

Annals of Entrepreneurship Education and Pedagogy – 2016

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ANNALS IN ENTREPRENEURSHIP EDUCATION

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What entrepreneurship educators don't understand about creativity and how to teach it

Jeffrey A. Stamp, PhD

Central to entrepreneurship is the notion that entrepreneurs *create* value. Hence, educators often focus on describing what value is, how value is found, and what defines value in an entrepreneurial context. Yet the entrepreneur is often more concerned at the early stages of the entrepreneurial journey with the personal attributes of actually how to be creative, to be innovative, and how to capture value from the creative experience. So the gap between knowing about and experiencing creativity and recognizing the outcomes from creative expressions or the creative experience is what this chapter will attempt to bridge. This is important because entrepreneurs are increasingly relying on their own creative expression and efforts as part of the knowledge economy. Yes, sweat equity has now become creative equity.

For entrepreneurship students, the allure of using their creative ability to discover and exploit opportunity is a major draw in these programs. Yet, in my exposure to entrepreneurship students worldwide and the faculty who guide them, I routinely get asked “Why do college students underperform when asked to be creative?” This question isn't limited to the entrepreneurship classroom. In my experience with many different groups, organizations and individuals, this same sentence could be universally applied with: Why do ___ underperform when (asked, required) to be creative?

My answer to this question is framed from observations of creative individuals and groups, combined with the analysis of the thousands of outcomes of the creative process in my years working with diverse groups as a creativity consultant and educator. The bottom line is that there is no simple answer. Creativity isn't a single skill or aptitude conducted by the human mind. Rather, creativity is a complex systems thinking approach that engages in searching for meaning where one is trying to develop a choice-filled decision-making engine that produces superior outcomes.

A productive illustration of this involves one of the pioneers of creativity research – E. Paul Torrance. In 1951, having just completed his Ph.D. on the role of self-concept in the educational success of college freshmen, Torrance diverted from the expected role of taking a position as a junior faculty member at a university to accepting a research challenge that deeply intrigued him at the U.S. Air Force Survival School.

The Survival School had been established because of the data that revealed that a high percentage of the bomber crews shot down in World War II survived the bailout but didn't survive on the ground. During his six years of conducting research on the psychology of survival, Torrance discovered that the major underlying factor critical to survival was creativity. This formed the basis for his survival definition of creativity: "when one is faced with a problem for which there is no practiced or learned solution, some degree of creativity is required" (Millar, 1995). This new awareness of the importance of thinking abilities beyond retrieval of memorized knowledge is still used in military survival training today. Torrance's early definition of creativity can be equally applied to the survival skills required of the nascent entrepreneur.

DIVERGENT AND CONVERGENT THINKING

Creativity is an essential and natural part of the human experience. Every moment of our lives we are confronted with a complex combination of sensory perceptions that we need to make meaning from. Each of these moments as they are perceived can be considered as another problem-solving moment we are required to navigate. During cognitive periods of high focus when we recognize the problem and additionally have a satisfactory memory of a high probability outcome, we exercise convergent thinking behavior and select a single response that forms our next behavior (Gelernter, 2016). This sort of convergent cognitive behavior derived from memory recall of existent knowledge is often defined as uncreative thinking.

However, during those perceptual moments where the stimulus is not familiar or a solution is currently non-obvious, then we could choose a divergent thinking behavior to produce a set of alternative choices from which emerges a selected choice response that forms our next behavior (Vincent et al., 2002). This sort of divergent cognitive behavior, which results in an emergent process of choice creation, assembly and selection, is often defined as a form of creative thinking.

These two simplified scenarios describe activities related to human cognitive performance. We either make decision choices from knowledge we currently have at our recall or generate new knowledge from which useful future choices will be selected.

Or do we? Is it that simple? Might the processes of convergent and divergent thinking be more integrated in everyday experience? If so, how can we leverage them better to produce superior experience outcomes?

CREATIVITY AS AN APTITUDE

Historically, studies on human cognition have focused on what is believed to be fundamental mental properties and cognitive processing such as intelligence, memory, judgment, logical reasoning and attention. Yet, despite the overwhelming evidence of the economic value of the outputs of the highest levels of human performance (e.g., genius), invention, talent and creativity at the everyday level have nonetheless yielded far less scholarly attention and study and even less in the classroom. One contextual perspective utilized in the study of creativity focuses on three vantage points, namely the personality approach, the cognitive approach and the sociocultural approach (Sawyer, 2012).

The personality approach is focused on studying the personalities of exceptional creators and has been described as “Big C” creativity. This domain is reserved for identifying those characteristics that lead to eminent works of creative output. The early focus on the Big C event helped to fuel the already-standing myth that people either have or do not have creativity, with no capacity for improvement. This myth is still widely believed by the public and teachers alike even though there is considerable research over the last 30 years that strongly refutes it (Amabile, 1983; Sawyer, 2012). In addition, the Big C focus has fostered a second myth, namely that creative ideas suddenly appear in a moment of insight or mysteriously from the unconscious. While everyone has had an “Aha!” experience, it isn't mysterious. When an idea suddenly enters the conscious mind, it has been shown in numerous studies that these insights follow from bits of previously held knowledge that are carried forward on a trajectory of new meaning assembled by the creator (Gelernter, 2016).

The cognitive approach based in cognitive psychology, is focused on what is described as “little c” creativity, and illuminates the internal mental processes that are leveraged by the individual engaged in creative behavior to assemble new knowledge structures. Despite the mountains of research conducted on well-defined themes to the contrary (Smith et al., 1995; Sternberg, 2003), there is still the lingering pervasive stereotype of the creative individual as the loner, the dreamer, the nonconformist, or the disruptive malcontent always trying to change things. These stereotypes continue to fuel the view in both the public and scholarly circles that creativity is a soft psychology rather than a viable thinking paradigm.

In reality, creativity can be developed and enhanced. It is an aptitude and not a trait. Sadly, many professors still think that some people are and some people are not creative. A variety of researchers have shown that creative thinking processes at the individual level such as divergent thinking, cognitive flexibility, analogical reasoning and situational memory

skills can be enhanced with practice and formulated into observable creative ability (e.g., Plucker et al., 2006; Torrance, 1972; Vincent et al., 2002). Improvements in both the ability to create ideas and the quality of those ideas have also been shown in both individual and group creative abilities through the use of intentional practice (Mitchell et al., 2015). In addition, there are many popular creative skill training programs such as lateral thinking (de Bono, 1970), mindmapping (Wycoff, 1991) and creative thinking exercises (Michalko, 1991) that are widely used to foster a creative attitude and mindset that bring conscious awareness to the process of generating new ideas.

The sociocultural approach considers the effects of various social and environmental factors on the acceptance of new things as produced by individuals or groups but ultimately accepted or agreed upon from a usability perspective by the surrounding societal group. At the individual level, a creative outcome is one that is both new and novel. However, when the creative process is employed by a group or the outcomes are engaged in the wider society, then not only do additional perspectives of the newness and novelty define the creative work but there is also a necessity for the creative work to be useful. Hence, an outcome can be more or less creative. Researchers have developed valuable methods such as the Creative Assessment Technique (Getzels and Csikszentmihalyi, 1976; Kaufman and Beghetto, 2009) that emphasize the evaluation of the output of creativity against expert norms.

The impact of new creative ideas that are produced by a group or organization is often labeled innovation (Amabile, 1996). In this case, there are two separate viewpoints from which to consider the effectiveness of the creative moment – the intrinsic motivation of the individual within the group and the assessment of the creative outcomes as appropriate to the social group.

