INSPIRING INNOVATION AND CREATIVITY: AN EXAMPLE OF EFFECTUATION IN THE ENTREPRENEURIAL CLASSROOM

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ABSTRACT

21st century skills such as complex problem-solving, creative and innovative thinking, and teamwork and collaboration can be developed in the classroom via entrepreneurship education. However, entrepreneurship educators face a particular challenge – how to encourage students to use innovation and creativity to engage in ideation/opportunity identification/recognition and then find a way to bring these opportunities to market. One practical barrier that sometimes needs to be overcome is the belief on the part of many students that they are "not creative". Effectuation, or starting with what you've got and trying to create something new, being open to the surprises that emerge in the process of just doing something, is proposed as a useful pedagogical model. After an overview of key concepts, suggestions are given for how to design entrepreneurial exercises or activities, using an effectual approach, to unleash creativity by "breaking the frame", imposing constraints, offering rewards based on goals with clear and fair rules, and requiring students to work in teams. It is proposed that incorporating these suggestions might inspire students to apply these concepts, to identify opportunities and act entrepreneurially, everywhere, all the time.

INTRODUCTION

In the 21st century, certain universal skills can lead to success. Most of these skills are not new: leadership experience, communication and problem solving skills, ability to work in a team, and having a strong work ethic have topped the list of attributes employers seek for many years (NACE, 2015). However, increasingly, the ability to take risks, be flexible and adaptable, and approach problem solving with creativity and innovation have become more critical (P21, 2007; Rotherham & Willingham, 2009). Changes in the way the worldwide economy works now require more attention to social and human capital, and an understanding of what makes companies successful means that agility, awareness of the larger ecosystem and the willingness to collaborate across networks are critical to attaining and sustaining a competitive advantage (Satell, 2016). All this means the entire workforce must be prepared: "schools must be more deliberate about teaching critical thinking, collaboration, and problem solving to all students" (Rotherham & Willingham, 2009), and skills in learning and innovation, with a focus on creativity, communication and collaboration, are essential (P21, 2007).

Increasingly, in colleges and universities, this challenge has been met by entrepreneurship education, the overall goal of which is "the teaching of skills and cultivation of talents that students need to start businesses, identify opportunities, manage risk, and innovate in the course of their careers" (Kauffman, 2013, p. 4). 21st century skills that can be developed via entrepreneurship education include complex problem-solving, creative and innovative thinking, and teamwork and collaboration (Boyles, 2012), and this education has been found to positively

influence students' desire to actually act entrepreneurially once they leave higher education (Kuttim, Kallaste, Venesaar, & Kiis, 2014). However, exactly how to accomplish this goal is still debatable, with a call to use the entrepreneurial attributes of continual innovation and creativity to focus on further refining and moving entrepreneurship education to the "next level" (Kuratko, 2005, p. 591), perhaps acknowledging the "inadequacy of the existing business oriented approach" (Gibb, 2002, p. 234), and even questioning the overall efficacy of entrepreneurship education itself – whether this education, the way it is currently delivered, can "really work to create business enterprise" (Rideout & Gray, 2013, p. 329). Perhaps as a reaction to these challenges, the movement away from a more traditional classroom approach toward more experiential pedagogies is becoming more widespread (Fixson, ND; Neck & Greene, 2011; Pittz, 2014; Schindehutte & Morris, 2016; Vanevenhoven, 2013).

