, is still based on the assembly-line mentality of one-size-fits-all. As educators, we can't assume all learners "spark" at the same time; therefore flexibility is necessary in the lecture room in order to support the depth and range of creativity."

When Sandra started teaching 28 years ago, what would have been the definition of a 'creative' activity or class?

"In 1985, Whole Language was a huge initiative," Sandra explains, "which allowed students to have choice and time in their English-Language-Arts development. Creative activities included: literary circles and discussion groups; book projects – posters, mobiles, dioramas, sculptures, game boards; creative writing pieces – narratives, poetry, scripts and dialogs; and drama options. All examples listed provided learners with opportunity to express their literary understanding through multiple intelligences."

Compare this to today – what is the current the definition of a 'creative' activity or class in her local area of Hawai'i?

"Currently, creativity is less about integration with content, and more about add-on approaches to standards-based curriculum," says Sandra. She continues, "Whereas, 20 plus years ago, creativity was a natural component to lesson planning, today it tends to be a forced necessity burdening teachers with overflowing plates of requirements. Creative opportunities tend to be limited to elective courses such as Art, Mu-

sic, Drama, and Physical Education; or in limited pockets across core content areas."

Does Sandra have any opinions on whether creative people have a tendency to over-react to stimulation? Sandra says that yes, this does occur with a particular age group more often than others.

"As a middle school educator for the last quarter of a century – based on the aforementioned statement," she says, "all of my students would be creative – since early adolescents (10-14) over-react and are easily stimulated!" She continues, "I believe all students are born curious and have creative tendencies, but often-times traditional learning environments stifle these opportunities. I don't see an over-reaction to stimulation, but rather a liberation or freedom of expression."

How important does Sandra think writing skills are to creativity? Does she believe that there is more of a focus on writing because of the way we communicate online?

Sandra says that she does think so. "Writing skills are crucial for current and future success," she says. "With the caveat of partnering reading with writing. In order for learners to express themselves effectively through written communication, they must also be exposed to others' examples, thus reading in order to write. I believe a strong emphasis has been placed on reading, in order to boost standardized test scores; however, there is not equitable balance with writing.

Our students are able to answer comprehensive questions adequately, but when asked to summarize or editorialize a passage, they are befuddled and lack appropriate competencies, due to lack of time to teach the appropriate writing skills."

"Currently, creativity is less about integration with content, and more about add-on approaches to standards-based curriculum."

Sandra L Cameli



It has been indicated that negative experiences in our early lives can stunt creativity. How can creativity be encouraged in a student that is displaying this sort of problem?

Sandra says, “Center or station-based learning, common in early life and in very young educational environments,” are all good ideas. She continues, “Encourage and develop creativity, and although not as widespread in upper years, the opportunity to learn in small groups and with individualized learning plans through centers and stations can ignite or re-kindle a student’s creativity.”

Has creativity been under-valued in the past, with a focus on academic performance over creative achievements? Does Sandra believe that this is shifting?

“Unfortunately, it has been undervalued,” she agrees, “and with excessive emphasis on standardized test performance, creativity (viewed as time consuming) has been relegated to enrichment or elective status. The shift is over-due, although more emphasis has been directed toward curriculum programming reform.”

There has been controversy and discussion over the last few years about the increasing pressures of standardized tests. How do you think the rise of standardized tests affect creativity?

Sandra says, “In the last 28 years of teaching, I have seen substantial decline in the ability of students to think critically, creatively, and independently. Specifically, in the last decade, learners have been conditioned to only find the “correct” answer, and are hesitant to take risks, hence the decline of creativity.

Personally, I’ve seen students’ stress levels rise when assigned creative projects – they continually want to know what the final outcome should look like, rather than become enthusiastic about the potentials. It makes a seasoned educators disillusioned about the state of education.”

Does Sandra consider herself a creative person? “Yes!” she says.

“I’ve never been textbook-bound as a teacher, since I remember the best and worst experiences as a child in school myself. In my 28 years in the classroom I rarely repeated a lesson or program the same way, always reinventing my practices and approaches. Part of my inspiration has always come from the desire to learn and to seek alternatives to the traditional modes; however, most of the motivation has come from my “clients” themselves. When faced with the choice of cloned, regurgitated-answered pupils or chattering innovation of lively learners – of course, I’ll always opt for the latter!”

In Sandra’s opinion, does creativity come in rhythms? What could a student (adult or younger) do when they have to complete a creative task and they have no inspiration? What have you found success with in the past?

She says, “Creativity does come in spurts and can be accompanied by dry spells. As a facilitator of learning, my best piece of advice involves allowing students to talk with others about their ideas. The synergy between like minds, and even opposing thoughts, can stimulate thinking and concepts. Human beings are social beings and ideally “grow” when stimulated by the readings, writings, dialogs, and interactions with others. When we isolate students in learning environments, we deprive them from essential inter- and intra-personal development.” ■

Steve Wheeler

Learning with ‘e’s

The Learning with ‘e’s blog focuses on technology for the classroom. Steve Wheeler is a British academic, author, speaker and learning technologist. He is the Associate Professor of Learning Technology in the Faculty of Education at the University of Plymouth where he teaches on a number of undergraduate and postgraduate teacher education programs. He also tweets under the handle @timbuckteeth and has nearly 23 000 twitter followers at last count.