CREATIVITY AND ENTREPRENEURSHIP: THE IMPORTANCE OF EXPERIENCING

The awareness of creativity as a strategic way of thinking or as a problem-solving process should be inherently interesting to the entrepreneur. The link between creativity and entrepreneurship has been implied, expressed and considered for quite some time (Beattie, 1999; Dimov, 2007; Drucker, 1985; McMullen and Shepherd, 2006; Mitchell et al., 2004; Morris et al., 2003; Whiting, 1988; Zahra, 2005). Creativity and entrepreneurship have both been subjected to confusion and argument in their respective and combined scholarly literatures over definitional and process orientations as well as legitimacy as a field of study. This can be seen in the inclusion of creativity in the definitional identity of entrepreneurship,

and some have even posited that entrepreneurship is simply a sub-field of creativity (McMullan and Kenworthy, 2015).

Notwithstanding the debate in ordering the interaction between creativity and entrepreneurship, the value of creativity research in the context of entrepreneurship should yield valuable results. Both creative and entrepreneurial activities often exist in a domain of ill-defined problems where there are few solution and ambiguity. In both cases, characteristics of autonomy, flexibility, openness to experience, risk tolerance, self-efficacy and intrinsic motivation have been identified as beneficial at the individual level in practice. Yet what of their value in the entrepreneurial classroom? Given the inherent lack of structure in these pursuits independently, how can creativity blended into the entrepreneurial classroom yield meaningful learning moments that translate into real-world practice and experience?

Experiencing creativity will help entrepreneurs identify and realize their unique creative talents. From a pedagogical perspective, the constructivist approach (Savery and Duffy, 1995) to learning and teaching is valuable here. It stresses the role of knowledge creation as opposed to knowledge transmission in yielding greater capability among entrepreneurship students in the control of the creative process. Further, it emphasizes the unique societal and environmental influences on creativity that will be vital to both the emergence of the nascent entrepreneur and the critical act of entrepreneurship as experience that will benefit the entrepreneur in the venture development process (Morris et al., 2012).

In addition, experiencing creativity will help entrepreneurs become better problem solvers who can utilize creative reasoning to solve important problems that they face in both a market and a societal context and not just divergent thinking or creative method awareness. Creativity is best achieved when flexible, exploratory, non-predetermined paths of discovery are possible (Amabile, 1983), so it is important to provide nascent entrepreneurs with an environment of safe experience from which to test out new ways of thinking. Moreover, experiencing creativity will help entrepreneurs become more effective leaders addressing even more pressing issues facing our ever-changing, fast-moving society. Creativity is also viewed as a central element in problem solving, and there are a number of ways in which creative thinking can facilitate decision making (Sternberg, 2003).

For entrepreneurship educators, experiencing creativity can enable them to teach more effectively. Over the past 20 years of teaching creativity at the college level, I've certainly learned from constant innovation in the classroom and from helping and guiding others to use creativity more in the classroom. The role of the instructor changes when creativity is being experienced because the role shifts from the sage on the stage to an active side-by-side

participant or guide to the creative process. This is an uncomfortable position to be in because creativity is a searching experience that depends more on questions than on answers.

OVERCOMING MYTHS AND MISPERCEPTIONS

It's hard to think of any breakthrough product or service launched by an entrepreneur that didn't involve some level of creativity along the way. In the entrepreneurship classroom, there is always a palpable feeling that somewhere in the herd of gray matter inhabits the next big idea that will lead to a blockbuster IPO. So why then are college business plans still crowded with the next new bar, textbook reseller, dorm furniture storage, or food delivery service ideas? The key lies in the constant competing behavioral actions between familiar, habitual actions and seldom-exercised creative ones. In the dual pressures of daily life and the totality of college course work, many students operate from the easily accessible domain of the knowledge and experiences they hold from their current vantage point. This too is compounded by the natural constraints of a one-semester course that requires perhaps an entire business plan to be created such that any focus on creative processes is often confined to a few lectures at the beginning of a semester. Add in the trepidation by entrepreneurship faculty to guide or manage a seemingly fuzzy process such as creativity, and it can lead to a variety of perceptions and behaviors that actually inhibit the creative process. In my journey as a professional creative I have seen many groups of corporate professionals full of the appropriate aspiration and motivation to succeed creatively, but they struggle with producing useful novel and useful concepts. In the classroom these same behaviors that inhibit creativity need to be identified and then practical ways found to foster new creative behaviors that can produce superior creative outcomes. Here is my list of the 10 most common creativity inhibitors and practical ways to integrate creativity into any entrepreneurship classroom.

1. Starting Too Big

There is a lot of value in motivating students to do their best work. Yet again, when it comes to the creative process, it's a separate issue to set the bar too high, too early. In practice, beginning a semester emphasizing the importance of coming up with big Aha! moments for their projects isn't a request with a high probability of success. It isn't that students can't come up with the next Facebook or Uber; rather it's a matter of proficiency in creative cognition. As I've guided countless corporate creative teams that struggle with their sole professional task of creating breakthrough innovations that change the world, I'm aware of

the low probabilities at play in these efforts. So it is important to distinguish between “Big C” and “little c” creativity in practice.

What does it mean to be creative? This question gets the same level of impressions and suggestions as does the question of what it means to be entrepreneurial. As with entrepreneurship, a standard definition of creativity has been lacking in the field. Plucker et al. (2004) did a comprehensive literature review of 90 different articles that had the word “creativity” in the title from peer-reviewed business, education and psychology journals over a three-year period. Only 38 percent of the peer-reviewed papers analyzed explicitly defined what creativity was. This lack of structural terminology only aids in the continued propagation of the myths of what creativity is. Plucker et al.'s (2004) work provides a synthesized framework of creativity from the combined literature that now forms a widely accepted definition: “Creativity is the interaction among aptitude, process, and environment by which an individual or group produces a perceptible product that is both novel and useful as defined within a social context” (p. 90).

Gardner defines the “creative individual” as “a person who regularly solves problems, fashions products, or defines new questions in a domain in a way that is initially considered novel but that ultimately becomes accepted practice in a particular cultural setting” (Gardner, 1993, p.35). Gardner then defines creative works as “the small subset” of works in a domain that are ever deemed to be “highly novel, yet appropriate for the domain” (p.38); these works “actually cause a refashioning of the domain.” Those great minds such as Freud, Einstein or Picasso were eminent examples of domain innovators or disruptors that ultimately refashioned their domains, but refashioning was deemed valuable not only by the producers of the new knowledge but also by the sociocultural definitions of what is valuable.

But what about the rest of us? Kaufman and Beghetto (2009), in their 4-C Model of Creativity, expand on the traditional conceptions of the creative output to include “mini-c,” which is the creativity inherent in the learning process. Fostering motivation to learn in students has a direct positive effect on creative ability (Plucker et al., 2006). In addition to defining who and what is considered creative, there also is a need to include student exposure to the factors that lead individuals to undertake creative actions intentionally. The continual experience of these types of cognitive skills in the creative process can be important to seeding the necessary entrepreneurial scripts that can be used in future entrepreneurial behavior (Mitchell et al., 2009).

In my view, the key in the creativity classroom while decidedly constructivist in orientation (Novak, 2002) is purposed on exposing students to new ways of information

processing that can lead to more desirable cognitive habits that enhance their ability to think creatively. Welling (2007) identified four mental operations that account for a large proportion of creative cognition: application, analogy, combination and abstraction. Of these, abstraction, which is defined as the discovery of any structure, regularity, pattern or organization that is present in some different perceptions, is of key importance in the entrepreneurial context that can be experienced and practiced in the classroom as a precursor to opportunity identification.