In the entrepreneurial classroom where a more experiential approach is adopted, the suggestion is to find ways to develop creative capabilities, primarily because imagination and the ability to "relate previously unrelated objects or variables to produce novel and appropriate or useful outcomes" has been identified as a key entrepreneurial competency (Morris, Webb, Fu, & Singhal, 2013, p. 358). Arguments have been made that "entrepreneurship should not be equated with new venture creation or small business management, but with creativity and change" (Kirby, 2005), and empirical studies have demonstrated that teaching creativity in the context of entrepreneurship education can increase students self-perceptions of their creative abilities (Schmidt, Soper, & Facca, 2012), and have a "positive impact on team and firm innovation" (Gundry, Ofstein, & Kickul, 2014, p. 529). However, even though entrepreneurial creativity has long been identified as a valuable attribute, and this training has started to be introduced into the entrepreneurial classroom, there is still no clear consensus on how best to do this (Lin & Nabergoj, 2014). There is a call for more pedagogy that stimulates entrepreneurial creativity, and subsequently measures its effectiveness, its contribution to both individual and organizational success (Gundry et al., 2014; Lin & Nabergoj, 2014; Rideout & Gray, 2013; Schmidt et al., 2012). The suggestions presented in this paper are meant to address this challenge.

THE CREATIVITY CHALLENGE

The assumption is that educators have bought into the aforementioned challenge to incorporate creativity into the curriculum, and may desire to do so via some sort of assignment or exercise, usually beginning with ideation, or the first investigation of potential new business ideas. However, when educators ask students in the beginning of a class to come up with these new ideas, they often hear students complain, "but I'm not creative!" The educator then must convince these students that "everyone is creative!" At this point, the educator has several options.

In the entrepreneurship class, the educator can point out, via a mini-lecture or assigned readings, that an entrepreneur has to be aware of the entire entrepreneurial process, from the initial recognition or identification of an opportunity, through the evaluation of its feasibility, acquisition of sufficient resources, and actual action taken to realize a presumably profitable outcome (adapted from Shane & Venkataraman, 2000). And, in order to be truly entrepreneurial, some creativity may be necessary at every step.

In order to engage the students, to help them understand why this is so, the educator can then use "war stories" and case studies to model the creative entrepreneurial process, and, if the models are credible, students may be inspired to try based on what they've seen others do.

However, this doesn't substitute for direct experience. Therefore, instructors might want to develop an experiential exercise where students actually enact a creative process in pursuit of a solution to an identified problem, observe the effects of what they've done, and continue to learn as they adapt, essentially becoming self-efficacious agents of change. Alternatively, educators can expose the students to a story with a credible model of the entrepreneurial process, and ask the students to experience it vicariously by walking in the shoes of the creator, commenting on what they see along the way, and then reflecting on how this might be incorporated into their own way of doing things.

Whatever the pedagogical mechanism, educators should be aware of how their own process mirrors what they're trying to teach. If the subject matter involves innovation and creativity, the educational process should be equally innovative and creative in how it approaches the content.

What follows are suggestions for how to incorporate effectual entrepreneurship in the classroom: starting with what you've got and trying to create something new. However, just like in any entrepreneurial activity, there are some assumptions, some things we need to know, in order to pave the way for success. First we will give an overview of salient points, then we will give examples of how those concepts might play out in an entrepreneurial example. Then we will suggest how entrepreneurial educators might use these concepts and examples to design lessons that maximize their potential, inspiring students to creatively apply these concepts, to identify opportunities and act entrepreneurially, everywhere, all the time.

CONCEPTUAL FRAMEWORK & EXAMPLES

The Concept: Entrepreneurship

Entrepreneurship is an activity that involves doing something with something that results in something different. It can be practiced by *discovering* a new application or use for something that already exists – exploring the universe for things/processes/ideas, identifying the opportunities associated with these discoveries, and exploiting the properties of these elements for a new market, or expanding the possibilities for use in an existing market – OR by *creating* something new, transforming existing resources into something that has never been seen before – identifying existing resources, starting with who you are, what you know, and who you know (Sarasvathy, 2012; Sarasvathy, 2001), investing "no more than what you can afford to lose" (Read, Sarasvathy, Dew, Wiltbank, & Ohlsson, 2011), trying something, seeing if it will work, and continuing to tinker with it until you've found a viable market or markets.

