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TABLE OF CONTENTS

CREATIVE ACHIEVEMENT & INTELLIGENCE AMONG STUDENT ENTREPRENEURS.....	1
Mark Shrader, Gonzaga University	
Todd Finkle, Gonzaga University	
FEMALE ENTREPRENEURS AND NEGOTIATION SELF-EFFICACY: A STUDY ON NEGOTIATION SKILL BUILDING AMONG WOMEN ENTREPRENEURS.....	17
Veronica Guerrero, California Lutheran University	
Judith Richards, California Lutheran University	
ENTREPRENEURSHIP EDUCATION AND THE ROLE OF THE REGIONAL UNIVERSITY.....	29
Charles Harrington, University of South Carolina Upstate	
Ramin Maysami, Jackson State University	
THE DRIVERS OF ENTREPRENEURIAL INTENTIONS - AN EMPIRICAL STUD AMONG INFORMATION SYSTEMS AND COMPUTER SCIENCE STUDENTS.....	39
Natalie Kaltenecker, Institute for Information Systems and New Media, LMU Munich	
Christian Hoerndlein, Institute for Information Systems and New Media, LMU Munich	
Thomas Hess, Institute for Information Systems and New Media, LMU Munich	
THE ‘BUSINESS CONCEPT’ COMPETITION AS A ‘BUSINESS PLAN’ ALTERNATIVE FOR NEW AND GROWING ENTREPRENEURSHIP PROGRAMS: WHAT’S THE BIG IDEA?.....	53
Robert Laud, William Paterson University	
Stephen Betts, William Paterson University	
Sam Basu, William Paterson University	
PUBLISHING CHILDREN’S BOOKS WITH INTERDISCIPLINARY TEAMS: REFLECTING ON STUDENT INNOVATION THROUGH THE LENS OF TONY WAGNER.....	59
Stephanie A. Fernhaber, Butler University	
Erin Albert, Butler University	
Angela Lupton, Butler University	
BUILDING A SYSTEMATIC FRAMEWORK FOR ENTREPRENEURSHIP EDUCATION.....	73
Astri Ghina, School of Business and Management (SBM), Bandung Institute of Technology	
Togar M. Simatupang, School of Business and Management (SBM), Bandung Institute of Technology	
Aurik Gustomo, School of Business and Management (SBM), Bandung Institute of Technology	

USING THE BUSINESS MODEL CANVAS AS A METHODS APPROACH TO TEACHING ENTREPRENEURIAL FINANCE.....	99
William T. Jackson, USF St. Petersburg	
Daniel James Scott, USF St. Petersburg	
Nathan Schwagler, USF St. Petersburg	
DEVELOPING UNDERGRADUATE ENTREPRENEURIAL CAPACITY FOR SOCIAL VENTURE CREATION.....	113
Erik Noyes, Babson College	
Benjamin Linder, Olin College of Engineering	
EFFECTS OF TRAINING METHOD AND AGE ON EMPLOYABILITY SKILLS OF MEXICAN YOUTH ENTREPRENEURS.....	125
Héctor X. Ramírez-Pérez, Universidad Panamericana Guadalajara	
Ann Marie E. Smith, Dowling College	
Jorge E. Franco-López, Universidad Panamericana Guadalajara	
Juana Román-Maqueira, Organization of American States	
Elsa-Sofía Morote, Dowling College	
ENTREPRENEURIAL TRAINERS – THE COMPETENCE MIX IN ACTION-ORIENTED ENTREPRENEURSHIP DEVELOPMENT PROGRAMS.....	135
Øystein Rennemo, Nord-Trøndelag University College	
BUILDING AN INTELLECTUAL PROPERTY AND EQUITY OWNERSHIP POLICY FOR ENTREPRENEURSHIP PROGRAMS: THREE DIFFERENT APPROACHES.....	151
David Rahn, California State University	
Tammy Schakett, Ohio Northern University	
David Tomczyk, Quinnipiac University	

CREATIVE ACHIEVEMENT & INTELLIGENCE AMONG STUDENT ENTREPRENEURS

Mark Shrader, Gonzaga University

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ABSTRACT

This study fills a gap in the entrepreneurship literature by investigating creative achievement and intelligence within students who have been entrepreneurs. The study looks at differences in the levels of creative achievement and intelligence between students who have been entrepreneurs versus those who have not been entrepreneurs.

The study used the Creative Achievement Quotient (CAQ) (Carson, Peterson, & Higgins, 2005) and college entrance exam scores and grades as measures of intelligence. There were several significant findings. First, students who had been entrepreneurs had significantly lower college entrance exam scores. Secondly, students that had been entrepreneurs had significantly higher CAQs. Finally, students that had been entrepreneurs performed significantly higher on four measures of the CAQ: Architectural Design, Inventions, Scientific Inquiry, and Theater and Film. The findings and their implications are discussed.

INTRODUCTION

According to the Kauffman Index of Entrepreneurial Activity (Kauffman Foundation, 2014), since 1996, America's overall business creation rate declined from .31% of American adults per month starting businesses to .28% in 2013. People have been trying to understand the causes for such a drop. Is it government intervention and/or regulation? Is it big companies purchasing smaller companies? This research focuses on trying to understand more about student entrepreneurs, creativity and intelligence. These relationships are all under investigated in the field of entrepreneurship.