Steve believes that technology can be a major

factor in driving change in classrooms, and a great way to enhance a student’s creativity. “I always say to my colleagues, if you want the student to be creative, give them a camera and watch them go! The number of things they can do with that camera even without knowing what it can initially do for them is just incredible. You see some very creative actions emerging.”

Are all kids inherently creative? “I think Ken Robinson originally said, ‘Creativity is only imagination until you bring it out in some kind of act, or some kind of purpose.’ Children have an incredible amount of imagination. So do adults, actually, but it’s interesting that when you’ve been in school for a long time maybe when you are 12, 13, or 14 years old and in secondary school, your imagination tends to be stifled somewhat and your creative outputs reduce incredibly.”

Steve has pointed out that there are tests on divergent thinking in children and adults. For example people are instructed to think about how many uses there are for a house brick or a paperclip.

Steve says, “When you are five, you can think of hundreds, because there is no limit to your imagination but somehow by the time you are 14 years old you can only think of about ten. And as an adult, you can think of even less, because it seems almost as if school has knocked the creativity out of you!”

So what does Steve put this down to? “I think that’s partly to do with the kind of ‘factory’ or the ‘industrialised model’ of education,” he says, “but it’s also to do with other things as well, like peer pressure and family life and so on.” So does he think that technology could help with this? “I think technology is not the only answer but it will help young people to be more creative and

to put those creative acts “into being” through tools like cameras and mobile phones, for instance.”

Steve is quite an advocate for game playing, citing the fact that it can help students retain the information and engage with it in new ways. However, it seems in the current school system, the older a student gets, the less “playtime” they are given.

Does this educator think that it could be possible (and beneficial) for secondary students and adult and university/college students to receive more time to ‘play’ while learning, for example, with games and active exercises?

Steve says, yes. “Absolutely, and in fact, I do I give my students a lot of playtime I give them new tools to play with I give them new ideas to kick around. It’s a good way to experiment with making mistakes. What better way than finding out what those errors could be, except in a simulation, or a game?”

Steve points out that simulations and computer programs are often used to train many medical, armed forces and health students. These simulation ‘games’ allow them to practise their skills with games-based learning. These students can make their mistakes, and learn from them without having to endanger themselves or others.

In the past, it could be said that initially people thought computers were frivolous, gaming was just for fun, blogging wasn’t a serious way to write and facebook was to be avoided. Times are changing, in particular, for advocates of social media. Is technology opening us up to how we look at these ‘more disposable’ forms of creativity? Does Steve feel that some teachers are slow to take up these new technologies?

Steve says, “Facebook is important because it’s where young people are and if you want to know where young people are and what they are doing you need to go to Facebook. Any lecturer or teacher who is avoiding the use of Facebook because they think it’s frivolous...well, they need to rethink and change their minds!”

Steve has a gentle warning for his co-educators, however. “They also need to be careful that they don’t overstep the line – it’s like ‘down at the disco’ – you go into Facebook and you try to use their language and you get it wrong and you look stupid. So don’t try to ‘get down with the kids’ but do try to understand what they are doing!”

Some critics of the genre have mentioned that blogging is a ‘disposable’ form of journalism. Steve disagrees. “I don’t think it is disposable; I think blogs are in a new culture, this new culture that has emerged. I wrote a book on this a few years ago called Connected Minds, Emerging Cultures: Cybercultures in Online Learning and in it we talked about a number of emerging cultures – things that are changing the paradigm, things that are disrupting what we’ve considered to be the social norms up until now.

And how does Steve think this will affect mainstream publishing? “I have to say that a lot of publishers are getting worried, a lot of record producers and film makers are getting worried because their territory, their hegemony, is being eroded by these new technologies.”

Steve says, “People are coming in and publishing for themselves, this kind of Levi Strauss notion of bricolage that started with the punk era of the 70s and the music and fashion industries.”

“People started doing it (publishing) themselves, I was a punk musician and we created our own record label because we just couldn’t break into the mainstream, so we sold our own vinyl disks, and distributed them ourselves. We created our own fanzines and so on, we didn’t go through any publishers.”

The educator continues, “In today’s world things are different. One publisher came to me recently and said to me, ‘Steve, we’re very concerned because you are no longer writing, reviewing or editing for any closed journals – can we talk