The first process has been labeled the "causal" approach – starting with a predetermined goal where optimal resources are identified and systematically applied (efficiently and/or effectively) in order to achieve this goal, with results evaluated through experimentation and quantitative assessment, yielding the highest potential return –while the second process employs "effectual" reasoning, where the goal is not predetermined, but instead open to the surprises that emerge in the process of just doing something – the entrepreneur in this case "effects" change by transforming something into something else, and is not constrained by any preconceived notion of a market or strategy, therefore is free to create something truly new, turning the "unexpected into the profitable" (Sarasvathy, 2001).

Both processes are acceptable entrepreneurial activities that can lead to what Schumpeter (1934) famously called the "creative destruction" of an existing market or industry, thereby

leading to economic outcomes that can be simultaneously disruptive and reinvigorating, an essential component of economic growth. Both processes also require entrepreneurial creativity. Schumpeter (1934) considered entrepreneurs to be the agents of transformation, creating new things out of the old, converting new ideas into successful innovations, but this requires an understanding of how that transformation can occur, and a good understanding of how to get people to be creative.

The Example: Effectuation

One way to create something new through transformation is to reconfigure something that already exists – deconstructing it and then reconstructing it into something different. One example of how this process has lead to a profitable venture comes from the company Terracycle, which partners with individual recyclers, major consumer product companies, retailers, manufacturers, municipalities and small businesses across 20 different countries to "recycle the non-recyclable". As of 2016, over 60 million people have helped collect and recycle enough waste to raise over 15 million dollars for charities around the world. Terracycle's mission is to "eliminate the idea of waste". (http://www.terracycle.com/en-US)

This concept is at the heart of Terracycle's founder Tom Szaky's approach to waste. He calls it "upcycling" and explains that it is a way of rethinking waste – turning waste into raw material that can be used for another purpose, a purpose for which the waste material was never intended (Szaky, 2014). This idea underpins the Terracycle business model that sees waste as an asset, "not as the end of a linear process but as a stage in a circular life cycle" (Szaky, 2014, p. 5).

When Szaky started out in 2001, his major goal was to find a way to win a business plan competition and use the money to start a business. He had had an idea to do something that reused existing materials and therefore helped the environment, and so he started there, but what he learned along the way made him continually refine his vision. Although his business model has evolved over the years, and he's always remained open to opportunities, he's also remained true to his ultimate goal – to eliminate waste. He has turned the unexpected into the profitable, and the trick to doing that is to change people's perception of waste, get them to see possibilities in a crumpled bag of potato chips. This requires creativity.

The Concept: Creativity

Creativity has been defined as "the production of novel, useful ideas or problem solutions" (Amabile, Barsade, Mueller, & Staw, 2005, p. 570), and the "generation of products or ideas that are both novel and appropriate" (Hennessey & Amabile, 2010, p. 570). Relative to the entrepreneur's task of creating something new that will find a profitable market, another definition for creativity is "the goal-oriented individual/team cognitive process that results in a product (idea, solution, service, etc.) that, being judged as novel and appropriate, evokes people's intention to purchase, adopt, use, and appreciate it" (Zeng, Proctor, & Salvendy, 2011, p. 25). This focus on the subsequent adoption and use of a new product or idea means that entrepreneurs must not only have the idea, but also find a way to *act* on that idea. Therefore, even though the idea might be novel and useful, if the idea or product is not brought to market, it would not be considered an example of entrepreneurial creativity (Amabile, 1997).

In addition, even though much attention has been paid to the ideation process – coming up with new ideas, seeing opportunities available for exploration or exploitation – entrepreneurial creativity can also be present not only in the products, services or ideas themselves, but also in the process of identifying a market, figuring out a new way of producing or delivering these products or services, and, echoing the effectuation approach, obtaining or transforming resources into innovative combinations that create a market where one did not previously exist (Amabile, 1997; Read et al., 2011).