Much attention has been focused on the importance of creativity to the success of organizations and individual careers. Creativity and innovation are essential ingredients that entrepreneurs bring to organizations to create new products, services, and ways of thinking differently that allows organizations to create competitive advantages within the global marketplace. A 2010 American Management Association study identified creativity and innovation as one of the four critical skills needed for business success today and in the future (Schmidt, Soper, & Facca, 2012). CEOs identified creativity as the number one leadership competency of the future (Bronson & Merryman, 2010). As a result of the increased rate of change in technology today, creativity is a critical skill for recognizing and creating opportunities to satisfy customer needs (Allen, 2012).

Despite the obvious importance of creativity to economic growth and welfare, Bronson and Merryman (2012) noted a consistent decline in the creativity scores of U.S. students since 1990. Sternberg (2010) stated that the greatest problem facing colleges today in admissions,

instruction and assessment is that administrators are locked into an archaic notion of what it means to be intelligent. The U.S. higher educational system has relied on standardized tests that measure cognitive and memorization-based intelligence for a long time. Unfortunately, these tests have created a learning environment that rewards the traditional methods of thinking and discourages creative thinking. The U.S. needs a better instrument to measure a student's creative ability. Furthermore, schools need to do a better job of fostering creativity within students in higher education. But how can we do this? Sternberg and Lubart (1995) stated that a person's level of creativity could be developed in varying degrees. But what about intelligence? And how does creativity and intelligence relate to entrepreneurs? It is evident that creativity and intelligence exist in all people to varying degrees.

It is at this point that we investigate these relationships at a critical juncture; during a person's higher educational experience. Given the importance of creativity to the economy and the field of entrepreneurship, we investigate two research questions that will assist us in understanding creativity and intelligence within students that have been entrepreneurs. The first research question is: Is there a difference between the Creative Achievement Quotient (Our measure of creativity) of students that have been entrepreneurs versus students that have not been entrepreneurs? We measure whether or not a student has been an entrepreneur by asking them: Have you ever been an entrepreneur of a startup? The second research question is: Is there a difference between intelligence scores for students that have been entrepreneurs versus students who have not been entrepreneurs? A discussion of the findings and their implications follows.

BACKGROUND ON CREATIVITY

Creativity has been investigated by numerous scholars in fields such as psychology, education, cognitive science, philosophy, business, linguistics, history, theology, sociology, and economics. One result of this is that there is not a high degree of standardized thoughts on creativity. Meusburger (2009) stated that there are over 100 definitions of creativity. Examples include Boden's (1994) assertion that creativity is producing something that is novel or different. Barringer and Ireland (2012) and Gryskiewicz (1987) state that creativity is the process of generating a novel or useful idea. Rhodes (1961; 1987) suggested that the definition of creativity is related to four different potential areas: (a) the person who creates, (b) the cognitive processes involved in the creation of idea/product, (c) the environment in which creativity occurs, and (d) the end products of creative activities. An individual is regarded as creative if he or she solves problems frequently and is capable of displaying content in a certain domain in a flexible and novel manner (Gardner, 2006; Wodtke, 1964) and eventually will be recognized and agreed upon by others regardless of culturally setting differences (Yi, Sulaiman & Baki, 2011).

Individuals who are creative in nature tend to utilize their cognitive and affective resources and abilities to resolve difficulties and challenges in life (Helson & Srivastava, 2002). Creative individuals are believed to exhibit a style of living and thinking that leads to a regularity of breakthroughs in specific domains or disciplines rather than across the board (Gardner, 1993). According to Gardner (2006), "Creativity is a characterization reserved to those whose products are initially seen to be novel within a domain but are ultimately recognized as acceptable within an appropriate community."

Despite all of the definitions of creativity, there is no one set definition that we can use. Amabile and Tighe's (1993), theory of creativity stated that there are three basic components within an individual that are required for creativity in any given domain or discipline. The three components are namely domain-relevant skills, creativity-relevant skills and task motivation. Domain-relevant skills refer to elements related to the individual's level of expertise in a specific domain which includes basic intelligence or talent in the domain, knowledge acquired through education, experience and technical skills in the domain. Creativity-relevant skills consist of cognitive and personal styles that are important in producing novel and useful ideas in any domain. The creativity component is task motivation where it involves one's self-perceived motivation for engaging in a particular task in a specific domain at a particular point in time. The task motivation portion exists in two forms, intrinsically and extrinsically.

Creativity and Intelligence

Multiple studies have examined the relationship between creativity and intelligence. Results have been mixed. Wallach and Kogan (1965) found no relationship between creativity and intelligence in fifth grade children. Eysenck (1995) and Taylor (1995) believe that only geniuses can be creative. Srivastava and Thomas (1991), Sarsani (2008) and Yi, Sulaiman and Baki (2011) found a positive relationship between creativity and intelligence. However, Getzels and Jackson (1962) found no relationship between the two.