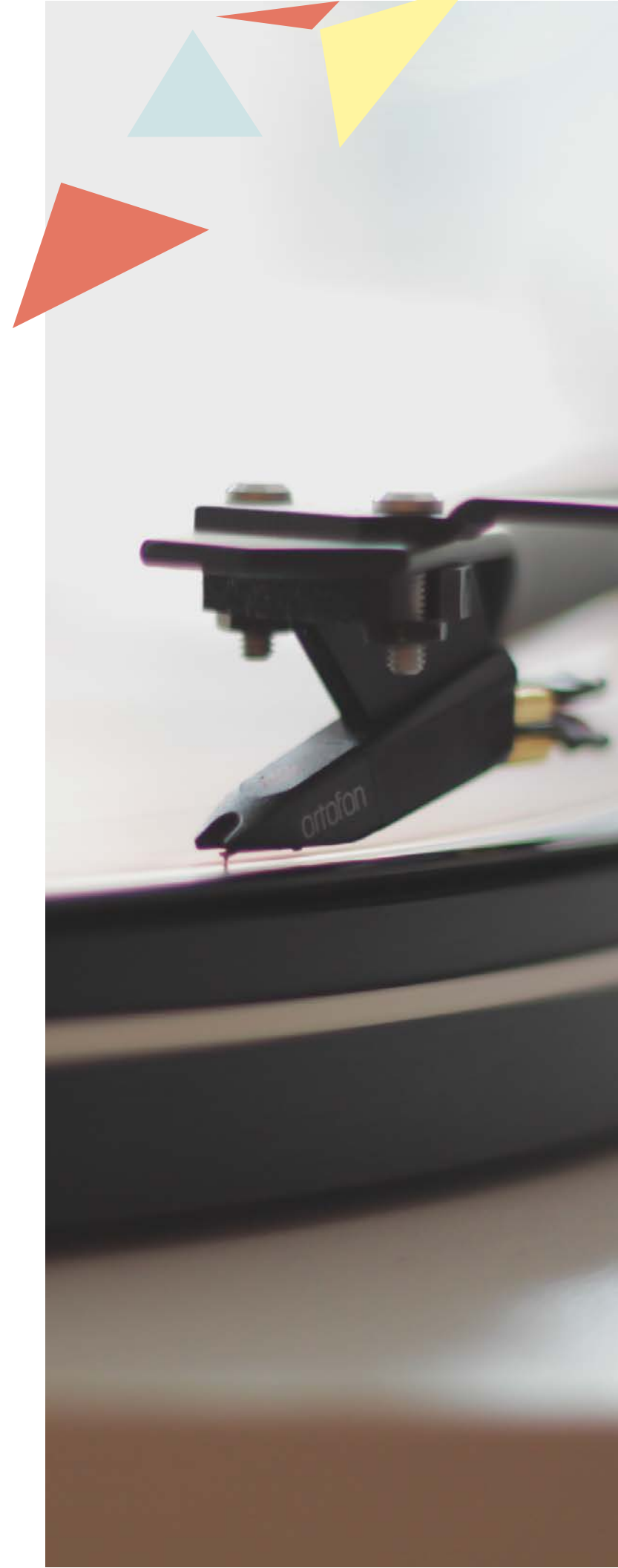
about this? You know, we’re changing our models.’ I told them, ‘You’re not changing them fast enough!’ I’ve withdrawn all my support for closed journals I’m going for open access journals now, I’m going for blogging now, because it gains you a bigger audience.”

The world of publishing information has drastically changed as new technologies have emerged: “For example, I produced two papers in 2006 and one of them took three years to publish in a closed journal. Three years is unacceptable in any sense, let alone the field of technology where things are changing. So I produced this paper, it was reviewed and (the publisher) sent it back to me. It took them 18 months to review it, because they couldn’t find two reviewers (would you believe!) that would look at it and I sent it back to them with the corrections fairly quickly. It then took them another 18 months for it to appear in paper because of the backlog.”

Steve feels (understandably) that this is an example of a wasted opportunity. “It was coming up to the time of our research excellence framework exercise; this is the time of year when everybody starts publishing,” he explains. “The second paper was sent to an open access journal and it was reviewed by three people, openly. There was no blindness; I knew who they were, they knew who I was, and all the names were open.”

Steve continues, “It was ‘open review’ and therefore had a kind of transparency. I am attracted to the openness of journals and blogs; you can usually see who is writing. Both versions of my papers were published online as were the review comments from the journal reviewers, as were my responses to them.”

Steve parallels this to more traditional publishing: “My closed journal has had 36 citations to date and my open access journal has had 550. There’s no comparison. Anybody who reads that paper can see where it comes from and the provenance of it, how it was responded to, and so on. For me, that’s the future of publishing academically. Forget the closed journals, they are dead.”



Blogs, journals, papers, social media, conventional news: there are so many creative resources in the marketplace now, it might be fair to say that many educators may not know where to begin when sourcing resources for their students. If an educator wanted to try to get started with new media in a classroom situation, what would Steve recommend?

“Firstly, I would suggest some kind of social media link,” he says. “Obviously, you need hand held devices too, so those are the two things I would choose.” Steve mentions that, “Handheld devices where students can move around are essential. The students should be able to take the portable devices with them, so they are not tethered to a table or desk. It’s important that they can move around the space...they can go outside...they can use the hand held device anywhere,” Steve feels that these things are the most essential to contemporary learning.

“Whether it’s a mobile phone, an iPad, Android, whatever it is, it doesn’t matter! As long as they can gain access to all the same resources as everybody else,” he explains.

“The second thing I would recommend is some kind of social media link. I advocate Twitter, in fact I have Twitter walls in my classroom so we can converse not just with everybody within the group (with the back channel that Twitter offers) but also, we converse with experts outside the room, somewhere else in the world.” Steve has been very progressive with adopting this technology.

“Twitter is really cool because they can actually converse with the authors of books they are reading,” Steve says. “A lot of people are locked into my Twitter stream. I have over twenty thousand followers and when they see me tweet something out from one of the students, they will respond and it comes up live on the screen and the students think that it’s amazing!”