This requires the entrepreneur to be aware of the entire entrepreneurial process, from the initial recognition or identification of the opportunity, through the evaluation of the feasibility of this opportunity, acquisition of resources necessary to act on the opportunity, and actual action taken to realize a presumably profitable outcome (adapted from Shane & Venkataraman, 2000). Although there is need for creativity at each stage, much attention has been paid to the initial opportunity identification/recognition phase, mostly because no subsequent entrepreneurial action would be possible without this ability on the part of the entrepreneur to become aware that an opportunity actually exists.

The Example: Opportunity Recognition

To return to the example of Terracycle, founder Tom Szaky's journey from initial idea to profitable business illustrates the use of creativity at every stage of the entrepreneurial process: he began with the novel idea that "worm poop" could be harvested and turned into fertilizer: he fed worms on garbage he collected from local sources, used a conveyor process to collect the "poop" then mixed it with water to make a "tea" that could be applied to plants in need of nourishment. He tested the feasibility of this fertilizer idea by applying the liquefied product to plants, and saw that it worked, and that it met a need in the market – people liked the organic fertilizer as an alternative to chemical concoctions. Therefore the product was not only useful, but also appropriately positioned to appeal to a certain user.

During the production of this product, Szaky rapidly realized that he didn't have access to all the resources necessary for processing and bottling, so he had to get creative in locating alternative solutions. For instance, Szaky's team scavenged used soda bottles and low-cost methods for applying labels, at one point using old paint strippers to heat-shrink the label sleeves so they'd adhere to the bottles (see the full story in Szaky, 2013).

Once the fertilizer business had established itself, Szaky realized that he needed to investigate other business extensions if he wanted to grow beyond the niche market for eco-friendly fertilizer. He wondered if there were other ways to apply what had become the Terracycle business model – could he find "new ways to use things that other people will pay you to dispose of" (Szaky, 2013, p. 111)? This led Szaky to look at the possibility of converting all waste into potential consumer products – one very productive product line is the creation of book bags, pencil pouches and document folders from used drink pouches and chip bags, collected by "brigades" of school children. (See https://www.terracycle.com/en-US/ for more information.) The current mission of Terracycle is to eliminate the concept of waste – in the belief that all waste "can be either reused, upcycled, or recycled into something new" (Szaky, 2013, p. 198).

This entrepreneurial journey has used creativity in multiple ways, at every stage, and illustrates the application of entrepreneurial effectuation, *creating* something new, transforming existing resources into something that has never been seen before, and ending up with a viable,

profitable and sustainable business. As such, the Terracycle story can become an excellent case study, useful for explaining the concepts and modeling the process so students can learn about entrepreneurship and hopefully be inspired to try it out for themselves. In addition, as part of *entrepreneurial education*, some of Tom Szaky's techniques for ideation and opportunity identification/recognition can be used as a model to design instruction in such as way as to show students that anyone can be creative.

PEDAGOGICAL IMPLICATIONS & APPLICATIONS

Entrepreneurial Education

Entrepreneurship educators have investigated both theory and method to determine the best way to teach students about the entire entrepreneurship process, but recently the focus has been on the opportunity recognition/identification component, since the ability to identify viable opportunities is "one of the most important abilities of successful entrepreneurs" (DeTienne & Chandler, 2004, p. 242). Research has determined that this ability can be taught, or awareness can be facilitated by manipulation of the environment (Autio, Dahlander, & Frederiksen, 2013; DeTienne & Chandler, 2004), yet there are still unanswered questions about how best to do this, and how to identify the exact mechanism by which students acquire and activate this knowledge.

Lin and Nabergoj (2014) specifically address these questions by focusing on entrepreneurial creativity as the gateway to improving students' cognitive entrepreneurial skills. They question the current pedagogy and point to the current lack of empirical evidence investigating the effects of creativity training on entrepreneurial activity. They suggest that too much emphasis has been placed on the opportunity discovery stage, and not enough focus has been placed on the process by which these opportunities, once identified, can be exploited and brought to market (p. 167). They encourage educators to "design an entrepreneurial, context-based pedagogy" to nurture entrepreneurial creativity in students (p. 170).