Emami, Bardai, and Ismail (2013) examined the relationship between entrepreneurship and IQ in the Graduates Bio-technology entrepreneurial program at UNIRAZAK. Their findings showed that there was a weak positive correlation between entrepreneurship traits and creativity and with leadership while the correlation with emotional quotient (EQ) was quite strong. The findings also showed that EQ and IQ had weak positive correlations with creativity.

Amabile (1996) suggests that there is no relationship between creativity and intelligence as measured through IQ tests or grades in school. Sternberg and Lubart (1995) suggest that creativity is similar to intelligence in that everyone possesses it in some (non-fixed) amount that, importantly, can be further developed in varying degrees. DeBono (1992) also suggests that creativity can be developed in individuals. These last two studies, combined with Amabile's (1996) results, have important implications for entrepreneurship educators. If there is no strong direct relationship between creativity and intelligence, educational efforts to stimulate creativity may be more successful across a broad spectrum of students.

INTELLIGENCE AND ENTREPRENEURSHIP

The relationship between intelligence quotient (IQ) and entrepreneurship is an understudied area in the field of entrepreneurship. Few researchers have looked at how intelligence affects the odds that a person will become an entrepreneur. Research on IQ has been performed in other areas. For example, higher IQ is associated with higher earnings (See Bowles, Gintis, & Osborne, 2001; Strenze, 2007; Jones & Schneider, 2010).

But how important is IQ when it comes to determining if someone becomes an entrepreneur? de Wit and Van Winden (1989) and de Wit (1993) found that IQ scores, when measured at age 12, had a positive significant effect on a person's propensity to become self-

employed later in life. Van Praag and Cramer (2001) examined 1763 schoolchildren and found entrepreneurial talent was positively related to IQ measured at age 12.

Shane (2009) reports that students who got “mostly A’s” in college are about 2 percent less likely than other students to be working for themselves. That is, better students were less likely to become self-employed. For a lot of majors — foreign languages, computer science and business — grades in college did not seem to have an impact on whether people became entrepreneurs. In comparisons among graduates in these majors, the self-employed had statistically the same grade point averages as those who worked in other professions (Shane, 2009). But for three majors — math, science and engineering, and statistics — the results were different. Graduates in these majors, who ended up self-employed, did slightly worse in school than those who did something else for a living. There was no significant difference between the average G.P.A. of statistics majors who became self-employed. They had an average 2.76 G.P.A., while the whole sample was 2.84 (Shane, 2009).

Based on existing research, we hypothesize (H1a) that entrepreneurship students will have significantly higher college entrance exams. We expect higher IQ scores to be associated with students who become entrepreneurs. This leads to H1a:

- H1a: Students that have been entrepreneurs will have significantly higher college entrance scores than students who have not been entrepreneurs.

We also examined students’ current GPAs. Similar to Shane (2009), we are of the opinion that just because a student has a high GPA does not necessarily mean that they are an entrepreneur or have been an entrepreneur. As such, we propose the following:

- H1b: There will be no significant difference between entrepreneurship students’ college GPA versus students who have not been entrepreneurs.

CREATIVITY AND ENTREPRENEURSHIP

Entrepreneurship and innovative business behavior have long been associated with creativity (Amabile, 1996; Nyström, 1979; Walton, 2003) and the two are often used interchangeably. Previous research has been done on the characteristics associated with the entrepreneurial mind-set. Hornaday (1982) listed creativity and innovativeness as a characteristic often attributed to entrepreneurs.

In the business context creative novelty and appropriateness is often translated into idea development (Ward, 2004), new product innovations (Amabile, 1996) and adapting or improving existing innovations (Kirton, 1987). Methodologically, creativity in entrepreneurship and innovation has been explained through cognitive processes, attitudes, motivation, existing knowledge, work environment and personality traits (Amabile, 1996; Walton, 2003; Ward, 2004).

Creativity plays an important part of the entrepreneurial process where it integrates within the opportunity recognition process (Figure 1). Figure 1 shows how environmental trends (e.g., economic, social, technological and political) integrate with an entrepreneur’s personal characteristics (e.g., prior experience, cognitive factors, social networks and creativity). As a result of this intersection, the entrepreneur seeks an opportunity or problem in the marketplace

and develops a solution through the creation of a new product, process or service. However, creativity is important throughout the entire entrepreneurial process.

Figure 1: The Opportunity Recognition Process

Environmental Trends

Economic Factors
Social Factors
Technological Advances
Political and Regulatory Changes

+

→

Business, Product or Service

Opportunity Gap

Difference between What's Available and what's possible

→

New Business, Product and Service Ideas

Personal Characteristics

Prior Experience
Cognitive Factors
Social Networks
Creativity

Source: Barringer, B. & Ireland, D. (2012). *Entrepreneurship: Successfully Launching New Ventures*.

There are also several personality attributes that have been shown to be traits of persons considered to be creative: (a) tolerance for ambiguity, (b) willingness to surmount obstacles and persevere, (c) willingness to grow, (d) willingness to take risks, and (e) courage of one's convictions and belief in oneself (Sternberg & Lubart, 1991). Wennberg (2004) stated that preliminary psychometric creativity testing has indicated that there were greater differences between students with different disciplinary backgrounds (e.g., entrepreneurship versus engineering students). This leads to our second hypothesis:

- H2: Students who have been entrepreneurs will have a significantly higher Creativity Achievement Quotient (CAQ) than students who have not been entrepreneurs.

