

SEEDS OF INNOVATION

HOW CAN WE FOSTER AND NURTURE INNOVATION IN OUR STUDENTS, OURSELVES AND OUR SCHOOLS?

“When we think differently about the things that we are used to seeing daily, we can create innovative learning opportunities.”

—from *The Innovator’s Mindset*
(Couroso, 2015, p.25)



The drive for innovation can feel like a Sisyphean labour; how do we balance constant drive for progress with our need for feelings of accomplishment?

How can we create an environment within our school culture that promotes innovation among students and teachers without burning them out or draining their creative wells dry?

This Resource Tool is designed to highlight a number of key areas and strategies to plant the seeds of innovation in order to grow learners who are equipped for the 21st century .

Hulme, Thomas and DaLaRosby (2014) in their essay “Developing Creativity Ecosystems,” they examine the role of higher education in producing “students capable of becoming the innovative leaders the twenty-first century economy requires” (p.14). A main focal point of the paper is on the creating of environments—what they call “ecosystems”—that are conducive for developing creativity. Vander Ark (2017) makes a similar point. Innovation cannot happen in a back corner or on the side; innovation needs to be in all that educators do with their students. Whether we call it an ecosystem for innovation or a culture of innovation, it needs to involve all aspects of educational and community life; it is going to require changes in the way we think and what we value.



RESOURCE

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IT TAKES AN ECOSYSTEM

In “Learning Innovations: It Takes an Ecosystem,” Vander Ark (2017) cites educational leader Michele Cahill, who writes, “At the heart of an ecosystem for learning is an ability to draw upon the assets of an entire city or community to support students as they grapple with the two primary tasks of adolescence: building competencies and forming their identities.” (Vander Ark, 2017)

A CULTURE OF INNOVATION

Fostering innovation needs to be about creating a “culture of innovation” rather than about specific technology or specific pedagogy; technology and pedagogy come and go, but the underlying creative culture should persist. A “culture of innovation” is one where all constituents are engaged in creative and design thinking; the social, emotional and intellectual environment along with the institutional infrastructure all support and nurture imagination, creativity and design thinking, which includes empathy, versatility, creativity, adaptability, risk-taking, openness to failure.

A culture of innovation is something that George Couros considers crucial in implementing innovative thinking in our schools; Couros calls this the “groundwork” for empowering educators and students to take risks and innovate (2015, p.65).

Creating a culture of innovation can be challenging because it requires change. But, as innovation expert, Grant Lichtman, writes, “Change isn't hard, it's uncomfortable.” Teachers like challenges; they don't like discomfort. What is it going to take to engage teachers with change? One overarching vision is to view teachers as learners and transform our schools into learning organisations. This sort of transformation takes time. Ironically, schools are often slow to learn. So what is needed to create a culture of innovation?

DESIGN THINKING, DESIGN LEADERSHIP

“Design thinking” is a concept coined by innovation expert Tim Brown (2008). It is an important concept when discussing innovation in business or education.

What is less discussed, but perhaps equally important is design thinking in leadership.

Senge (1990) challenges what many envision leadership to be; using an analogy of the role of a “leader” on an ocean liner, he calls our attention to the unseen but perhaps most vital role: the leader as “designer.” Design, argues Senge (1990), is fundamentally important. He writes, “it is fruitless to be a leader in an organization that is poorly designed” (p.341).

In the Harvard Business Review, researchers Goddard et al. (2016), published their findings about effective leadership with in education. Like Senge (1990), they present data in support of this notion of “leader as designer.” The essay is entitled, “The one type of leader who can turn around a failing school”; the authors present five types of leaders in education and they show the longer-term impact of their style of leadership associated with their personality: they are surgeon, accountant, philosopher, soldier and architect.



This is a snapshot of what they found studying several leaders and schools over an extended period of time:

We found five types of leaders, but only one that was truly effective. We also found that the most effective leaders were the least well-known, least rewarded, and least recognized; although they did a great job, the results took time to show, allowing them to be overlooked. Yet they were the only ones who built a school where exam results continued to improve long after they'd left. If more of them can be identified, developed, and appointed, we believe the whole education system will improve (Goddard, et al., 2016).