However, even if entrepreneurship educators desire to give students experience in the entire entrepreneurship process, and give students the self-efficacy to act creatively on this experience, one practical barrier that sometimes needs to be overcome in the classroom is the belief on the part of many students that they are "not creative". In anticipation of this response, educators often turn to exercises that engage students in activities designed to reawaken their creativity and build self-efficacy or confidence in their ability to use their imagination as an "endless renewable resource" for making sense of the complicated world around them (Michalko, 2001; Seelig, 2012). Although many of these exercises are fun, and effectively engage the students, there are also concerns that the experience will be short-lived, and may not transfer beyond the classroom, or even beyond the class session within which it was introduced. In particular, there is as yet no concrete evidence that training nascent entrepreneurs in how to identify innovative opportunities will actually result in profitable business ventures (DeTienne & Chandler, 2004).

There are both practical and theoretical reasons for why this might be so. Sarasvathy (2015), when asked how to best teach entrepreneurial effectuation, acknowledged that many students are worried they don't have any brilliant ideas, money or other resources to use, and they are afraid to fail, or just don't like the uncertainty of the entrepreneurial process. She suggests educators address these practical concerns by encouraging students to just start with what/who they know, and by inspiring students to just try, and see what they're capable of. In the

case of the older student, or one with more work experience, he or she may be so confirmed in his or her "causal" mindset – believing that the route to success is through the traditional business planning process – that the concept of proceeding without first acquiring the needed resources is very uncomfortable. These students may have to unlearn something, and one way to do that might be to engage them in activities that fuel their imagination, exposing them to what's possible.

Research has identified psychosocial and external environmental variables that may influence the activation of entrepreneurial creativity. As we develop skills, we incorporate knowledge we've acquired over time, knowledge that has allowed us to categorize new information and develop heuristics or rules-of-thumb that help us know what to do in various circumstances. There are habits and routines we've adopted, "dispositions to act in particular ways under certain conditions" (Aldrich & Yang, 2014, p. 62), that have served us well in the past, and, because these are habitual and therefore unconscious mental processes, they may not be that useful when we're faced with ambiguous or uncertain environments or circumstances.

Effectuation is a useful way of dealing with uncertainty by identifying existing resources, starting with who you are, what you know, and who you know. The objective is to transform something into something else that's useful, that serves a profitable purpose. What follows are four suggestions for what to do to incorporate effectuation into the entrepreneurship classroom.

When designing entrepreneurial education, especially when encouraging students to use innovation and creativity to engage in ideation/opportunity identification/recognition, there are four things educators should consider doing. Whether designing exercises, prepping students for case discussions, or giving advice on how to proceed with specific entrepreneurial tasks, educators should consider

1. *"breaking the frame",*
2. *imposing constraints,*
3. *offering rewards based on goals, and*
4. *working in teams.*

Although these seem like rather standard suggestions, if the educator considers these as being part of an overall entrepreneurial mindset, this mindset might inspire students to act entrepreneurially as well. These suggestions are meant as one approach for nurturing entrepreneurial creativity, therefore better preparing students for their entry into the 21st century workplace.

Effectuation in the Classroom

Given that we all have biases that predispose us to use the same techniques that have worked in the past, we may need reminders that this is not the "same old, same old" situation. Yes, we start with what we've got, but the situation may require us to consciously reconsider our options. We may need something to jump start the process.

Therefore, educators might have to do something to ***"break the frame"*** of existing habitual responses, perhaps by purposefully creating an unusual environment that contains juxtaposition of inconsistent elements, thereby alerting both themselves and their students to the fact that something different is going on (Miron-Spektor, Gino, & Argote, 2011). This encourages everyone to reframe the problem, which can open up new possibilities for solutions.