METHODOLOGY

Sample

The sample consisted of 126 undergraduate students located at a private West coast university. The students were enrolled in two entrepreneurship courses and three finance courses. All of the students completed the survey except for two students who overlapped both classes. They were only asked to take the survey once.

Procedure

The students were given the Creative Achievement Questionnaire (Carson et al. 2005) (see Appendix). A few questions were added on measures of intelligence, demographics and

whether the student had been an entrepreneur and for how long. The survey was 28 questions long and the students had as much time as they wanted to finish the survey. The survey was done in the middle of the semester.

The two part study was evaluated into three categories: (1) the entire sample; (2) entrepreneurship students; and (3) finance students. For the second part of the study, we broke down our sample into (1) the entire sample; (2) students who had been entrepreneurs; and (3) students who had not been entrepreneurs. Utilizing t-tests and chi-square analysis, we examined the differences between the sample populations.

Measures

One of the main issues in the research on creativity is whether to categorize creativity as domain-specific or domain-general (Han & Marvin, 2002). Research (see Gardner, 2006; Yi et al. 2011) suggests that creativity may be domain specific. Similar to intelligence being domain specific in Math, English, Science, researchers have stated that creativity may foster within specific areas.

This study investigates a proven measure of creativity called creative achievement. Carson, Peterson, & Higgins' (2005) study on Harvard University and the University of Toronto students created a new self-report measure of creative achievement that assesses achievement across 10 domains of creativity (Visual Arts, Music, Dance Architectural Design, Creative Writing, Humor, Inventions, Scientific Inquiry, Theater and Film, and Culinary Arts). The Appendix shows the achievements that the students were to rate. The directions on how to score the questionnaire is also listed in the Appendix.

To measure intelligence we used two measures. The first was the percentile that a student scored on their SAT or ACT college entrance test. Students were asked to report both of their scores. These scores were then broken down into their respective percentiles. If both scores were received, they were averaged. If only one was received, we used that percentile. Another measure of intelligence that was used was the student's current GPA.

Validity and Reliability

Carson et al. (2005) found the CAQ to be both reliable and valid and can provide a criterion to efficiently measure and study the varied components of creativity. When they gave the CAQ test at two different occasions to the same sample, all of the internal consistency reliability scores for the 10 domains were above the .70 minimum standards for research instruments (Hocevar & Bachelor, 1989).

Furthermore, Carson et al. (2005) characterized the CAQ by solid convergent validity, when compared to other measures of creativity, including divergent thinking tests and personality scales. Finally, they found that the CAQ demonstrated good discriminant validity when tested against IQ indicating its separability from intelligence and proved unrelated to self-enhancement, indicating that self-report scores on the CAQ were not inflated due to a desire to inflate personal image.

RESULTS & HYPOTHESES

Table 1: Characteristics of Students Who Have Been Entrepreneurs versus Students Who Have Not Been Entrepreneurs

Table 1 shows there were a total of 19 entrepreneurs in the entire sample versus 117 that have never been an entrepreneur. The average age for all of the students in the study was 21.5 years old with the entrepreneurs averaging 21.3 and non entrepreneurs averaging 21.6. There were no significant differences in age between the two samples of students.

There was no significant difference in sex with the mean male percentage for the entire sample at 66%. Sixty-three percent of the students who were entrepreneurs were male while 66% were male for the students that were not entrepreneurs.

The survey broke down the year in school for the students. We found significant differences at the senior and junior levels. Eighty-three percent of the students who were not entrepreneurs were seniors versus 53% for the students who were entrepreneurs ($p < .003$). Forty-seven percent of the entrepreneurs were juniors versus 17% for the non entrepreneurship students ($p < .003$).

There was a significant difference between the average college entrance percentiles for entrepreneurship students (74%) versus 81% for the finance students ($p < .03$). However, there were no significant differences between GPAs.

Table 1 CHARACTERISTICS OF STUDENTS WHO HAVE BEEN ENTREPRENEURS VERSUS STUDENTS WHO HAVE NOT BEEN ENTREPRENEURS (N=126)				
	All Students N=124	Entrepreneurs N=19	Have Not Been Entrepreneurs N=115	P value
Age of Students (yrs)	21.5	21.3	21.6	.32
Male (%)	.66	63	66	.79
Year in School (%)				
Senior	79	53	83	.003**
Junior	21	47	17	.003**
Percentile SAT and/or ACT	80	74	81.2	.03*
Average GPA	3.39	3.34	3.40	.41

* $p < .05$, ** $p < .01$, *** $p < .001$

It was hypothesized (H1a) that students that had been entrepreneurs would have significantly higher college entrance scores than students who have not been entrepreneurs. This hypothesis was not supported. In fact, we found a negative significant relationship where the entrepreneurship students actually had significantly lower college entrance exams.