Exercise – “frame it report”

The key for seeding new creative scripts in students is to start by breaking the creative process into discernible steps that can be recognized as different ways of processing information and observing the world around them. It is also valuable to reflect on any newly practiced mindfulness and awareness activity through a creative journal that captures their experiences of thinking. Engage the students to look purposefully for their own or observed behavior to process. One of the important roles of the teacher is to set the frame by which the focus of the behavior is observed to give the students a place to start. This exercise is designed to bring intention to three everyday frames (Goffman, 1974) from which to observe everyday mental tasks: the negative frame – “bug report” of things or situations that proved inadequate to a satisfactory experience; the positive frame – “possibility report” of what else something can do; or the neutral frame – “causality report” of open discovery of how things work or operate and identifying what is missing or gaps in knowledge to others. The overt exercise helps to seed discovering thinking and brings awareness to the non-obviousness in the world around the student. This dynamic framing exercise is straightforward, spawns considerable discussion in the classroom and often reveals ideas for new ventures. The key is guiding the students to expand the frames from which they view behavior and get them to recognize that discovery often begins with a question.

The bug report is the easiest to start with. Simply look for something that bugs you and then discover a new way to overcome the bug. For example, a team of students were rock climbing enthusiasts. They were dissatisfied with the lack of options in rock climbing holds for the gym that mimicked real rock formations. So they discovered a way to make 3D measurements of famous rock climb segments and then reproduce them on a 3D printer to recreate indoor practice climbs that matched their real outdoor surfaces.

The possibility report will produce an extension of a current idea or a cross-over into a new domain. For example, a team of students noticed that a popular brand of casual Crocs®

clogs didn't have accessories, so they fashioned prototypes of insulated clogs that could be worn in winter conditions.

The causality report is often the more challenging exercise because it does require more domain specific knowledge to find new uses or identify missing information that students can discover on their own. For example, a student wanted to find new opportunities in green, sustainable materials and, after helping his father install new fiberglass insulation in the attic, searched for green materials that could act as affordable, viable insulation alternatives.

2. Not Honoring the Process of Questioning

Entrepreneurs often operate at the edge of what they do not know (Hill and Levenhagen, 1995). In the entrepreneurial creativity context, awareness of sensemaking processes is a valuable practice to develop in students. In the classroom, I have noticed there is still an over-reliance on students asking questions and teachers providing the answers. I have learned that simply answering a question, while expedient, can inhibit the process of discovery and creative exploration by the student. Therefore, I focus my internal dialog to remind myself that I want to solve students' questions not by giving them the answers but by providing a path for them to develop stronger sensemaking skills and available problem-solving scripts. To do this, we employ the universal open question process of answering any question with the phrase "it depends" and then defining the contextual frame from which discovery can reveal satisfactory answers.

Individuals continually engage in sensemaking processes that reflect the synergistic interaction of information seeking, meaning ascription, and action (Ford, N., 1999). I find that exercising these three processes can significantly increase both curiosity and intrinsic motivation to search ever-widening contextual frames. This is one of my favorite activities, as it brings a collective sense of discovery to the entire class as students push for bringing their Aha! moments to share.

Exercise – question behind the question

Get students to ask a question that interests them and is a novel new question to them. Then require them to answer the question by seeing how many "it depends" questions it can spawn. Example: how many jeans do they sell at a local mall? The students pick a store and spend time watching customers and develop an answer. Then they use that experience to pose deeper questions: Where do the jeans come from? Where does a particular brand source its cotton for the jeans? How many total miles does it take for jeans to end up in this mall? Is the

practice of stone-washing jeans a sustainable practice? How many gallons of water does it take to raise and produce one pair of jeans? Are there fair trade systems in place for cotton growers in developing economies as with coffee? Evaluate on both the breadth and the thoughtfulness of these questions. Often this will lead to interesting new venture ideas.

3. Lack of Practice, Practice, Practice

The majority of the formal education experience is structured around the acquisition and retention of explicit knowledge. This knowledge acquisition and memorized structure develops a set of habitual actions that students perfect over time and recognize as the behaviors that are rewarded. Thus, when faced with a new challenge they tend to utilize a best-fit approach to previously held knowledge as a problem-solving strategy. Even in circumstances that favor some sort of creative action, students will likely choose familiar memory-recalled behavior options that are relatively more attractive based on their past success, relative ease, and certainty (Ford, N., 1999). Teachers also foster these memorized behaviors, because it is easier to develop grading rubrics for explicit information and to fit it into a well-defined syllabus. Thus, when it comes time to incorporate creativity-based activities it is seldom more than a single lecture or two in an entire semester.

The eminent creativity researcher E. Paul Torrance was one of the first proponents of adding creativity methods in the classroom with the development of an instructional model for facilitating suprarational thinking, defined as thinking beyond the rational thinking process (Torrance, 1972). His model specifies stages of heightening anticipation, encountering the expected and unexpected, and going beyond. The key cognitive behaviors that are experienced in the creative process embody the tension of anticipation and expectation. Torrance had as a goal to help students develop a metacognitive awareness of how they positioned their thinking when addressing creative challenges.

I certainly agree with Torrance that creative teaching isn't a guarantee of miracles in the classroom. That said, it has been shown that, with diligent practice, students will grow creatively and will solve many learning problems that otherwise defy solution (Torrance, 1972). I have confirmed this finding in the entrepreneurship classroom and have many students carry these metacognitive techniques with them in professional practice. The first step is to develop an awareness of how the mind is processing information and recognizing the role of continued memory reliance in both helping and inhibiting the quest for developing new connections that lead to novel ideas. In the Torrance Test of Creativity (TTC), this is measured as ideational fluency that asks students to come up with alternative uses for a

common object (e.g., describe as many uses as you can for a brick). This seemingly simple instruction is often in itself a hurdle to many students because they are over-reliant on memory of those explicit uses already memorized for the utility of a brick (e.g., a house, a dog house, a wall, a sidewalk, a road based on common themes) and conscious of the traditional educational expectation of succeeding in finding the “right” answer to this challenge.

The emphasis on divergent thinking processes in the TTC is but one of many creative cognition processes that students need to master to achieve superior creative outcomes. In addition to fluency (the number of ideas created in the responses), the TTC also looks at flexibility (i.e., the number of different categories of uses identified in the responses), originality (i.e., a statistical measure of novelty of the responses) and elaboration (i.e., the amount of elaboration in the responses) (Torrance, 1972). In exploring ways to train students that results in improved TTC scores over a semester, I have found that training students with metacognitive exercises that seed for both fluency and flexibility builds skill in learning how to process creative stimulus. This measure is defined as fluidity and evaluates the ability of intentional shifts between explicit and implicit thinking.

Exercise – “What do you see?”

One approach to improving the core of ideational fluency is experiential practice with creative stimulus. There are two kinds of stimulus: related or unrelated to the task or problem. Stimulus can be used in any sensory form, including visual, sound, taste, smell, tactile or proprioception (Stamp, 2000). I've found the easiest is with picture-based stimulus (i.e., a picture is worth a thousand words). The most accessible pictures from which sensory imagery can be processed are those with action (e.g., a surfer on a wave, a horse and rider jumping a barrier, a ballerina, or a bowling ball rolling down a lane). Select a picture and then ask: “What do you see?” Have the students write down as many words that describe the picture as possible in 15 seconds. What you will get in the first attempt is words that relate explicit information about the picture (e.g., surfer on a wave: water, surfboard, wave, blue, sunshine, California, beach, vacation, wipeout, etc.). Then ask the students to read aloud the responses and collectively as a class compare the breadth of the words expressed. Generally, over 90 percent of the words will be in ever-more specific reference to what is explicitly in the picture. This is because they are using habitual memory processing to look at the picture and interpret correct responses to the original question.