So, does Steve find that the students are teaching the teachers about these technologies in some cases? When answering, Steve cites the opinion of an American-Canadian novelist: “William Gibson said, ‘The future is already here but it’s just not evenly distributed.’ What he means by that is, not everybody will adopt everything, there’s always going to be innovators and early adopters and late adopters and laggards.”

“My belief is that we all have a huge potential, to be who we want to be, to make sense of the world in new and creative ways to be creative in terms of inventiveness and in terms of how we connect with each other. I utterly reject the learning styles theories that exist that say, ‘He’s an analyst, she’s a reflector, he’s a pragmatist.’ Each of us has the ability to all of those things in different contexts we just need to give people the opportunities to express themselves in these ways.”

“I think Howard Gardener (an American developmental psychologist) has the most appropriate model where he talks about multiple intelligence – that each of us can specialise according to what we want to be. But we all have all of those elements inside us.”

Looking towards the year 2020, could the classroom of the future have one kid at the front studying math and one kid at the back studying Shakespeare? Is that a good idea, or is there something to be said for collaborative group learning?

Steve says that this is already in effect in some places. “There’s a school in Auckland called Albany Senior High School which is a very innovative school. They were one of the first schools I’ve seen to do this. Albany has open spaces, open software, open ‘bring your own device’ policies and the teachers there all teach in the same space and the students are allowed to move around between classes as they wish.”

He continues: “This way, you are seeing a breaking down of the silos of curriculum, breaking down of the compartmentalisation, which is false anyway. It shouldn’t exist as all subjects are

related to each other and if you back to the great classic Greek educators they educated students in every which way all the time constantly asking questions.”

Steve goes on to mention another example of modern ‘deconstructed’ education practices. “There’s also a school in England called Skipton High School for Girls, which is innovating in different ways too. It’s a girls’ engineering college, it’s the only one I know of anywhere in the world. It’s a secondary school and engineering is at the heart of everything they do. This relates to design, ergonomics, how to use technology, how to apply science; all that is within their curriculum. They’ll do things like study physics with music, or art with science, or maths with English.”

Steve was there fairly recently. He says, “I asked one of the girls, she was only about 13 years old, during a presentation, ‘What was it about doing all these curriculum things together that you like?’ and she said ‘It helps me to understand the world better.’

Steve, like many other educators is spreading the messages of new media in learning to other students and teachers who are ready to step up to new challenges in education. ■

Susan Smith Nash E-Learning Queen

Susan Smith Nash has a diverse background. She is both an energy industry professional with graduate experience in economics and an active e-learning consultant with a Ph.D. in English. In e-learning since the early 1990s, Nash is involved in e-learning and hybrid learning at universities, corporations, and not-for-profits. Her books include E-Learning Success (2012); E-Learners Survival Guide (2010); Moodle 1.9 Teaching Techniques (Packt Pub, 2010); Klub Dobrih Dijanj (Ljubljana, 2009); and Excellence in College Teaching and Learning (CC Thomas, 2008), co-authored with George Henderson. She is currently writing a book on The Fourth Industrial Revolution. Her blog, E-Learning Queen, has received multiple

awards, including the Top 50 School Technology blogs, the Top Reading and Writing blog, and the Top 40 Most Trusted Education blogs. Nash also received an award for being one of the Top 50 Education Innovators on the Web.

Nash says she has read Dr. Kim’s report and finds it pretty compelling.

“The crux of the issue is that we’ve made child-rearing a factory in many ways, and have completely industrialized education in public schools, where teachers and administrators live in dread of underperforming on standardized tests,” she says. “The consequences are nothing to be scoffed at -- after all, if you miss your target, you’ll potentially lose funding for your school, which consequently means job losses and other punitive actions.” However, Nash believes Dr. Kim’s findings might benefit from a little investigation.

“Would everyone agree with her metrics? Are they simply supporting a convenient narrative that is, at its heart, a jeremiad and vaguely apocalyptic? I would argue that one problem may be in how we’re measuring creativity. If creativity means finding unusual and unexpected ways to do a task, or make something into existence, which has at its heart a unique process or outcome, then aren’t we by definition unable to assess creativity with an uncreative instrument or evaluation tool?”

Although she doesn’t necessarily buy the pitch that creativity has declined in the human population, Nash says she thinks “our socialization processes can punish deviance. After all, by all qualitative measures, creativity is deviant. It deviates from the norm. In that, it requires freedom.” Even what we often call “creativity” is simply conformity, she says. “Being truly creative, and having creative solutions and creative self-expression are not always recognized as such because we tend to have conformist ways of thinking about creative processes and output.”

When we asked her about the role of technology in creativity, she said, “I like to think of various philosophers and their stance on technology



when I think of the role of technology in creativity. Here are a few:

“Heidegger: Technology is about finding ways to understand the essential ontology of things and the cosmos. Technology reveals ‘being in the world’ -- it makes things possible to unveil themselves, and to understand the ‘frames’ in which the world is truly built. Technologies let something come forth; they open up reality into something bigger, deeper, and more profound. They teach us about the world.

“Marcuse: Marcuse looks at technology as a form of control, and suggests it controls our lives. That said, it’s easy to see how Marcuse was responding to those he viewed as technocrats, and the way that the factories of the 20th century controlled workers, and essentially dehumanized them.”