We also hypothesized (H1b) that there would be no significant difference between students who had been entrepreneurs versus students who had not been entrepreneurs. This

hypothesis was supported. There was no significant difference between grades of the two samples.

Table 2: Creativity Achievement Quotient of Students Who Have Been Entrepreneurs versus Students Who Have Not Been Entrepreneurs

Table 2 examines the differences in the Creativity Achievement Quotient between students that have been entrepreneurs versus students that have never been entrepreneurs. Additionally, the table examines if there are any significant differences between the 10 constructs that make up the CAQ. Overall, there were several significant differences between the populations. The entrepreneurs had a significantly higher CAQ score (11.1) versus finance students (6.9) at the $p < .03$ level.

There were four significant differences out of the 10 constructs of creativity that were evaluated. Entrepreneurship students were significantly more likely to have expertise in Architectural Design ($p < .006$); Inventions ($p < .04$); Scientific Inquiry ($p < .003$); and Theater and Film ($p < .005$). There were no significant differences between Visual Arts, Music, Dance, Creative Writing, Humor, and Culinary Arts.

Table 2 CREATIVITY ACHIEVEMENT QUOTIENT OF STUDENTS WHO HAVE BEEN ENTREPRENEURS VERSUS STUDENTS WHO HAVE NOT BEEN ENTREPRENEURS (N=126)				
	All Students N=124 Mean	Entrepreneurs N=19 Mean	Have Not Been Entrepreneurs N=115 Mean	P value
Creativity Achievement Quotient (CAQ)	7.5	11.1	6.9	.03*
Visual Arts	1.2	2.2	1.1	.12
Music	.92	.61	.97	.47
Dance	.50	.11	.56	.51
Architectural Design	.18	.61	.10	.006**
Creative Writing	.71	.44	.76	.38
Humor	1.2	1.3	1.1	.73
Inventions	.98	1.8	.84	.04*
Scientific Inquiry	.65	2.0	.42	.002**
Theater and Film	.52	1.2	.40	.005**
Culinary Arts	.63	.83	.59	.12

* $p < .05$, ** $p < .01$, *** $p < .001$

We hypothesized (H2) that students who had been entrepreneurs would have significantly higher CAQs versus students that had not been entrepreneurs. This hypothesis was supported.

DISCUSSION

This study evaluated data on 126 undergraduate students from a West coast university during the spring of 2014. The study fills a gap in entrepreneurship research by looking at differences in the levels of creative achievement and intelligence between students who have been entrepreneurs versus those who have not been entrepreneurs.

Specifically, the first hypothesis examined if there were any differences between college entrance exams and GPAs of students who had been entrepreneurs versus students who had not been entrepreneurs. We found that current students that had been entrepreneurs had significantly lower college entrance scores versus current students that had not been entrepreneurs.

Our findings indicate that there may be other factors involved in becoming entrepreneurs besides IQ. Sternberg (2004) stated that successful entrepreneurship requires a blend of analytical, creative, and practical aspects of intelligence, which he terms successful intelligence. Furthermore, we propose that IQ alone cannot measure a person's aptitude to become an entrepreneur. There are many factors that are needed to become an entrepreneur that cannot be measured through an exam such as motivation (or hunger/drive for success), ability to lead others (leadership), ability to relate to others (social skills), creativity, vision and perseverance.

We also hypothesized (H1b) that there would be no significant difference in GPAs between students that had been entrepreneurs versus students who had not been entrepreneurs. This hypothesis was supported. There was no significant difference between grades of the two samples. This finding is in tune with previous research.

Our final hypothesis (H2) found that students who had been entrepreneurs had a significantly higher Creativity Achievement Quotient than students that had not been entrepreneurs. This is supported in the existing literature. For example, entrepreneurship and innovative business behavior have long been associated with creativity (Amabile, 1996; Nyström, 1979; Walton, 2003) and the two are often used interchangeably. Previous research has been done on the characteristics associated with the entrepreneurial mind-set. Hornaday (1982) listed creativity and innovativeness as a characteristic often attributed to entrepreneurs. Wennberg (2004) stated that preliminary psychometric creativity testing has indicated that there were greater differences between students with different disciplinary backgrounds (e.g., entrepreneurship versus non-entrepreneurship students).

Our findings show that students that have been entrepreneurs have a significantly higher CAQ level. Furthermore, when we broke down our CAQ scale and examined each construct we found that entrepreneurship students were significantly more likely to have expertise in Architectural Design, Inventions, Scientific Inquiry and Theater and Film.

IMPLICATIONS

The U.S.'s level of creativity has been declining for decades along with its level of entrepreneurship. How can we make a difference? We can start in the classroom by educating our students more about creativity. Schools and instructors do poorly in providing environments that spark creativity, rarely allowing students to "pursue projects that encourage them to develop their creative thinking" (Sternberg & Lubart, 1991, p. 613). Creativity, despite its importance, is

not generally rewarded in the classroom. Educators need to improve their environment to stimulate creativity in the classroom.