Next, have the students do this again and coax them into increasingly implicit interpretations of the picture (e.g., surfer on a wave: wipeout, vacation, fun, whoa!, hang 10,

life of a start-up venture, taking an exam). Again, have the students share their words and link the interpretations through metaphor (e.g., a new venture as a surfer on a wave). This collective sharing of implicit viewpoints shows the students that the origins come from the ability to derive new meaning and sense-giving to the images. The key learning moment with the students is that, while each individual implicit view of picture stimulus is unique to the student, it is identifiable to each student once aware.

Finally, allow the students to repeat the exercise for an additional 15 seconds with the same prompt, "What do you see?" Awareness of the freedom to freely associate the picture to any implicit meaning as long as they can communicate its meaning fulfills the mental construct as a viable creative idea (i.e., it is new to them, it is useful to the individual in that it fulfills the problem statement, and it is useful to the group to add to their meaning). I do this same basic exercise for many weeks each semester, and this can be used in a testing format as well. As the students gain fluidity skill, they can easily record 20 or more explicit words or phrases and 20 implicit words or phrases in the same 15-second period. Once they have achieved this level of fluidity in developing new and useful mental models to stimulus they have an increased likelihood of creating bigger ideas when searching for new venture opportunities.

4. Providing Examples

Showing examples in class is great. In my new venture class, I love to show students examples of new business ideas gleaned from social media or other online sources. While it is both stimulating and exciting to share the latest new app or newest breakthrough idea recently funded by Silicon Valley VCs and generates ample discussion in the classroom, it's a win/win at the expense of creativity. Showing examples, I've found, can inhibit creativity in a couple of subtle ways. Firstly, showing an example is a suggestive behavior on my part as leader in the discussion. This example is then interpreted by the students as the best or an ideal way to approach the problem, and they generally accept this as the preferred solution, since I represent the expert view in the room. This often results in causing creative blocks or "me-too" derivative ideas in the classroom as students use this example as their basis for comparison. This suggestive effect isn't confined to the entrepreneurship classroom. I have seen this effect in corporate brainstorming sessions countless times. When someone of authority gives an example up front before work on a creative challenge is started, the social standard of the group shifts toward that example. This effect has been demonstrated in research. Beaty and Silvia (2012) confirmed other research that ideas in a divergent thinking

task tend to get more creative across time. They also showed that, as intelligence increased, this disrupted the normal serial effect in idea generation, concluding that individuals use executive process to converge on more productive solutions. Thus, when an intelligent example is presented, students actively revert to convergent thinking strategies rather than explore new idea spaces.

Secondly, an example, and in particular an elegant or novel solution to a creative challenge, can intimidate students still trying to assimilate the idea in their own knowledge structures. This effect is even more pronounced when bringing up “latest trend” conversations in the classroom, as students who are particularly aware of a category or well versed in trends tend to share examples they have memorized from other sources, which inhibits the other students in the class who sense they have less to contribute.

To stimulate and provide an environment for the creative process to flourish, instead of offering an example up front, I better define the context for which the original creative problem existed and then guide them into the creative space to explore their new knowledge generation. I only use the example then to show as an endpoint comparison. For example, I like to use the opportunity space of “tech-active sports gear.” This market category is a familiar conceptual space to college students and is also particularly active commercially. To get them started, I share some of the work of Boden (2004), who contextualizes the creative space into three perspectives: new combinations, new explorations and new transformations. Then I have the students put these perspectives to use. In this example, one viable conceptual space for sports gear is the backpack. One example of a new combination is to combine sensors with backpacks. A new exploration of the backpack concept space is to re-envision the backpack as not only a device to carry items but also one that re-charges the electronic items you carry. A new transformation of the backpack could be to combine solar panels so that the backpack can provide a heated interior of the backpack to keep your electronics from freezing in cold outdoor climates for hikers, explorers, the military or students in cold climates. In each of these cases, the students can develop new backpack concepts and then compare them to commercial examples to evaluate their creativity on novelty, utility, and acceptability to a particular customer target. Examples have their role after the creative process. Eliminating examples altogether also inhibits the creative process, as students will often hesitate, not knowing where to begin as their minds resort to memory-based behaviors searching for the correct answer. The key is to balance the use of examples as an evaluative comparison tool and not as a creative tool.

Exercise – “What if?”

This is a re-envisioning of the standard divergent thinking alternate uses exercise in the Torrance Test of Creativity. The idea here is, when students ask for guidance or suggestions related to a concept idea that they are working on, to resist the temptation simply to provide an example. The goal of the creative process is to provide more choices from which to choose in making a decision about a conceptual idea or product. Instead, provide them a new context from which to view their task. Often this is a process of deconstructing assumptions and then forcing a new combination of elements to change the opportunity space.

Here's what to do. Take an everyday object and have the students create new concept ideas to repurpose or find new uses for the object (e.g., a pen, a plastic drinking cup, a ping-pong paddle, a Pringles® can, etc.). Then set up the task in an entrepreneurial context by having the students prototype their concept after the creative process, test the idea with a targeted customer, and produce a rough estimate of costs and pricing to establish viability. The key here is to help them re-envision the problem space by deconstructing the item and asking questions: What is it made of? What physical utility does it have? What is it used for? What benefit does it provide the user? What could be added to this to transform its utility or benefit? How could this be used in a different way for a different customer?

One of my favorite new product concepts for this exercise was a team of students who came up with a new use for a Pringles® can that took the properties of volume, structural rigidity, and the observed Aha! moment that it could fit into a car cup holder to develop a concept for a pet store that utilized the can as a storage structure to transport fish home. The idea was cleverly simple. The can would be sold to pet stores with a plastic bag, twist tie and pre-printed stickers that gave care and feeding instructions to customers on their new pet. Now transporting that new goldfish home from the pet store is safe for both the owner and the fish. The prototype concept was so well received by pet store owners that the students spent a summer sourcing supplies and developing the idea, which they eventually sold to a local pet store.

5. Relying on Demonstration

I will never forget the first time I saw a demonstration in a class. I was in first-grade math and the teacher was showing how to solve single digit addition problems using a number line. I was hooked. However, I saw a different way to perceive the process of adding two numbers by reinterpreting the origin of the problem and how it affected the count on the number line. This of course was one of my first indications that I had a natural curiosity to question

explicit knowledge structures. The teacher, however, simply called me stubborn. The teacher was interested in showing us the “what and how” of addition, and I wanted to know the “why.”

Yet demonstrations remain a central part of the teaching classroom. When I use a demonstration, I am mimicking and suggesting the “right” way to do something. The classic study of monkey see, monkey do behavior in humans shows that a demonstration is a powerful way to imitate desired future behavior (Millgram et al., 1969). However, a demonstration has also the power to inhibit creative thinking, because in showing the “right” way I have effectively circumvented what students might have conceived had they been allowed an opportunity to view the process from a fresh, unbiased perspective.

A common example in the entrepreneurship classroom is in demonstrating customer experience usage assumptions as explicit knowledge versus allowing the students the freedom of deconstructing potential customer needs and then formulating their creative concept of a business, transaction or usage model. While I'm a big proponent of design thinking or human factor design as a framework for creating new ideas, it is important to keep in mind that filling up a wall with Post-it® notes isn't creative until a value-focused concept is captured from that process and validated with potential customers for acceptability.

Exercise - “I spy”

In this exercise, instead of demonstrating the user experience of an app or a website or the buying experience of a product or service, I let the students set up experience gathering sessions. They even have to determine how many observations they are motivated to gather to make and support user trends or conclusions. One of my favorites is to utilize video technology to capture user behavior or to conduct user stories or conversations. For example, students will go into a grocery store and, while they are shopping, engage with shoppers in unassuming conversation to ask why they are buying or using a certain product. Then the students are required to create new usages or applications, combinations, transformations, customizations or aftermarket add-ons. While this is a familiar variation of the focus group or consumer surveys, it is purposefully unstructured so that the students experience first-hand the value of consumer-centered inquiry. For example, a team of students went to a car oil change location and investigated customer stories around dealing with long wait times for car service. The students, then realizing the value of a consistent pool of captive customers, proposed new concepts in customer service and new revenue streams to fill the repair wait opportunity.