Citing Lao-tzu, Senge (1990) points out that the best kind of leader is often overlooked because “little credit goes to the designer. The functions of design are rarely visible; they take place behind the scenes” (p. 341). This is precisely what Goddard, et al. (2016) also found in their study. “The most effective leaders,” they write, “were the least well-known, least rewarded, and least recognised” (Goddard, 2016). The most effective leader is what they call “the architect.” Goddard, et al. (2016) found that “Architects are the only leaders with any real long-term impact, as they quietly redesign the school and transform the community it serves.” Essentially, the architect is a “leader as designer.” Only the architect, who seeks to redesign and transform an organization, truly makes a lasting impact.

MAKING SPACE FOR INNOVATION



CREATING AN INNOVATION ECOSYSTEM

“A campus culture,” writes Hulme, et al. (2014), “provides an environment in which all students may feel inspired to develop their creative capacities” (p.20). All constituents, from students to administration should be involved in crafting and implementing “structures



1. CREATE PHYSICAL SPACES FOR INNOVATION

A first step many educational institutions take in terms of innovation is allocating areas for intentional innovative activities. Places like creativity labs, maker spaces and innovation zones are very important. Besides offering a place to innovate, these designated spaces also help convey the value the educational institution places on innovation. Hulme, et al. (2014)

writes that “educational institutions need to intentionally create and fund innovative spaces for students, thereby allowing for the sociocultural aspect of creativity to emerge” (p.20). Designated innovative spaces underscore the intentionality of bringing “people together in meaningful ways and provide opportunity for the Medici Effect to occur”—that is “breakthrough insights at the intersection of ideas, concepts, and cultures” (Hulme, et al., 2014, p.20; Johansson, 2004).



Beyond designated maker spaces, creating an ecosystem of innovation means “designing classrooms, meeting spaces and lounges” in order to promote “sharing of ideas, prototyping creative products and developing fresh approaches to problems” (Hulme, et al., 2014, p.20).

Other considerations like aesthetics should also be examined: “consider the impact of colour” and “furniture style” writes Hulme, et al. (2014, p.21). Whiteboards, drafting and prototyping supplies as well as options for integrating and using supporting technology (both existing and new).



ELEMENTS OF “WOW-WORTHY” LEARNING SPACES

FLEXIBILITY: Learners “should be able to easily transition to [various] functional spaces” across the campus.

BELONGING: Learners need “to feel like the space is theirs”; this is done by diversity of content and student work displayed and well as student directed spaces.

INTERACTION: Learning spaces should be transformable for easy interaction, small group discussions or other collaborative activities.

ATTENTION: “Show off valued materials”—artifacts, images, inspiring quotations and objects that matter to the learners and augment the content and skills being addressed.

NEAT: “Supplies, tools, furniture and books should be stored”—avoid clutter by ensuring everything has a place.

WALLS: Library, Hallways, and Classroom “walls are important real estate—spaces to fill with content-related murals, posters, banners, whiteboards, and bulletin boards”

(Finley, 2014, pp.1-2)



2. TAKING TIME FOR CREATIVITY

Business innovation expert, Teresa Amabile states that the two main resources that “affect creativity are time and money” (1998, n.p.). When it comes to time in particular, managing it requires careful consideration. Too much time or not enough time can have varying affects, both positive and negative. Working under pressure is often cherished by people who cite colloquial and personal anecdotes. Amabile argues that tight deadlines should be authentic if they are used at all. For example, “time pressure can heighten creativity” when the innovator “faces a serious problem and desperately needs a solution” (Amabile, 1998, n.p.). This might be a medical problem needing a creative solution while the patient is undergoing an operation. Another example might be the infamous Apollo 13 mission (1970), where astronauts were limited by a very narrow “life or death” time window. These situations, however, are rare. Instead, Amabile points out, “civilizations routinely kill creativity with fake deadlines or impossibly tight ones” (1998, n.p.). Taking time to be creativity—that is time for ideation and incubation—garners better results. “It can be slow going to explore new concepts, put together unique solutions, and wander through the maze”