Hennessey and Amabile (1987) discuss the issue of intrinsic versus extrinsic motivators and their effects on creativity. They state that they can be applied to any classroom at any grade level. That is, creative people are intrinsically motivated to complete a task. Thus, educators must be aware that, if they implement an extrinsic reward structure with these students, this will undermine their intrinsic motivation. In other words, allowing students to pursue their own passions should stimulate creativity within students. Runco and Nemiro's study (cited in Runco & Chand, 1995) suggest that motivation is important for creative thinking and that problem finding would facilitate intrinsic motivation in individuals. In other words, students will be more motivated when they choose their own tasks. This would make the task meaningful to the individual. They further suggested that educators devote more time to problem-finding skills to communicate to students that this ability is as important as problem solving. Often, though, extrinsic motivators must be used to foster intrinsic motivation.

Hennessey and Amabile (1987) reported that extrinsic rewards undermine intrinsic motivation and creative production. In addition, when students expect an evaluation, their focus switches from intrinsic motivation to extrinsic motivation, especially if they are being observed. Hennessey and Amabile cautioned that when convergent thinking is a teacher's goal, then extrinsic rewards can improve performance on a task. However, when students understand that their teachers "value" creativity, then this message has a positive effect on creativity. Schools also should have a continuing evaluation program to determine the effectiveness of their educational programs in developing creative abilities in their students.

A developmental theory of creativity proposed by Renzulli (1992) suggests that students should be provided with opportunities to engage in "ideal acts of learning" (p. 171). The learner, teacher, and curriculum must all be involved for these ideal acts of learning to occur. Renzulli's major concern was in how educators can promote a disposition for creative productivity. Renzulli (1992) stated that one way to enhance someone's creative production is to have them focus on their own interest. Their interests can be tasks or objects. Renzulli reported that the more consistent and intense the interests, the more creative were the students (Fasko, 2001).

Torrance (1981) noted several signs that indicate when creative learning occurs, such as improved motivation, alertness, curiosity, concentration, and achievement. The art of being a great teacher comes into play here where teachers have the innate ability to read their students to enhance the learning environment. The instructor has to realize the importance of positive energy, being a mentor, role model and advocate for the students.

Sternberg and Lubart (1991) suggest that instructors give more long-term assignments to develop students' tolerance for ambiguity. Schools typically do provide a fertile ground for students to learn to overcome obstacles. Schools, and specifically instructors, need to encourage students more to take risks with their newly acquired skills. Taking risks is difficult for creative students because creativity is not always rewarded with good grades (Sternberg & Lubart, 1991). Perhaps this is due to the negative attitudes teachers hold toward creative students, which is supported by the findings of Westby and Dawson (1995). Thus, educators must be more aware of this potential negative outcome of their grading. Instructors need to emphasize that it is alright to fail. Learning takes place during failure as well as success.

Creative people are rarely the superstars in any organization. Today, the creative work is achieved by people that we are not aware of in most organizations. They are people with high levels of creative thinking skills, expertise and are intrinsically motivated. Instructors must be aware of this and structure their courses so that creativity flourishes. Instructors need to build relationships with their students to understand their intrinsic motivations. Thus, they can serve as mentors to the students and give them direction in their future entrepreneurial pursuits.

REFERENCES

- Adams, K. (2006). The sources of innovation and creativity. National Center on Education and the Economy, Washington, DC.
- Allen, K. (2012). *Launching New Ventures: An Entrepreneurial Approach*. South-Western, Mason, OH.
- Amabile, T. M. (1996). Creativity and innovation in organizations. Harvard Business School Teaching Note. Harvard Business School Publishing, Boston, MA. 1-15.
- Amabile, T. M. (1996). The motivation for creativity in organizations. Harvard Business School Teaching Note. Harvard Business School Publishing, Boston, MA. 1-14.
- Amabile, T. M. (1998). How to kill creativity. *Harvard Business Review*. Sep-Oct, 76, 5, 76-87, 186.
- Amabile, T. M., & Tighe, E. (1993). Questions of creativity. *Creativity: The Reality Club 4*. New York: Simon & Schuster.
- Barringer, B., & Ireland, D. (2012). *Entrepreneurship: Successfully Launching New Ventures 4th Edition*. Prentice Hall, Upper Saddle River, NJ.
- Bowles, S., Gintis, H. & Osborne, M. (2001). The determinants of earnings: Skills, preferences, and schooling. *Journal of Economic Literature*. 39, 1137-1176.
- Bronson, P., & Merryman, A. (2010). The creativity crisis. *Newsweek* July 19, 2010.
- Bull, K. S., Montgomery, D., & Baloch, L. (1995). Teaching creativity at the college level: A synthesis of curricular components perceived as important by instructors. *Creativity Research Journal*, 8, 83-90.
- Carson, S., Peterson, J., & Higgins, D. (2005). Reliability, Validity, and Factor Structure of the Creative Achievement Questionnaire. *Creativity Research Journal*, 17(1), 37-50.
- Chambers, J. A. (1973). College teachers: Their effect on creativity of students. *Journal of Educational Psychology*, 65, 326-334.
- Chamorro-Premuzic, T. (2011, March 15). How many successful entrepreneurs would fail an IQ test? *Psychology Today*. Accessed August 4 from: <http://www.psychologytoday.com/blog/mr-personality/201103/how-many-successful-entrepreneurs-would-fail-iq-test>
- Davis, G. A. (1991). Teaching creativity thinking. In N. Colangelo & G. A. Davis (Eds.), *Handbook of Gifted Education*. Boston: Allyn & Bacon. 236-244.
- de Wit, G. (1993). Models of self-employment in a competitive market. *Journal of Economic Surveys*. 7(4), 367-397.
- de Witt, G., & van Winden, F. (1989). An empirical analysis of self-employment in the Netherlands. *Small Business Economics*. 1, 263-272.
- Emami, M., Bardai, B., & Ismail, W. K. (2013). The interrelationship between entrepreneurial trait-E.Q (Emotional Quotient), I.Q (Intelligence Quotient), ADHD (Attention Deficit-Hyperactivity Disorder), creativity, and leadership talent. *Journal of Entrepreneurship & Management*. 2(1).
- Eysenck, H. J. (1995). *Genius: The Nature of Creativity*. Cambridge University Press, New York, New York.
- Fasko, D. (2001). Education and creativity. *Creativity Research Journal*. 13, 3-4, 317-327.
- Finkle, T. A. (2012). Corporate Entrepreneurship & Innovation in Silicon Valley: The Case of Google, Inc., *Entrepreneurship Theory & Practice*, 36(4), 863-884.
- Freeman, J. (2006). First insight: fostering creativity in university performance. *Arts and Humanities in Higher Education*, 5(1), 91-103.
- Gardner, H. (2006). *Multiple Intelligences: New Horizons in Theory and Practice*. New York: Basic Books, Inc.
- Getzels, J. W., & Jackson, P. J. (1962). *Creativity and Intelligence: Explorations with Gifted Students*. New York: John Wiley and Sons, Inc.