6. Creative Freedom

This question always comes up sooner or later – how much freedom do people need in order to be creative? I have a love, hate relationship with this question. Many creative practitioners will point to the seminal work of Alex Osborn (1963) in his book *Applied Imagination* as interpreting the creative process as one without constraints – that creativity needs to have maximum freedom to increase ideational efficiency. However, in professional practice I have found that, if there is too much freedom without a particular focus, then the individual or group involved in the creative exercise will revert to habitual thinking practices in search of readily available ideas or familiar ideas with high probability (i.e., “low-hanging fruit” ideas). What Osborn actually said was that, to improve ideational efficacy, two factors were required: 1) go for quantity; and 2) defer judgment. Many have treated deferring judgment as a proxy for freedom to say any idea that comes to mind. Deferring judgment or withholding criticism is important for allowing individuals to feel free to offer unusual or unconventional ideas, but this is different from freedom or release from a focused goal orientation.

The real issue is the interpretation of the term “freedom” as it relates to the context of the creative process experienced by the individual, which if unresolved can inhibit the creative process. At the individual level, the freedom issue can range from mild concern to fearful apprehension by individuals who wonder where or when new creative ideas will appear. This is initiated by the myth held by both students and teachers requiring creativity to include the necessity of experiencing a flash of insight (Sawyer, 2012). This misconception can often be traced from students as a misunderstanding of the role and value of incubation used in their creative experience.

Many teachers and practicing creatives utilize the historic four-stage creative process model proposed by Wallas (1926) of preparation, incubation, illumination and verification. This has been a useful conceptual foundation for creativity researchers as well (Sadler-Smith, 2015). Perhaps the most intriguing of the steps to put into practice is the step of incubation – often defined as that stage of creative problem solving where the problem is temporarily set aside after a period of initial work (Smith and Dodds, 1999). However, the challenge centers on how incubation is practiced – is it exclusively accidental or can it be practiced intentionally? Even in Wallas's book he doesn't make an explicit distinction between when to use conscious thought and when to use unconscious thought but does encourage two techniques for incubation as either conscious work on other problems (i.e., a distraction) or relaxation from all mental work (Sadler-Smith, 2015).

Gelernter (2016) describes a variable of human consciousness that operates along a spectrum from high focus to low focus many times during the day. At high focus, the mind works in a convergent manner. It identifies specific problems and tasks. It calls on the memory for data, patterns and instructions necessary to answer the questions and perform the job at hand. In times of high focus the mind is busy thinking on purpose. By comparison along this continuum, the mind at low focus may drift and even seem to go blank. At lowest focus, when the body is asleep, the dreaming mind turns up images and memories in an attempt to pursue meaning by inventing stories, not according to a rational blueprint, that we sense as dreams. A logical argument and a story are two ways of putting fragments in proper relationship (Lakoff and Johnson, 1980). This approach according to Gelernter can place the range of creative production from scientists to poets on the same spectrum. Others have argued and shown empirically that incubation effects are the brain's active forgetting process of eliminating inappropriate mental sets, which allows for new combinations to become favored.

This brings us back to the most often used method of creative focus, the brainstorming group. To Osborn's credit, in the early 1960s when he proposed his method, it was touted as a way to double the number of ideas created to address a problem (Osborn, 1963). Brainstorming was created in an information-sparse environment and was a method to gather a group of people to collectively focus on a problem space. At that time, communication of ideas occurred fastest and was best done in the same room at the same time. In effect, the early brainstorming group was its own private knowledge network. This strategic gathering of a carefully selected network of explicit knowledge holders could produce unique combinations of that knowledge quickly and efficiently to provide new concepts. However, in today's highly connected world, how people access information has changed. It is now harder to "think outside the box," when search engines have expanded the size of the box exponentially and almost instantly. With the cost of knowledge fast approaching zero, it changes the entire role of the brainstorming group and how we engage others in the creative process (Altman et al., 2015). Therefore the brainstorming process whether individually or in a group needs to evolve from a practice of high focus to one where low-focus approaches can be used to actively foster incubation of the vast knowledge choices into manageable superior creative outcomes (Mitchell et al., 2015).

Exercise – hatching eggs

In this exercise I encourage the students to discover active incubation strategies that help them prepare for the process of individual or group brainstorming effectiveness. The idea is

very simple and designed to help active incubation by providing alternative stimuli not related to the task in an active attempt to use both the incubation tactics and distraction and relaxation to a strategic advantage. The use of stimulus helps the unconscious processes in the mind make new combinations that may become conscious at a later time and hatch unexpected but novel ideas. Students can do this exercise either alone or in groups, but I require them at least to hold one brainstorming group as part of the exercise so that they can experience group thinking around a creative problem. The key is to allow the student to explore secondary free knowledge sources that may spark new knowledge.

Here's what to do. Assign a creative challenge. One of my favorites is to have students or teams create new board games. In the Wallas (1926) structure, in the Preparation Phase, there is complete design freedom here to define what is a board game, define what is the concept of play, explore how games are played, and explore who is the intended target audience for the game. However, the final prototype must be a game (i.e., contain true gaming elements: fun, competition, scoring, winners and rules). Then in the Incubation Phase students must identify and utilize a non-game stimulus to help provide conscious awareness of design elements relevant to the creative challenge. One of the suggestions I give them is to go to a bookstore or newsstand and pick out 10 random magazines without judgment and then utilize the visual images to spark ideas for their games. Then they are asked to go for a walk-about in a social meeting place and see how humans engage in play. Some students have gone to the mall, park, playground, subway station, hospital waiting area, or even a zoo (i.e., animals play too). The key here is to watch others and let the mind actively perceive the stimulus without regard to its immediate application. Then the students are asked to set aside the problem until the next day, when they hold another brainstorming group or proceed individually to develop novel game concepts. The concepts are evaluated for play value and fit to the expected consumer target, and the students submit their favorite three game concepts with rules and play descriptions. The topic concept is prototyped, and the students must record on video actual user interaction with the game and conduct enough trials to establish verification of their initial concept assumptions.

It is interesting to read in the students' creativity journals when the ideas become conscious to them. Part of the obvious revelation that occurs is the students' determination of the goals and limitations of their newly formed ideas. In addition, when students develop improved metacognitive awareness of their internal creativity ability they demonstrate a greater ability when performing creative tasks (Puryear, 2015).

7. Not Encouraging Ownership of Ideas

I love to hear live music. Not only is it a source for experiencing a type of creative expression, but it also is a source of creative inspiration. When listening to a musician play a set on stage, it is often very easy to distinguish a song written by someone else that the artist is covering versus a song that the artist wrote. There is a discernible difference that comes out into what I term the “ownership sound.” This distinctive sound of ownership in the expression of the music performed seems to be a real-life example of the intrinsic motivation principle of creativity, which states that people are most creative when they feel motivated primarily by the interest, enjoyment, satisfaction and challenge of the work itself – and not by extrinsic or outside motivators (Amabile, 1983). Intrinsic motivation is one of four factors of the componential theory of creativity, which in essence is a comprehensive model of the social and psychological components necessary for an individual to produce creative work and includes high domain expertise and high skill in creative thinking, and works in an environment high in support for creativity. Taken together, in the proper social environment creativity flourishes. This explains in some part the viral nature of some cover versions of otherwise famous songs that have been re-envisioned, re-worked, deconstructed, sampled or reinterpreted by a new performer and then hit the popular music charts. It reinforces in the entrepreneur classroom that I shouldn't be describing a breakthrough innovation but rather how this breakthrough innovation breaks away from the commonplace standard in its category. We all work on the shoulders of those who create before us, but more than simply borrow inspiration we need to own it in order that the next stage of improvement can truly emerge.