Nash says she thinks it’s clear that information technology both unveils the world and also exercises control over our minds, behaviors, and destinies, insofar as human beings can be controlled.

“Given that toys are very preprogrammed these days, particularly those based on computers (tablets, smartphones, etc.),” Nash says, “it allows a child to be passive and let the device do the creating for him or her. On the other hand, a good video game allows a child to envision new worlds and to consider the possibilities that magic can happen and that infinite agency is just around the corner. Superhero status is democratized.”

What are the implications for education and e-learning?

“They’re pretty profound. It places within those who would define knowledge (via standards and assessment) a deep desire to use technology to control all aspects of the learning and the assessment processes.”

“Thus, the race is on,” she says. “Whoever creates the most amazing technology controls the world. Is that the case? Based on behaviors and beliefs, I’d say ‘yes.’”

When we asked her if this technology could be used to measure creativity, Nash said, “People think that creativity is measurable. Isn’t that all you need in order to develop instruments and to measure whatever it is you’ve decided is the phenomenal manifestation of creativity?

“The problem is, the moment you define creativity and then make it measurable, you defuse its power, and destroy the magic of what it is that elevates creativity to the truly life-engendering. All cynicism aside, creativity should be rewarded, especially if it manifests itself in the germination of new life, marked by unusual pathways, procedures, products, etc.”

Nash shared a few practical tips for educators looking to foster creativity in their classrooms:

“I’d advocate a new approach to socialization -- it would involve ‘inverse role-playing’ -- role-playing upside down and to go backwards in processes, to break stereotypes.”

“I’d also advocate a great deal of ‘alone time’ -- allowing students to think by themselves and have their own private journals, projects, math equations, chemistry experiments, engineering creations (robots running amok!) and more. “I’d also advocate reading and listening to short stories, tales, and novels from the 19th century. That was a time of great self-reflection due to rapid change -- both in the beginning of the 19th century and at the end of the century.”

Flipped classrooms are also part of Nash’s prescription: “The beauty of the flipped classroom is that it encourages action and experimentation in the classroom. Reading, media, and practice assessments have been done in anticipation of class time, which is designed for the application of knowledge.”

As far as the student-teacher relationship goes, Nash says, “There needs to be a predictable level

of trust, and unconditional love (which is not the same as accepting all kinds of behavior). Rejection can never be a factor. People do not take creative risks when they are suffering from fear.” Nash says creativity is vital in her own life and profession. “It’s the key to my success,” she says. “I have to create - and, I have to get a little messy as I do so, because I have to be aware of how knowledge is being used, why it’s used, how it’s measured, why and how it’s useful -- all that is considered ‘education’ - but it’s really a technology -- a great unveiling and revealing of the frames of consciousness and ontological possibilities in the world and of the world.”

In terms of teaching, Nash finds herself first advocating a vision, and then defusing the pressure by introducing the absurd and the experimental. “It’s fun to see just what we can do. We start with a vision, and then we gather around and see just what might be brought into the frame -- with the goal of pulling the curtain back and revealing an entire new body of existential scaffolding. It makes us accept ourselves and our bonds with others -- we must not judge; on the other hand, let’s judge as harshly as we feel -- after all, it’s the subjectivity within our own essence that causes us to passionately believe in our own emotional responses. They’re valid. On the other hand, perhaps they are not. Society decides. So, why not conform? The reason is simple. Survival requires risk and risk-taking, and creative production involves the very essence of risk.”

As far as “creative people” are concerned, Nash believes we should abandon the notion of the overly sensitive artist who reacts impulsively to bouts of inspiration.

“Creative people are very disciplined and self-regulated,” she says. “Otherwise, they would not have the ability to practice, practice, practice -- which is what really is required in order to perform at all, with any assurance of a recognizable outcome.”

As far as background or home environment is concerned, Nash says, “I think that parents who understand the importance of creative expression are vital. On the other hand, ‘creative’ par-

“Today, we don’t need a publisher. The computer is a publisher, so these students are able to publish at will and it doesn’t have to be text, it could be music, it could be video. Remember, this is where we got Justin Bieber from!”

Thomas Whitby

ents may unconsciously imprint the student with his or her own form of conformity and unwillingness to try new things.”

In addition, “a child who has been abused, neglected, or in the midst of radical uncertainty (war, constant moving, lack of bonding) may not thrive if they are pressured to demonstrate ‘creativity.’ What they need is tantamount to a kind of Maslow’s hierarchy -- before embarking on the requisite risk-taking required for creative endeavors, he or she will need to feel solid, stable, supported.”

Finally, we asked Nash if she thinks graduates and professionals value creativity more than they did when they were in college, and, if so, how that can be remedied.

“Education focused narrowly on the acquisition of a single skill set has a very short shelf life unless it’s combined with more of a meta-education, which is sadly out of fashion (humanities, liberal arts),” she says. Because the job landscape changes so quickly these days, people “may need to re-educate, retool, and re-envision themselves.”