(Amabile, 1998, n.p.). Managers, administrators or educators “who do not allow time for exploration or do not schedule in incubation periods are unwittingly standing in the way of the creative process” (Amabile, 1998, n.p.). To avoid either extreme of burnout (not enough time) or boredom (too much time), Hulme, et al. (2014) suggest that the “ideal scenario is low or moderate time pressure, with

the occasional and brief sessions of increased urgency” (p.21). See below for Amabile, Noonan & Kramer (2014) “The Time-Pressure/Creativity Matrix.” Granting students and teachers time to develop new ideas and novel approaches should be sanctioned throughout the academic year; “if creative thought is valued, this pursuit deserves sanctioned time to allow ideas to come to fruition” (Hulme, et al., 2014, p.21).

The Time-Pressure/Creativity Matrix

Our study suggests that time pressure affects creativity in different ways depending on whether the environment allows people to focus on their work, conveys a sense of meaningful urgency about the tasks at hand, or stimulates or undermines creative thinking in other ways.

		Time Pressure	
		low	high
Likelihood of Creative Thinking	high	<p>Creative thinking under low time pressure is more likely when people feel as if they are on an expedition. They:</p> <ul style="list-style-type: none"> • show creative thinking that is more oriented toward generating or exploring ideas than identifying problems. • tend to collaborate with one person rather than with a group. 	<p>Creative thinking under extreme time pressure is more likely when people feel as if they are on a mission. They:</p> <ul style="list-style-type: none"> • can focus on one activity for a significant part of the day because they are undisturbed or protected. • believe that they are doing important work and report feeling positively challenged by and involved in the work. • show creative thinking that is equally oriented toward identifying problems and generating or exploring ideas.
	low	<p>Creative thinking under low time pressure is unlikely when people feel as if they are on autopilot. They:</p> <ul style="list-style-type: none"> • receive little encouragement from senior management to be creative. • tend to have more meetings and discussions with groups rather than with individuals. • engage in less collaborative work overall. 	<p>Creative thinking under extreme time pressure is unlikely when people feel as if they are on a treadmill. They:</p> <ul style="list-style-type: none"> • feel distracted. • experience a highly fragmented workday, with many different activities. • don't get the sense that the work they are doing is important. • feel more pressed for time than when they are “on a mission” even though they work the same number of hours. • tend to have more meetings and discussions with groups rather than with individuals. • experience lots of last-minute changes in their plans and schedules.

WANTED: ADVENTURERS & INNOVATORS

3. HIRE AND TRAIN INNOVATIVE TEACHERS

According to Jim Collins, author of *Good to Great*, a great organization that is “built to last” engages in “first who... then what” in their hiring practices. This means “selecting people more on their fit with core values and purpose” than on anything else (2001, p.56). Hiring and training the right sort of people will help foster a culture of innovation. Hulme, et al. (2014) state that “employment decisions and ongoing development opportunities shape the creation of an innovative ecosystem more than any other dynamic” (p.21). Hulme, et al. (2014) go on to say that institutions should seek out curious adventurers who will bring an innovative spirit to the student experience” (p.21). Hiring is one way to foster an innovative culture, but equally important is the training of existing faculty and staff within a school. Hulme, et al. (2014) suggest that “inserting appropriate degrees of uncertainty, risk-taking, and divergent thinking into employee development programs stirs the creative spirit and ultimately results in more integrated creativity ecosystems” (p.21).



4. ORGANIZE STUDENT LEARNING EXPERIENCES TO DEVELOP CHARACTERISTICS OF A CREATIVE PERSON

Learning experiences should also be designed to foster creativity and innovation. Hulme, et al. (2014) suggest three practices that enhance creative capacity (p.22):

- (1) initiate opportunities to prototype and fail
- (2) emphasize deep questions
- (3) develop creative boards of directors to serve as mentors and to develop new ways to foster innovation on an ongoing basis.