Ways of doing this include asking students to physically or mentally change their point of view, ask others, including other educators, for their perspectives, or ask questions that begin with "why" (Seelig, 2012, p. 30).

Regarding how to engage students in ideation/opportunity identification/recognition, this leads to

> **Suggestion 1: Break the existing frame**
> *At the beginning of the lesson or activity, present the students with an uncommon or unusual environmental cue, one that will break their existing perceptual/habitual framework, alert them to the presence of something new, and warn them that the same-old-same-old way of doing things may not work.*

An example of how that might work is to have students walk into the classroom which has been reconfigured with workstations where recycled material is there to be reconstructed or upcycled into something else. The Terracycle case can then be used as a model for how to proceed. Students could be asked how they might act if they were Tom Szaky. Is there another way to think about garbage? This might get students to rethink their own values regarding waste, essentially helping them consider the effectuation question "Who am I"?

An additional environmental barrier that exists in many entrepreneurial activities is the presence of ***constraints***. Especially in the effectual reasoning model, constraints are a given, and the entrepreneur is encouraged to see this not as a negative, but as an opportunity to activate what/who they know in pursuit of a solution. Constraints can be either inhibiting or freeing of creative activity. Especially when externally imposed, constraints such as strictly regimented evaluation mechanisms, restricted choice of options and tight deadlines can reduce the motivation to engage in creative behavior, however "individual differences in people's *interpretation* of the constraints can significantly affect the outcomes on creativity" (Amabile, 1990. p. 75).

Research has indicated that time pressures, especially, can either help or hinder creativity: when people experience a fragmented environment where changes occur frequently under tight deadlines, and where they don't believe their work is important, then constraints reduce creativity – people feel as if they are "on a treadmill"; when people are allowed to focus deeply on an activity they believe is important, and are challenged by the work itself, time pressures can increase creativity – people feel as if they are "on a mission" (Amabile, Hadley, & Kramer, 2002). In the entrepreneurship literature, it has been proposed that "bricolage", or making use of available resources to create something new, is chosen as a viable path simply because of the lack of other viable resources – therefore "resource constraints facilitate the emergence of entrepreneurial creativity" (Lin & Nabergoj, 2014, p. 172)

In addition to individual response and interpretation of constraints, acknowledging realistic constraints in a market subsequently forces entrepreneurs to focus attention on the need to create viable products(Ries, 2011). It's been said, "every habitat has its own constraints", and acknowledging this reality can sharpen the creative response (Seelig, 2012, p. 114). Artists, especially, often purposefully impose constraints on their creative process: poets follow the rules for haikus, musicians limit themselves to an acoustic rather than an amplified venue, painters choose oil rather than watercolor (see, for example, 10KHrs, 2015). Therefore educators should not ignore the impact of either externally imposed or self-imposed constraints on the creative process.

Regarding how to engage students in ideation/opportunity identification/recognition, this leads to

Suggestion 2: Impose constraints
At the beginning of the lesson or activity, inform students that there will be things they cannot do, resources they cannot use, and that there will be a time limit on the activity.

For how this might work, again using the Terracycle example, tell students that there is a deadline from the customer, and they must create a new product using only the materials in front of them. This is reminiscent of Szaky's need for a creative solution when he had orders to fill and faced resource constraints in bottling the "worm poop". The creative challenge is to "make do" with what you've got, utilizing the resources you do have available, and consider the effectuation question "What do I know?"

Closely associated with the concept of constraints is the need to consider ***rewards*.** People are intrinsically motivated to do things from which they feel a sense of satisfaction, where doing the activity enhances their sense of self-determination, where they feel an opportunity to have autonomy or freedom to choose the methods to use or tasks to do, where they can demonstrate their competence or feel they have an opportunity to do good work, and where they have a chance to work with or socially relate to other like-minded people (Deci & Ryan, 1985). To the extent that educators can also provide rewards that enhance these feelings of self-determination, students will be motivated to exercise creativity (Amabile, 1997). In addition, imposing *rules* that directly relate to meaningful *goals*, although essentially constraining, will focus students' activity, especially if the reward is clearly related to these goals, and feedback is clear and fair – so the rewards are perceived to be distributed justly (Seelig, 2012, p. 126).