“It’s not necessarily easy to do so,” she says. “The reinvention of oneself is probably the most creative -- at least the most sustained period of creative endeavor - which an individual will do in their lifetime.” ■

Thomas Whitby

My Island View

Thomas Whitby is passionate about sharing ideas via technology. His blog is perfect evidence of that. It is apparent that some educators are slow to take new technologies up, and Whitby has attributed a few different reasons for this. “There really are a number of reasons; there’s no one reason. For many educators, they find that they are scared of social media and they are afraid to make mistakes in public. There are educators who are just not comfortable with it, because they don’t understand it. Also – it’s been

used against teachers. We all build up relationships with our students and sometimes in social media that relationship can become confusing. Many school districts and parents take it the wrong way.”

Whitby mentions that not all teachers and students use social media effectively. “On the other side of that, there are also educators who are ‘not smart’ because they do occasionally ‘do the wrong thing’ and unfortunately the media seizes on the people who do the wrong thing as if that is the norm and it isn’t. I’ve read blogs of teachers who were knocking parents and making fun of their students on their blog and I feel that’s just not right. It’s dumb! There was one teacher in particular that the press picked up on, and as a result many administrators started coming up with policies to prevent teachers from contacting students through social media. So that scared quite a few people off.”

Is blocking social media the solution? Whitby says, no. “One of the things we don’t do (and this is what drives me nuts!) often I hear about administrators trying to block teachers out from contacting students through social media. Yet if a teacher lives in the same community as the students nobody counsels them not to have contact with the students in the community – it doesn’t make a lot of sense!”

What about creativity in social media? Do these new platforms mean that creative ideas are easier than ever to spread and share? “Yes, very much so,” says Whitby.

“We don’t call it ‘group thinking’ we call it ‘collaboration,’” he says.

“Collaboration has always been with us. To explain it best, I will go back in time. I worked in an English department with nine other people and if I wanted to present something on Shakespeare I could go to those nine other people and say, ‘What have we all done for Shakespeare?’ and we could actually work out something together. Somebody would have a Shakespearean lesson that they previously used that they could show

to me. Really, this was a form of collaboration, and it was very good.”

However, it was not always perfect, says Whitby. “The problem would come in if I said to them, ‘I want to use technology to present some kind of Shakespearean lesson.’ At that point, those nine people were usually not as well-versed in technology as I was,” he says. “So I could not collaborate with them about an essential need that I had.”

The education landscape is constantly shifting. What skills are teachers emphasising towards 2015 more than they did in previous generations? Are teachers focusing on creativity more or less?

Whitby believes that new technology is much more a factor in teachers’ rooms discussions today than it ever was. “Technology has changed the way we do things,” he explains.

“For instance, let’s go back in time again. In English class, we would have students do creative writing and the best that we could do with our students was to have them submit their creative writing to a publisher,” he points out. “The publisher would then decide whether it was publishable or not. As an English teacher, you would always take pride in the students who were able to get things published. That was the ultimate goal.”

“Today, we don’t need a publisher. The computer is a publisher, so these students are able to publish at will and it doesn’t have to be text, it could be music, it could be video. Remember, this is where we got Justin Bieber from!” the teacher points out.

No one would be surprised at Whitby’s comparison, and the Justin Bieber story is most certainly true. YouTube is where the singer and superstar first got noticed by publishers back in 2008. Now he is one of the most successful recording artists in the world, with multiple hits, sell-out concerts, a hit movie and he hasn’t even hit the age of 21. Whitby admires his determination; “Justin Bieber put his music out on the internet, and as a

result, he's a multi-millionaire today. He didn't need anybody's permission to do that. He just did it and was accepted. The idea behind this, is that if students can create without permission we're not doing what we need to do as educators to get them to be responsible and to do things while critically thinking about what it is they are doing."

The question remains, do some students seem learn differently? Are some more 'creative' learners and some more 'analytical'? Whitby says that in his experience, "Yes, they are."

However, his thoughts on the matter stress that teachers should not aim to pigeonhole students. "I cannot say whether they are more 'creative' or not!" he says, just that they learn differently. "It also depends on whether or not we are giving them the ability to be creative," he points out. "You have to remember that our educators today are still putting students in rows and still dumping content on them via direct instruction and lectures. So that doesn't leave a lot of room for creativity."

He mentions shifting ideologies as a factor in this: "The idea is to have this paradigm shift where teachers are actually enabling students to make decisions about their own learning. To do problem-based learning and project-based learning which enables that creativity is so essential." "Once again, let's come back to technology. We find that technology gives us the tools to enable students to do be more creative. This happens not only while they're in the classroom, but to be creative wherever they are, or wherever it is they find and use the new technology."

The teacher continues: "As far as younger students go, it's amazing to me that some of the largest social media networks are geared to students who are under ten years old."

"Webkinz and Penguin World would be two ex-

amples," he says. "Younger students learn collaborative skills on social networks like these. They begin to 'learn how to learn' collaboratively, and then they go to their educators and their educators say, 'I'm sorry, we don't do that 'social media stuff' here, so we're going to put you in rows and you're not going to be able to learn the same way as your peers.'"

So, is creativity seen much in the younger grades? Whitby says yes, it is, but limited in places of learning where they have students sitting in rows and strict content delivery. Does Whitby think that some students respond better to the old-fashioned type of learning? Should a single classroom be able to support different types of students at the same time?