Exercise – word hack

In this exercise I want to simulate a real-world test of Amabile's componential theory of creativity. For this to be universal to everyone in the class in some experience domain where they could generally participate with equal expertise, I decided to leverage the everyday use of language and explore word innovation in the English language. English is a language that has a very malleable structure. There are hundreds of examples of hybrid words that are in common use in our culture, such as television (tele = at a distance, vision = to see). Popular products also inherit hybrid names that are used to set them apart from the competition, such as NyQuil® (Ny = night time, Quil = tranquility). The word hack exercise when utilized in a supportive creative environment in the classroom works amazingly well as an exercise because creating new language sparks a natural intrinsic motivation to own what is created, as it finds immediate social usefulness and fits the criteria for a creative work because it is

also novel, and I require that the word be tested in social media for acceptance by others. In addition, it fulfills the componential theory's other two tenets in that expertise in spoken language is fairly uniform at the college level (even if English is not the first language) and the exercise emphasizes the development of expertise in the important creative skill of bisociation (Koestler, 1964), itself a hybrid word that means to connect two things that come from two different contexts into one.

Here's how it works. This exercise can be done individually or in groups. First, the most efficient source of stimulus is any newspaper that obviously has numerous sections and is full of words. Then have the students work to identify by visual inspection about 20 multi-syllable words and write them on a separate piece of paper. From the collected words, draw a vertical line between the natural syllable splits in the words and then combine by random or visual experimentation syllables from two words and make a new word. The exercise can be used in any allowed time frame, but the key is to allow for the assembly of a few new word options from which a preferred creation is identified. The exercise is completed by creating, in addition to the word, a definition and an example of the new word used in a sentence (see Stamp, 2015

for an illustration). A few examples of words created by students in real classroom sessions were: demonstrate + achieving = demichieving – only getting half of one's work done but always getting full credit in the eyes of the boss or teacher; saliva + explosive = salivosive – a food that is so desirable it causes someone to drool excessively at the mere thought of it; fun + anniversary = funversary – if you have to work on a defined national holiday, your employer allows you to specify a different paid holiday that you identify as your personal funversary; beverage + emergency = bevmergency – a meeting that is so boring that only an adult beverage can make the situation tolerable.

The final task in this exercise is to test the newly created words in a real social context. For this, the students use the words in any online social media form they wish with the goal to see how much reach and re-use they can effect. In this portion, it is also expected that the creator define and measure what is termed reach. This sparks a new creative task to see how much ownership of the words a student will take and where these words will end up. Some created words have ended up on nationally syndicated blogs or even on the local television station used by a host in a news report.

8. Forcing Traditional Grading

I get asked this question a lot – how do you grade creative assignments? I often think this question is asked because there are a lot of people who still secretly believe you cannot grade the output of creative efforts and use this as a clever ploy to convince me that there is no way to grade creative efforts. I couldn't disagree more. This is very similar to the ongoing debate within and around entrepreneurship – you can't teach entrepreneurship. In both cases, the research literature is proving this is no longer a debate. Both creative and entrepreneurial ability can be nurtured and improved with practice. However, if I grade on a traditional normative standard without providing appropriate guidance and feedback in improving creative awareness then I can inhibit student creative self-efficacy. Instead, I have become a big fan of longitudinal approaches to assessing creative ability, and these methods have direct utility in the experiential entrepreneurial classroom.

In the entrepreneurial domain, the creation and writing of a business plan is considered both an essential part of the curriculum and a vital skill that translates to critical steps in the creation of a venture. From a pedagogical perspective considerable effort has been advanced to develop effective models for teaching the craft of business plan writing and analysis. One way to assess the ability of a student to grasp the essential knowledge structures and skill to construct a business plan is to use an experience-based tool that qualitatively assesses investment criteria that are important to venture capitalists. White et al. (2011) demonstrated using a situated and community practice approach for 13 business plan criteria evaluated by students and a panel of three expert evaluators that a high level of internal consistency between students and experts could be achieved. This indicates that using a business plan as an experiential template prepares students to understand the structure, meaning and importance of concepts, behaviors and skills necessary in the practice of entrepreneurship. Others have taken a behavioral approach to measuring longitudinal growth in entrepreneurial intentions throughout the entrepreneurship education process (Fayolle, 2004).

In the creativity domain, similar methods have evolved over time to assess creativity and creative ability in students. One of the most effective is the Consensual Assessment Technique (CAT) first articulated by Amabile (1982). In the CAT, a product or concept is deemed creative to the extent that appropriate observers agree that it is creative. This method too as it has been developed over time has shown reliability and construct validity in the assessment (Hennessey, 1994). The only issue that arises is the criteria used and the form of the creative product. The CAT is used to assess a variety of outputs, such as a form of

literature (e.g., poem or story), an art creation (e.g., collage or drawing) or a product (e.g., inventions or science-based experiments) evaluated from a defined beginning framework such as a theme or word prompts. Another approach is to borrow the time-honored practice in art and design of the critique. Researchers have adapted this highly experiential methodology and practice from the design studio to the creativity classroom with great success in measuring growth in creative abilities (Hokanson, 2012). In the behavioral domain, researchers have developed metacognitive awareness assessments to build student creative self-efficacy and intention (Puryear, 2015).

In the intersection between creativity and entrepreneurship, I have found that one of the best ways to evaluate creative output is to blend a literary form with a product form and blend it into an essential part of the entrepreneurial process, the concept. A concept in this context is a written and often visual treatment of the core attributes and description of the value proposition that the entrepreneur is attempting to transact with the desired consumer. The development of a successful value proposition, business model and consumer desired attributes are a critical first step in the early stages of business plan development. Using a word-based concept (e.g., in paper or web landing page format) as an assessment to evaluate both creativity and entrepreneurial abilities in students works particularly well in the classroom because it both is time efficient and can be done before significant resources are committed to building prototypes or models. In addition, a concept is a very usable framework to identify both value-creating elements essential to entrepreneurs (e.g., consumer benefits) and awareness of the creative process (e.g., novelty, utility and social acceptance). Part of the learning process as well comes not only from learning to produce a concept but also in critically evaluating and interpreting concepts created by others.

Exercise – three stars

This exercise is one that I use multiple times during the semester in a testing environment to provide a longitudinal measure of student growth in creative ability. The test exercise has three parts. It starts with a carefully selected visual image (see the exercise “What do you see?”). Part one asks students to provide 10 words that describe what they see in the picture on a continuum from explicit to implicit knowledge. The key here is to evaluate students’ command of their mental fluidity and evaluate their ability to recognize what is explicit versus implicit knowledge and interpret how they visually perceived the objects in the picture.

Part two asks the students to use the picture as a primary source of stimulus and create three seed ideas where this image could be used effectively as an image in an advertisement (e.g., traditional print or landing page). A seed concept (30 words or less) is a simple

description of the idea, the target consumer and the main consumer benefit. Then the student is asked to qualitatively (as opposed to subjectively) rate their seed ideas from 1 (best) to 3 (least) in terms of benefit preference and fit to the consumer target.

Part three then asks the students to write an expanded concept of their preferred idea in an advertisement format of no more than 100 words. A concept in advertisement format includes a picture, positioning language and attribute description to communicate a consumer-focused offering that has been validated in the literature to represent an accurate medium to estimate consumer trial (Kahle et al., 1997). This format is most effective when the information in the written concept mirrors the information consumers have when they decide what to purchase. An advertising directed concept to test consumer trial purchase of a product or service is similar to using a business plan to test investor trial investment in an entrepreneur.