- Gryskiewicz, S. (1987). Predictable creativity. In S.G. Isaksen (ed.), *Frontiers of Creativity Research: Beyond the Basics*. Bearly: Buffalo, NY. 67-75.
- Han, K. S., & Marvin, C. (2002). Multiple creativities? Investigating domain-specificity of creativity in young children. *Gifted Child Quarterly*, 46(2), 98-109.
- Helson, R., & Srivastava, S. (2002). Creative and wise people: similarities, differences, and how they develop. *Personality and Social Psychology Bulletin*, 28(10), 1430-1440.
- Hennessey, B. A., & Amabile, T. M. (1987). *Creativity and Learning*. Washington, DC: NEA Professional Library.
- Hocevar, D. & Bachelor, P. (1989). A taxonomy and critique of measurements used in the study of creativity. In J. A. Glover, R. R. Ronning, & C. R. Reynolds (Eds.), *Handbook of Creativity*. New York: Plenum.
- Hornaday, J. (1982). Research about living entrepreneurs. In *Encyclopedia of Entrepreneurship*, ed. Calvin Kent, Donald Sexton, and Karl Vesper (Englewood Cliffs, NJ: Prentice Hall, 26-27.
- Jones, G., and Schneider, W. (2010). IQ in the production function: Evidence from immigrant earnings. *Economic Inquiry*. 48, 743-755.
- Kauffman Foundation (2014, April 9). Kauffman Index of Entrepreneurial Activity Interactive. Kauffman Foundation. Accessed October 8 from: <http://www.kauffman.org/multimedia/infographics/2013/kiea-interactive>
- Kirton, M. J. (1987). Adaptors and innovators: cognitive style and personality. In S.G. Isaksen (Ed). *Frontiers of Creativity Research; Beyond the Basics*, Buffalo, NY: Bearly Limited, 282-304.
- Meusburger, P. (2009). Milieus of creativity: The role of places, environments and spatial contexts. In Meusburger, P., Funke, J. and Wunder, E. *Milieus of Creativity: An Interdisciplinary Approach to Spatiality of Creativity*. Springer.
- Millar, G., Dahl, C., & Kauffman, J. (2011). Testing the whole mind-educating the whole child. *Alberta Teachers' Association (ATA) Magazine*. Accessed June 21 from: <http://www.teachers.ab.ca/Publications/ATA%20Magazine/Volume-91/Number3/Pages/Testingthewholemind.aspx>
- Renzulli, J. S. (1992). A general theory for the development of creative productivity through the pursuit of ideal acts of learning. *Gifted Child Quarterly*, 36, 170-182.
- Rhodes, M. (1987). An analysis of creativity. In S. G. Isaksen (Ed.), *Frontiers of creativity research: Beyond the basics* (pp. 216-222). Buffalo, NY: Bearly. (Original work published 1961).
- Runco, M. A., & Chand, I. (1995). Cognition and creativity. *Educational Psychology Review*, 7, 243-267.
- Sarsani, M. R. (2008). Do high and low creative children differ in their cognition and motivation? *Creativity Research Journal*, 20(2), 155-170.
- Schmidt, J., Soper, J., & Facca, T. (2012). Creativity in the entrepreneurship classroom. *Journal of Entrepreneurship Education*, 15, 123-131.
- Shane, S. (2009, July 20). Do good students become entrepreneurs? *New York Times*. Accessed on August 5: http://boss.blogs.nytimes.com/2009/07/20/do-good-students-become-entrepreneurs/?_php=true&_type=blogs&_r=0
- Srivastava, S., & Thomas, A. (1991). Creativity of pre-school children effect of sex, age, birth order and intelligence. *Journal of Psychological Researches*, 36(2), 92-98.
- Sternberg, R. J. (1997). *Successful Intelligence*. Plume Books. New York, New York.
- Sternberg, R. J. (2004). Successful intelligence as a basis for entrepreneurship. *Journal of Business Venturing*. 19(2), 189-201.
- Sternberg, R. J. (2010, October 10). Teach Creativity, Not Memorization. *Chronicle of Higher Education*. Retrieved from <http://chronicle.com.proxy.foley.gonzaga.edu/article/Teach-Creativity-Not/124879/>
- Sternberg, R. J., & Lubart, T. I. (1991). Creating creative minds. *Phi Delta Kappa*, 72, 608-614.
- Sternberg, R. J., & Lubart, T. I. (1995). *Defying the Crowd: Cultivating Creativity in a Culture of Conformity*. New York: The Free Press.
- Strenze, T. (2007). Intelligence and socioeconomic success: A meta-analytic review of longitudinal research. *Intelligence*. 401-426
- Taylor, B. (1995). *Into the Open: Reflections on Geniuses and Modernity*. New York University Press, New York, New York.