"It's not impossible," says Whitby. "It's hard work. Ideally, that's the way it's supposed to be! If we could have individual education plans for each and every student in a place of learning, that is the 'the ultimate goal.'"

He does admit, "It's a difficult job to do. Once again, the technology enables us to do that, and more so with technology than without it. We are getting to point in time with education where we can address each individual student's needs and allow them to do that." ■

Trista Nabors Teacher at Oak Mountain

Trista Nabors is a photography teacher in Oak Mountain in Birmingham, Alabama. In 2011, Oak Mountain was named a Blue Ribbon educator by the US Department of Education, the highest honor awarded to any secondary school, public or private.

"I do think creativity has declined over the last 10 – 15 years," Nabors says. "I have been teaching since 2000, the beginning of No Child Left Behind. I am now seeing students that have known anything but NCLB and you can tell. Over the past 10 years especially, 'teaching to the test' has reigned supreme. It is very difficult now to get

students to try things outside of the box because they have never been taught how.

We as teachers get frustrated and mad at students due to their inability to be creative or for being too scared to try, but it is not their fault. It has been drummed into their heads to do everything a certain way, to do it fast, and to memorize and regurgitate information to score well on all the standardized tests that kids are forced to take."

In her own discipline, photography, Nabors says it's not creativity that has changed; it's the tools. "I began photography in the early 1980s and then went on to study it further in college (1993 – 2000). I learned 35mm black and white film photography with a wet traditional darkroom. This past year was the first time I taught both film and digital photography. The creativity is still there. The need to 'see,' compose, create, and manipulate are all still there, but now we do it with memory cards and printers instead of film and trays. Everything you can do with Photoshop you can do by hand; it just takes a LOT longer."

Nabors says she still includes assignments that students have to do by hand, and even finds that, in these scenarios, students take more pride in the work they create. "But," she says, "it has to be blended. It is not practical or beneficial for them or for me to only teach the 'old' ways; both old and new methods have their place." When we asked this teacher about the wider use of technology in creativity education, Nabors re-emphasized that there needs to be a balance of hands-on, organic creation and digital tools.

"It is hard to beat technology when it comes to research now. Why would anyone sit in the bottom of a library for hours pulling books and flipping pages when you have the world at your fingertips? But students still need to make things with their own hands. It gives them such a sense of ownership and pride when they can hold their product in their hands and say, I made this. Technology is a tool, but it should not be used alone or as a crutch for thinking on your own. I definitely think they should be blended, though, to get the best amount of learning and creativity."



Nabors is a huge proponent of project and product-based learning in cultivating creativity. She says, “Going deep into one subject and creating from that subject can and will cover so many areas. I think that is much better than touching on a lot of different subjects but never delving deeply into that subject. You miss so much. You might get the question right on the test, but do you really know what you have just ‘learned?’” Nabors would also advise other educators to be flexible in allowing students to indulge their creative urges, but believes you have to draw the line somewhere.

“Sometimes you can’t just produce a creative thought. It can come in the shower, in the car, that time between waking and sleeping, etcetera. I have extended due dates for students that have it hit late in the game as well as giving extra assignments to those that got it right off the bat. That is the hard thing about creativity—it knows its own timetable, not your class schedule. But students have to understand deadlines so that they will be successful in the real world. Paying customers are not going to wait patiently while you get your creative juices flowing. Sometimes you just have to suck it up and get it done.” Another danger in indulging every creative impulse is overreacting to stimulation.

“I consider myself a creative person,” Nabors says. “I am 39 years old and I know that I can overreact to stimulation. I can get super jazzed about something and I better jump on it right then because when the excitement is gone, I no longer want to do the project. My students and I get super obsessed with things, and when the energy is gone, it is just gone and you are exhausted. The problem with that is, if you were not finished with the project/product it is hard to go back and finish it. Many things often go uncompleted.”

As far as measuring creativity is concerned, Nabors says it may be safer to recognize, rather than quantify, creative expression.



“I don’t know if you can create a standardized test based on creativity. That seems to be an oxymoron in itself,” Nabors says. “I do think that creativity can be graded with appropriate rubrics—specialized rubrics, not a generic ones found on the internet. Original thought can be recognized and rewarded as well as be assessed. Creativity is taking the base assignment or example given, and then making it your own.”

Nabors believes it’s never too late to encourage a person’s creativity. “You just have to get them over the hump of being scared that they are going to do it wrong, or someone is going to laugh at it,” she says. “Creativity is a very personal thing. You are creating something from the inside of yourself and then putting it on display for others to judge. That is very difficult.”

Background is important, Nabors adds, but doesn’t think a student’s parents have to be creative for that student to be creative. “I do think that the parents have to understand and encourage creativity in a young student that shows talent,” she says. “We also need teachers and administrators who think creativity is important. If you get squashed at home or at school, or both, it can lead creative kids that don’t fit the “cookie cutter mold” out in the cold. And that can lead kids down a bad path.”

By way of advice, Nabors says to “start off small” and “encourage, validate, and reward projects/products that are being created.” Even if a student’s work does not quite make the mark, but reflects effort and personal investment, you have to encourage them or they will not try again. “The next one will be better. Creativity takes practice just like math.”