In addition to curricular integration of innovation and creativity, schools can also incorporate extracurricular opportunities. Likar, et al. (2015) suggest that innovation and entrepreneurship clubs can foster emerging interest in creative applications, as well as the introduction of elective innovation problem-solving courses (pp.208-209).

“By creating numerous opportunities for students to interact on a personal level with individuals who would normally never cross their paths, educators enable students to fill their boards and thus increase the development of associative thinking and creative self-efficacy” (Hulme, et al., 2014, p.22)

“Developing the characteristic of a creative individual involves developing a creative ecosystem that teaches students the characteristics of curiosity, associative thinking, courage, and creative self-efficacy and provides the roadmap to navigate the innovative process” (Hulme, et al., 2014, p.23).

GROWTH MINDSET AND MAKING MISTAKES

“‘Spoon feeding’ in the education system is a severe deterrent to creativity and innovation, and as students become more dependent on teachers, such learner identity development has a negative effect on academic achievement” (Ramma, 2014, p.9)



One of the primary hallmarks of an innovator is the ability to make mistakes—repeatedly—until success is achieved. Innovation guru, George Couros, writes extensively about the growth mindset that is needed for success in innovation: he simply calls it “The Innovator’s Mindset” (2015). Drawing on the seminal work of psychologist Carol Dweck in her book *Mindset* (2006), Couros applies the principals of a “growth mindset” to innovative thinking. He defines the innovator’s mindset “as the belief that the abilities, intelligence, and talents are developed so that they lead to the creation of new ideas” (2015, p.33). Both educators and learners need to develop an innovator’s mindset. For learners, it will prepare them for the twenty-first century world; for educators, it will help *them* to prepare learners for that world.

LESS MARKING OR GOING MARKLESS?



A well-known maxim states that people learn from making mistakes. If this is true, then why do we create environments where students are discouraged from making mistakes? To follow the logic through, this means that students are being discouraged from learning. Through test cultures, high-stakes grades and traditional evaluation practices, students are trained to avoid mistakes as much as possible. The result is a reluctance to take risks or embrace challenges, and a fixation on numbers and marks rather than on learning. One

solution to student mark obsession is to stop using grades; a helpful primer on the topic of effective feedback and going “markless” is Alfie Kohn’s essay “The Case Against Grades” (2011). Good educators are constantly interested in looking at radically different and new ways to help students move from “mark-mongering” to authentic learning. The notion of dropping grades altogether is a very appealing one. Alfie Kohn seeks to address recurring problems of assessment head-on by suggesting that grades are archaic and counter-productive to genuine learning. Kohn’s essay begins by identifying the problem all educators face since seemingly “time immemorial”—students pursuing grades instead of pursuing learning. Kohn points out that there has been a considerable history of theorists and educators lamenting the pitfalls of the traditional grades and reporting approaches to teaching and learning; he cites studies that go back to 1933. Summarizing the findings from several researchers, Kohn states that students’ interest in learning is diminished by grades (Kohn, 2011, n.p.). He writes, “a grading orientation [to teaching and learning] and a learning orientation [to teaching and learning] have been shown to be inversely related” when it comes to intrinsic motivation.

Going “markless” relates to innovation and design thinking; the concerns Kohn raises about grading resonates with this area of pedagogy. He notes that grades cause students to “avoid taking any unnecessary risks.” Risk-taking is one of the key ingredients to nurturing innovative thinking in our students, yet grades run counter to this, by funneling students toward a pursuit of grades by the easiest and most certain means possible. Kohn also began his unpacking of why grades are problematic by addressing the “broader psychological and pedagogical questions” related to “measurement” in educational contexts. This relates to fostering growth mindsets or developing fixed mindsets. Kohn also argues that simply changing the form of assessment doesn’t alter the underlying problems caused by grades. He takes aim at some of the recent reforms, such as “assessment for learning” and “assessment as learning.”