The exercise is evaluated and scored without student names attached by myself and a panel of three former students who serve as creative process experts. A scoring rubric is defined for each part. In part one, each of the 10 words on the continuum from explicit (left-side anchor) to implicit (right-side anchor) is awarded for accuracy (if it actually exists in the picture it counts and is on the left side of the continuum) and originality (it exists on the right side of the continuum and can be inferred from the level of sophistication in word choice and its connection to the picture).

Part two is evaluated and a weighted average score of the order ranking of the three seed concepts of the student's ranking compared to the panel's. Maximum points are given if the student ranking compares to the expert panel ranking. This is an effective grading because it requires students to demonstrate they understand value creation in a concept and how to make it attractive to a perceived consumer rather than simply picking the concept they personally like or find appealing. One of my best resources for expert panelists is former students from my creativity class who volunteer to be raters in order to keep their creativity skills fresh.

Part three rates the concept as described in the CAT for written creative tasks (Amabile, 1982). The CAT has been validated for the three predictive factors of creativity, style and technical correctness. For consumer concepts, creativity is evaluated by the expert judges for attention-getting relevance, fit to consumer mindset, and ability to draw the consumer in. Style is interpreted in writing skill, appropriateness and structure. Technical correctness is the ability to communicate effectively overt consumer benefit, reason to believe, and new and different scales.

I have used this exercise format since 1999 and have found it to have a couple of surprising outcomes. First, students don't see this as a test as much as they perceive this exercise as a way to showcase or demonstrate their newly developed creative skills. Students grow at different rates as their creativity awareness and practical skill emerge. When students see this improvement it builds their intrinsic motivation to try increasingly challenging creative problems. In fact, over time I've added a qualitative assessment of ambition in order to award extra credit to students who take on impressive depth in their concepts and excel at a higher level. Second, students are generally proud of their work in this exercise (testing) format. I've had many students tell me they have kept these tests for years after college to remember the creative processes we experienced in class and applied it to professional challenges. In addition, I've had students who have proudly shown these tests in a job interview when recruiters ask what differentiates them from other candidates, because corporate recruiters recognize the concept format and can compare it to professional competency, and love to hire students with a mature entrepreneurial mindset who can adequately communicate ideas.

9. Requiring Success

During the course of any creative project, there are bound to be both roadblocks that appear in internal cognitive processing and external design obstacles that arise during the course of information acquisition or knowledge development. It is one thing to provide a supportive environment in the classroom but that doesn't always result in the individual personalities in the classroom overcoming these blocks. It is vital to the learning process within creativity to develop schemas and heuristics for overcoming roadblocks and failures that arise to successfully persist to an acceptable outcome.

C. Ford (1996) suggested that sensemaking is guided by schemas that construct meaning and structure on information and can positively influence creativity. When students perceive a negative outcome in their own creative processes or receive negative feedback from a teacher these events could result in schemas that inhibit the creative process. Of course, each person when receiving negative feedback responds emotionally in different ways, and ability to persist or use intrinsic motivation to overcome these obstacles can vary greatly. What is considered negative feedback by one student can be simply a suggestion to try something different to another. Researchers have not yet found a solid link between failure feedback and future levels of creativity, but others have found that the ability to carefully

manage goal orientation can moderate positive effects of negative feedback to create successful creative outcomes (He et al., 2016).

Since having a strong goal orientation increases intrinsic motivation for positive outcomes to the effort, it is important to understanding and experiencing failure in the creative process. In the classroom, mastering the skill of asking open-ended questions (see the exercise “question behind the question”) is a practice that helps students work through creative obstacles as they encounter them. It is also important that the classroom develops a culture of the class time as a forum of open conversation for creative reaction to failure or roadblock resolution that moves issues forward.

The creative process is designed as an idea generating process that results in more solution choices for ill-defined problems. But often, in the active working of problems that take an extended time, students in response to challenging ill-defined problems resort to familiar behaviors of habitual convergent thinking and search for the single right answer. This problem-solving strategy is often at odds with the prescribed challenge, and students experience feedback from the experience that is perceived as negative when the results are less than satisfactory. This effect is particularly pronounced in entrepreneurship problems because of the inherent ambiguity involved in working on innovation type problems such as business model invention. Even the task of specifying the goal in entrepreneurship problems can lead students to struggle at creative tasks to solve those problems. In this case, it is often concluded by the teacher that the creative ability of the students must be lacking when in many cases it is an issue of prescribing the outcome goal expectations with better clarity.

Creativity researchers also debate the role of creativity in solving problems. The literature for many years has continued a lively debate on whether better creative outcomes are derived from general creativity knowledge (Plucker, 1998) or domain specific or event task specific knowledge (Baer, 1998). The argument persists because many divergent thinking assessments ask for specific creative outcomes (e.g., uses for a brick) from a general creative process (e.g., create as many uses as possible without regard to the utility or success implied by the instruction). While numerous studies show that more ideas are produced when there is greater domain specificity to the required task, it has been shown that, when people are presented with a specific creative task such as writing a poem, a higher level of creative performance is exhibited by someone with domain expertise in writing than someone with equivalent domain expertise in say mathematics (Baer, 1998). This has also been shown to be true in task specific problems like making a collage, which has greater creative outcomes by those with more graphic design domain experience as compared to those without. Whether or

not these empirical results are research design and analysis artifacts is still hotly debated (Plucker, 1998).

This goal or process ambiguity can easily happen in the entrepreneurship classroom. One of the favorite creative problems posed in a venture initiation class is to create a new business model for an established business. I've seen this problem pose negative feedback perceptions throughout the creative problem-solving process. Part of this is lack of domain specific expertise, and part of this is a lack of specific goal orientation. Even the entrepreneurship literature debates a common definition of a business model (Morris et al., 2005). Then couple this with the confounding goal orientation of working through the development choices for which goal – value for the firm, value for a targeted customer, firm-level competitive advantage, firm positioning in the marketplace, economic model or resource combination effects – can inhibit the creative process and the students revert quickly from divergent process to convergent identification of “What is the correct answer the teacher is looking for within all these factors?”

In my experience, the hurdle to creativity in solving this problem is caused by two inhibitory factors: 1) the assignment isn't personally meaningful to the student, with little ownership, so there is little intrinsic motivation that can help the student persevere when business model design obstacles appear; and 2) the assignment specifies a general problem (create a new business model) with a specific expectation (that it is novel and economically viable, i.e., it works) rather than asking for options for a specific problem (create a new transaction model) with a general expectation (does the new invention make money for the firm?). This allows the student to shift the locus of the intrinsic motivation to a learning goal orientation that strengthens the creative process through the problem design obstacles to achieve new and different knowledge with a searched and identified cause and effect basis. It is unreasonable for the teacher to have an expectation of protecting entrepreneurs from making mistakes either in the classroom or in the real world, but we can help seed the important entrepreneurial traits of perseverance when faced with ambiguity.

Exercise – pivot proof

In this exercise have the students select a product or service and pivot it to a completely different market category (e.g., profit to non-profit, or taking something from a traditional business model and pivoting to the shared economy model). Another way to conduct this exercise is to select a vacant building in your community and ask the class to create an ideal business for this location. The choice can be any space from a well-defined open space in a popular mall or prime retail location to a long-empty building that has seen better economic

prosperity. In this creative challenge there are two parts: 1) creation of three possible concepts for the space; and 2) evaluation of the business model assumptions for concepts to be economically competitive in that space. Have the students present the three concepts and their findings to establish which is the best concept for the space and why the other two are less successful. Often any or all of the concepts need to pivot during the evaluation phase as new information is discovered for the concept to become competitive. Many students will experience many iterations of creativity and evaluation before they decide on which concept produces the best simultaneous creative and economic outcome. This exercise accomplishes a shift from high-risk failure in achieving successful domain specific solutions (a correct answer) to a low-risk failure general creative process experience that seeds useful schemas and heuristics for overcoming design obstacles that can be utilized when addressing future specific problems.