“I see people fighting to get creativity and the arts back in, but it is a tough fight,” Nabors says. “This all gets tied into politics, money, and how the job market is going. It is hard for parents and administrators to push creativity when they want to make sure these students can get a job when they leave the education system. I just think that people have forgotten how much creativity is needed to be successful in anything. Creativity is being talked about a lot more these days, and that is making me much more hopeful.”



Conclusion

So what exactly can be classed as ‘creativity’? In fact, there have been many perceptions of this word throughout history. Consulting one of the major sources of information for the modern era, Wikipedia, we can find an idea that the ‘creativity’ that we know today was not always the feeling, emotion or attribution that we understand in this current era.

To quote Wikipedia: ‘The ways in which societies have perceived the concept of creativity have changed throughout history, as has the term itself. The ancient Greek concept of art (in Greek, “techne” — the root of “technique” and “technology”), with the exception of poetry, involved not freedom of action but subjection to rules. In Rome, the Greek concept was partly shaken, and visual artists were viewed as sharing, with poets, imagination and inspiration’. So – it follows that creativity must have rules, it must be metered, constrained; which some would argue goes against the embodiment of the word, the concept, itself.

This suggests that if creativity is to have rules, how are these to be obeyed and when can they be broken? It seems that the ideas captured within this E-Book lend scope to the notion that there is a general feeling in the wider education community that creativity is being largely ignored in favor of measurable outcomes – i.e. test scores, as this is a goal that is not easily measured and therefore of little use to the teaching community when the community is being seen as a merely profitable, functional venture. Creativity is not always profitable. Creativity is not easily measured. Creativity is subjective and therefore, immeasurable and loose. These are words that place fear into the hearts of superintendents and school boards across the globe. If something cannot be measured and tested, then what place does it have in the world of academia?

From Wikipedia: ‘Renaissance men sought to give voice to their sense of their freedom and creativity. The first to apply the word “creativity”, how-

ever, was the 17th-century Polish poet Maciej Kazimierz Sarbiewski — but he applied it only to poetry. For over a century and a half, the idea of human creativity met with resistance, because the term “creation” was reserved for creation “from nothing”.

In the 19th century, art took its revenge: now not only was art recognized as creativity, but it alone was. When later, at the turn of the 20th century, there began to be discussion as well of creativity in the sciences and in nature, this was taken as the transference, to the sciences and to nature, of concepts that were proper to art’.

So, it seems that creativity has been as much-maligned in times past as it is in the current age. Scott Barry-Kaufman, a cognitive scientist and leading researcher in the field of neuroscience has said, “The entire creative process– from preparation to incubation to illumination to verification– consists of many interacting cognitive processes and emotions. Depending on the stage of the creative process, and what you’re actually attempting to create, different brain regions are recruited to handle the task.”

Convergent thinking is a concept first introduced to the world by psychologist J. P. Guilford in the 1880s. It is normally touted as the ability to give the ‘correct’ answer to a standard question. The idea is that the answer should not require significant creativity; convergent thinking is the type of thinking that focuses on coming up with a single, well-established answer to a problem.

Some might say that inventors who stuck to this method of thinking would never create anything

new. It is divergent thinking that allows for this: the re-packaging and re-working of old ideas into new compartments of thought.

The 18th-century philosopher David Hume, argued that invention was often an act of recombination, of compounding an idea or transposing it from one field to another, a notion repeated on occasion by the contributors to this book. For example, the first printing press was the result of the re-construction and re-use of a commercial wine press. The technology needed for this leap in human consciousness was actually within reach for the compatriots of the day – they just needed someone to think outside the square.

The benefits of the printing press would be seen later down the line. Having said that, it is pertinent to surmise that perhaps Johannes Gutenberg (the inventor of the printing press) had met with opposition at some point in his inventive strategy, perhaps along the lines of, “So what good will this thing be, then?”

Only history has revealed to us (as future generations) the impact of such an invention as the printing press. In Gutenberg’s day, there may have been other, more exciting, more accessible and relevant inventions that were taking precedence in popularity. Equally, the first airplane, as Lehrer points out, was really just ‘a bike with wings’. Only future generations would come to understand the significance of what these two bicycle salesmen had actually achieved. In these two cases as Lehrer points out, “the radical concept was merely a new mixture of old ideas.”

So what are we to do to foster creativity within our students and within ourselves? Lehrer is very clear on his ideas for a cultural revolution. He says: “Instead of sharing links with just our



friends, or commenting anonymously on blogs, or filtering the world with algorithms to fit our interests, we must engage with strangers and strange ideas,” he writes. “The internet has such creative potential; it’s so ripe with weirdness and originality, so full of people eager to share their work and ideas. What we need now is a virtual world that brings us together for real.”

One must remember that the word “creativity” derives from the Latin: “from nothing”. In order to truly be creative, do we have to release, let go, of this idea that creativity is a measurable ‘thing’? That it can be metered, taught, enhanced or embodied within the next generation – or should it merely be nurtured when recognized? How can something that is so inherently convergent to regular thinking be understood?

The teachers, trainers, philosophers and modern guides who have shared their opinions, thoughts, techniques and dreams in this book have made one thing very clear: creativity may in fact be under threat in this modern world and it is up to the teachers and guides of this world to make sure that there is always a place for “thinking outside the square”.

...and for being recognized for doing it. ■

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