Kohn powerfully speaks to our educator’s hearts when he quotes Nicholls and Hazzard, 1993, who describe the unfortunate dichotomy grading creates in the minds of our students: “school is seen as a test, rather than as adventure in ideas.” Although Kohn’s argument does not provide a panacea for resolving mark obsession, it does raise important points about creating more opportunities for formative, non-punitive assessment for learners.

“I remember the first time that a grading rubric was attached to a piece of my writing....Suddenly all the joy was taken away. I was writing for a grade — I was no longer exploring for me. I want to get that back. Will I ever get that back?”

— Claire, a student (in Olson, 2006)



PERSEVERING THROUGH MISTAKES PERSEVERING TO MASTERY

The famous designer of the light bulb, Thomas Edison, said that “Many of life’s failures are people who did not realize how close they were to success when they gave up” (Headstrom-Page, 2007, p. 22). Perseverance is crucial to innovative success. The key, however, isn’t to persevere with a bad idea or failed concept. In fact, persevering with a bad idea often signals the death knell of an aspiring entrepreneur. The real goal is to persevere researching, reflecting and rejecting until the innovator finds a truly good idea

In the first pages of Being Wrong, Kathryn Schulz writes, “In our collective imagination, error is associated not just with shame and stupidity but also with ignorance, indolence, psychopathology, and moral degeneracy.” This cultural terror of messing up, combined with modern modes of parenting and schooling obsessed with narrow versions of academic and career “success,” are making students more than risk-averse (Korby, 2015)

Not all failures are equally valuable experiences. Students need an opportunity to learn not only that it is OK to fail, but what are the best ways to fail. Amy Edmondson, in her essay “Strategies for Learning from Failure” (2011), she qualifies degrees of “blameworthy” and “praiseworthy” failure. Failure that results from experimentation and taking on big challenges is what she calls “praiseworthy” and will result in reframing, reiteration or rejection of the original idea.



SELF-DIRECTION (GENIUS HOUR / PASSION PROJECT)

THE PASSION PROJECT

Dewey (1902) argues that “somehow and somewhere motive must be appealed to, connection must be established between the mind and its material” (p.27). He says this because “The subject-matter does not appeal; it cannot appeal; it lacks origin and bearing in a growing experience” (Dewey, 1902, p.7). Learning without a “bearing” within a learner’s growing experience and interest will result in

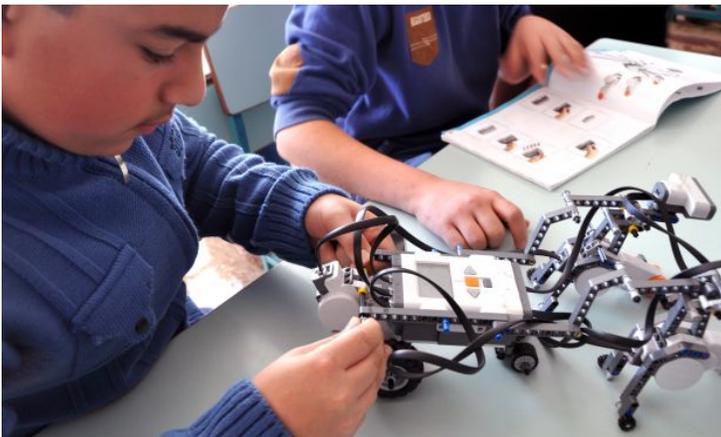
boredom and disinterest. Dewey (1902) accurately points out that “continuous initiation, continuous starting of activities that do not arrive, is, for all practical purposes, as bad as the continual repression of



initiative in conformity [...]. If the child were forever tasting and never eating; always having his palate tickled upon the emotional side, but never getting organic satisfaction that comes only with digestion of food and

transformation of it into working power” (p.10).

Engaging students with the opportunity to direct their learning or apply their knowledge and skills in areas that they are interested in is a means to heighten engagement and tap into a student’s motivation for tackling new challenges. Ideas such as the Genius Hour or the Passion Project one way to empower students with greater autonomy and self-direction. Such independence is also an ingredient for innovation and entrepreneurial thinking.



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