10. Watching the Clock

I am a big fan of allowing the creative process to take its course. Despite all the practice, skill attainment and creative cognitive awareness, time is one of the best resources to spawn creativity. I'm always amazed at the expectations people have for the creative process. I once had a senior-level human resources executive with a Fortune 100 company designate within the schedule of a two-day national sales meeting with 55 participants a time slot of 23 minutes for my creative session for novel marketing ideas for the next year. When I inquired into both the amount of time scheduled and the unique value of 23 minutes, the response I received was "Well, that should be enough time for you to come up with something, don't you think?" I've faced a lot of creative constraints in many projects, and with a skilled team constraints don't kill creativity as is widely assumed. Even the literature shows a movement on this issue. Where some theorists have described the ideal creative process as unstructured, open-ended, and free of external limitations, others have found that creative individuals and teams can benefit from constraints (Rosso, 2014).

The key to working with constraints is to be highly prepared for the creative process, be skilled in mental fluidity as discussed earlier (see the exercise "What do you see?") and have a mindset of the creative constraints as a focus that point to where ideas will emerge rather than as an line that can't be crossed (Mitchell et al., 2015).

The classroom itself can be a constraint to students in many ways. There is the physical reality that a 55-minute time slot can evaporate very quickly for students who are just acquiring new creative skill sets and adapting to group creative activities. In the case of

teams who are very skilled and whose scope of work is clearly defined and focused, 55 minutes can yield dozens of ideas that can be achieved compared to the same time period for student groups. In addition, the classroom holds perceptual constraints. I have observed from extensive interviews of both students and professionals in a group creative setting that approximately 50 percent of the ideas that are generated are never shared with the group. The three main factors that are related time and time again for this holding behavior are: 1) fear of saying something that is perceived as wrong or unintelligent; 2) fear that if they share in the larger group they won't receive proper credit for their contribution; and 3) fear that, if the group likes the idea and upon further effort it is determined that the idea isn't novel or unique, the individual praise from the group is annulled.

To overcome this I am a big fan of scheduling the class as a lab format that combines the three 55-minute lectures into one three-hour lab. Then structure the class in a flipped or inverted format where explicit knowledge acquisition from readings, videos or slide decks can be done outside of the classroom and the classroom utilized as an implicit knowledge processing lab. In this way, the class acquires a discovery atmosphere that changes the mindset of the students and increases group participation and sharing. I am also in favor of designating and formalizing a co-work space for the students to meet for team assignments so that they develop a sense of space and discipline for the creative process, giving them a space to integrate design thinking or other visually intensive processes into their creative activities. This can also be done for students who want to do projects independently. Developing a personal environment and process of personal creativity is also an excellent assignment for students to develop reflections that should be included in their creative journaling and shared in class.

Exercise – video PSA

This exercise is a free-form creative problem that blends creative thinking with the added ingredient of humor. Koestler (1964) first identified the link between creativity and humor as having the same structure as science or art in its discovery of hidden similarities. Humor works on the social level by leveraging an unexpected change in the angle of the optics of reality, as does science or art. Since the creation and production of humor is a form of opportunity recognition (i.e., it is implied that the customer here will have some level of appreciation for the humor) where the payoff is laughter or a new insight or appreciation rather than an economic one, this exercise is easily incorporated into the classroom. In this exercise the student or teams are required to create a short three-minute or less public service announcement (PSA) on their favorite or invented cause. The goal is to blend a creative new

approach to communicating the main benefit of the cause with humor as a vehicle for attention and reception of the benefit message. The big risk of this exercise to both the student and the teacher is the extent of the appropriateness and boundaries used in the humor portion of the challenge. The students create the videos outside of the classroom, and the class time is used for showing and discussion of the creative product. Grading is done on a weighted-average score of my critique and that of a student panel of former students from my class who volunteer as raters as an estimator of social acceptance. Some of my favorite PSAs were spots entitled “The emerging epidemic in America: how the government uses cat videos for spying on us,” “Look both ways: your guide to one-way streets” and “Good vegetarian hunting,” which created a new vision on the topic of animal protection by substituting the hunting of large game vegetables such as watermelons or heirloom tomatoes. The two students dressed in camouflage and proceeded to stalk and hunt vegetables in the wild. While the video received a high humor score, the classroom critique generated a lively discussion on the merits of hunting in general, animal rights and the concept of vegetable rights. Video projects in general also carry with them a high degree of intrinsic motivation to the students. The two students actually used the vegetarian hunting video as part of their job interview process with great success as a demonstration of their creative skill.

CONCLUSIONS

One of the defining, widely accepted moments in the development of the field of creativity was the 1950 address by J.P. Guilford at the annual American Psychology Association meeting in which he stated that less than 2 percent of the books and articles included in the *Psychological Abstracts* for the preceding quarter of a century were focused on some aspect of creativity. As history would have it, Guilford was able to give another “state of the field” address 20 years later and reflect on the publication of almost as many studies on creativity topics in each year thereafter as there were for the entire 25 years prior to his address (Guilford, 1970).

At the interface between creativity and entrepreneurship are the students who desire to acquire the cognitive abilities to be successful in their chosen area of the entrepreneurial experience, be it their own venture, corporate venturing, social, public or academic. In any of these, creativity will be a core competency that demands mastery. The entrepreneurship–creativity connection is more than just the creation of a new business; it occupies a central place as one of the most important decision-making systems at the entrepreneur’s disposal.

One of my favorite quotes, with which I begin each semester of my new venture initiation class, is this one that sets the framework for the entrepreneurial experience:

“Entrepreneurship is a dynamic process of vision, change, and creation. It requires an application of energy and passion towards the creation and implementation of new ideas and creative solutions. Essential ingredients include the willingness to take calculated risks in terms of time, equity, or career; the ability to formulate an effective venture team; the creative skill to marshal needed resources; the fundamental skill of building solid business plan; and finally, the vision to recognize opportunity where others see chaos, contradiction, and confusion. (Kuratko and Hodgetts, 2004, p.30)”

I utilize this quote as a launching-off point for emphasizing the importance and undeniable connection between the creative thinking process and the entrepreneurial thinking process. The creative process yields ideas; the entrepreneurial process requires creative ideas and, when combined with the creative process, is vital to the “big bang” of the entrepreneur’s universe – the vision to recognize opportunity.

Every idea has a context and a consequence. Our job as entrepreneurship educators is to provide the necessary creative aptitude skills and environment to help the students develop the proper connections in between. The key is recognizing that even in the scope of a semester the growth in creative self-efficacy and proficiency in practice is the point of the process, independent of creating the next disruptive innovation. I see continued opportunity in education research on the early creative components of entrepreneurship of what I term protoentrepreneurial ability: developing a sense of insight, recognizing that what one perceives can change, awareness that there are conscious choices in how to perceive the world, and the conation to turn perceptions into facts that form a concept that can be used to influence meaning for others. This form of situated cognition vital to the beginning behaviors of entrepreneurs is analogous to the protoimperative pointing used by children as a spatial language before they learn formal language behaviors (Jackendoff and Landau, 1992). Each cohort of students will have a different aggregate level of creative aptitude. Our task in the classroom is to transform their practiced, learned solution methods of habitual thinking and give them the awareness of both when to use creative thinking and how to utilize creative thinking processes in the scope of everyday use to achieve superior decision outcomes.

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