In effectuation, goals are important, for the entrepreneur needs to make decisions based on the *effects* of what he or she has accomplished. Even though the goal may not be predetermined, but instead open to the surprises that emerge in the process of just doing something, evaluating what happened against what was expected to happen requires the identification of some criteria against which this assessment can be made.

Regarding how to engage students in ideation/opportunity identification/recognition, this leads to

Suggestion 3: Offer Rewards Based on Goals, With Clear & Fair Rules
At the beginning of the lesson or activity, inform students that they will be rewarded for accomplishing something (i.e. provide a goal and the criteria that will be used to evaluate goal accomplishment); at the end of the exercise, provide feedback that directly relates to the goal accomplishment, and assign rewards fairly based on clear criteria. Note that this might mean that the criteria will need to be changed in the future, based on what was learned!

To include this suggestion as part of the activity, tell students that they will be rewarded based on how innovative their response is to the Terracycle challenge. One reward might be based how much the students learned, even if they did not "win" – just like Tom Szaky did, how might they change things in the future in order to get better next time? This encourages students to think about what they have learned, and how they might pivot.

Finally, one other variable that affects creativity and opportunity awareness is the extent to which the entrepreneur activates his or her external network of others – in the effectuation model this is "who you know", and is an essential part of the process of gathering enough resources to proceed with entrepreneurial action. Social networks are increasingly important sources of information, and research has indicated that exposure to diverse knowledge domains heightens awareness of opportunities for action (Autio et al., 2013). In addition, depending on the structure of the network and the individual's place in this network, when there are "structural holes" that require boundary spanning or brokerage activity, then individuals are exposed to more diverse and potentially useful information due to the different perspectives available – and this can lead to more creative insights (Burt, 2004).

Working in teams, as long as the members are mutually supportive yet willing to engage in constructive criticism, also provides access to multiple perspectives that not only enhance the opportunity for innovative solutions, but also creates a sense of "collective efficacy" in the team's ability to do good work (Krueger, 2000, p. 15). Regarding the classroom, the lesson gained from multiple research streams is to "encourage students to gain insights from everyone they can and to work in constructive teams where everyone contributes" (Seelig, 2012, p. 146).

One interesting additional caveat here involves the quality of group ideas. Research has indicated that sometimes individuals are more creative than the group, and that this finding indicates there's something about the nature of the group relationship that affects the quality of idea generation. In order to generate good ideas, not only do group members have to have diverse yet applicable knowledge bases, but the relationship among group members needs to include some "critical interplay" with an element of "constructive antagonism" in order to be maximally effective (Tippett, 2013). This underpins the recent suggestion that brainstorming might not be as effective as previously thought and that "dissent, debate and sharing of competing views can stimulate divergent and creative thought" (Nemeth, Personnaz, Personnaz, & Goncale, 2003).

One final caution remains, however. When dealing with ideation: really creative individuals may not want to share their ideas with others for fear that the idea may be stolen or otherwise appropriated (DeTienne & Chandler, 2004). This fear can be mitigated by the instructor who clearly establishes a culture of trust among participants in any collective endeavor, or outlines rules for sharing and penalties imposed for violation of these rules.

Regarding how to engage students in ideation/opportunity identification/recognition, this leads to

> ***Suggestion 4: Work in Teams***
> *At the beginning of the lesson or activity, inform students that they will be asked to work with others to accomplish the stated goal. Depending on the nature of the exercise, the size of the team may be important, and it is also important to create teams made up of individuals with diverse backgrounds and knowledge bases. Depending on the nature of the exercise, it may also be important to establish ground rules for interaction that increase trust and encourage constructive interaction that still allows for critical interplay and sharing of competing views.*

An important part of moving forward with something new is using all one's resources, including other people, asking the effectuation question "Who do I know?" Ask students how Tom Szaky did this as he grew his successful business, and then ask them to reflect on how

effectively they used this human resource, their own social capital, in accomplishing their goal. This reinforces the importance of the 21st century competencies of critical thinking, collaboration, and creative problem solving, and developing an understanding that agility, awareness of the larger ecosystem and the willingness to collaborate across networks are critical to attaining and sustaining a competitive advantage.

By utilizing these four suggestions for framing an experiential pedagogy, educators have an opportunity to practice effectuation themselves, starting with what they've got and encouraging students to do the same, developing self-efficacy or confidence in their ability to practice entrepreneurial creativity and produce something innovative, something new and useful.

CONCLUSION, LIMITATIONS & SUGGESTIONS FOR FUTURE RESEARCH

This overview of conceptual underpinnings and suggestions for how to encourage innovation and creativity by incorporating effectuation in the entrepreneurial classroom is meant to refresh educators' knowledge of the salient points regarding entrepreneurial activity, creativity and entrepreneurial education. Especially when encouraging students to engage in the initial stages of the entrepreneurial process – ideation, opportunity identification/recognition – and then in an overall awareness of entrepreneurial possibility – it can be hard to know what is the best way to proceed. Even seasoned entrepreneurs can miss things. When students come in saying, "I'm not creative", the educator has a challenge ahead.

Suggestions for utilizing entrepreneurial exercises to unleash creativity included "breaking the frame", imposing constraints, offering rewards based on goals with clear and fair rules, and requiring students to work in teams. An example was given of Tom Szaky, founder of Terracycle, and how he successfully used effectuation and the entrepreneurial process to *create* something new, transforming existing resources into something that had never been seen before, and ending up with a viable, profitable and sustainable business. Although educators are encouraged to create their own exercises and activities, the Terracycle case study can be an additional way of inspiring students to apply these concepts, to identify opportunities and act entrepreneurially, everywhere, all the time.[1]

These suggestions are meant to inspire educators to investigate their own methods of encouraging entrepreneurial activity in the classroom. Although the author has used these methods, there has, as yet, been no empirical evaluation of the outcome of this pedagogy, and one limitation of this current suggestion is that it has only been deployed, so far, in undergraduate classrooms in the United States. If we agree that entrepreneurial creativity is an approach to problem solving that engages with the entire scope of the entrepreneurial process, and therefore is important to encourage in everyone, then we cannot help but want to develop methods for expanding its use. Other educators are encouraged to use these techniques, or variations thereof, and communicate results to the author.

There has been a call to further identify the underlying foundations of entrepreneurship education – what its goals truly are (Kauffman, 2013), whether it works to achieve those goals (Rideout & Gray, 2013), and how, exactly, that goal accomplishment might be done (Kuratko, 2005; Morris et al., 2013). One suggestion for proceeding to answer these questions is to conduct "methodologically adequate" research (Rideout & Gray, 2013), particularly using the case study design, to help identify conditions under which successful entrepreneurial enterprises have developed and flourished. A combination of case studies might allow us to discover which variables are most influential, and which conditions and concepts might mediate relationships

between those variables. This paper has proposed using the Terracycle case study as one example of the application of effectuation, and has proposed using this case study as a focusing mechanism for experiential activity regarding entrepreneurial creativity, both modeling the way for students, and giving them an opportunity for practice in a supportive environment. What's remaining is to track those students as they go out into the world and try to fully engage in entrepreneurial activity – to what extent did the pedagogical model inspire and energize action? Was the promise of self-efficacy – the development of confidence in one's ability to act – actually realized? And did it make a difference? All we can do, as educators, is to start with what we've got.

[1] A case study of Terracycle that can be used in conjunction with the approach discussed in this paper can be requested from the corresponding author.

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