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- Torrance, E. P. (1981). Creative teaching makes a difference. In J. C. Gowan, J. Khatena, & E. P. Torrance (Eds.), *Creativity: Its Educational Implications* (2nd ed., pp. 99–108). Dubuque, IA: Kendall/Hunt.
- de Witt, G., & van Winden, F. (1989). An empirical analysis of self-employment in the Netherlands. *Small Business Economics*, 1, 263-272.
- Van Praag, C. M., & Cramer, J. S. (2001). The roots of entrepreneurship and labour demand: Individual ability and low risk aversion. *Economica*, 68(269), 45-62.
- Wallach, M. A., & Kogan, N. (1965). *Nodes of thinking in young children: A study of creativity-intelligence distinction*. New York: Holt, Rinehart & Winston.
- Walton, A. P. (2003). The impact of interpersonal factors on creativity. *International Journal of Entrepreneurial Behaviour and Research*, 9, 146–162.
- Ward, T. B. (2004). Cognition, creativity and entrepreneurship. *Journal of Business Venturing*, 19, 173–188.
- Westby, E. L. & Dawson, V. L. (1995). Creativity: Asset or burden in the classroom. *Creativity Research Journal*, 8, 1–10.
- Wodtke, K. H. (1964). Some data on the reliability and validity of creative tests at the elementary school level. *Educational and Psychological Measurement*, 24(2), 399-408.
- Yi, H. Y., Sulaiman, T., & Baki, R. (2011). The role of multiple intelligences and creativity in students' learning style. *OIDA International Journal of Sustainable Development*, 2(8), 85-93.

APPENDIX

CREATIVE ACHIEVEMENT QUESTIONNAIRE

1. Place a check mark beside sentences that apply to you. Next to sentences with an asterisk (*), write the number of times this sentence applies to you.

1. Visual Arts (painting, sculpture)

- ☐ 0. I have no training or recognized talent in this area. (Skip to Music).
- ☐ 1. I have taken lessons in this area.
- ☐ 2. People have commented on my talent in this area.
- ☐ 3. I have won a prize or prizes at a juried art show.
- ☐ 4. I have had a showing of my work in a gallery.
- ☐ 5. I have sold a piece of my work.
- ☐ 6. My work has been critiqued in local publications.
- * ☐ 7. My work has been critiqued in national publications.

2. Music

- ☐ 0. I have no training or recognized talent in this area (Skip to Dance).
- ☐ 1. I play one or more musical instruments proficiently.
- ☐ 2. I have played with a recognized orchestra or band.
- ☐ 3. I have composed an original piece of music.
- ☐ 4. My musical talent has been critiqued in a local publication.
- ☐ 5. My composition has been recorded.
- ☐ 6. Recordings of my composition have been sold publicly.
- * ☐ 7. My compositions have been critiqued in a national publication.

3. Dance

- ☐ 0. I have no training or recognized talent in this area (Skip to Architecture)
- ☐ 1. I have danced with a recognized dance company.
- ☐ 2. I have choreographed an original dance number.
- ☐ 3. My choreography has been performed publicly.
- ☐ 4. My dance abilities have been critiqued in a local publication.
- ☐ 5. I have choreographed dance professionally.
- ☐ 6. My choreography has been recognized by a local publication.
- * ☐ 7. My choreography has been recognized by a national publication.

4. Architectural Design

- ☐ 0. I do not have training or recognized talent in this area (Skip to Writing).
- ☐ 1. I have designed an original structure.
- ☐ 2. A structure designed by me has been constructed.
- ☐ 3. I have sold an original architectural design.
- ☐ 4. A structure that I have designed and sold has been built professionally.
- ☐ 5. My architectural design has won an award or awards.
- ☐ 6. My architectural design has been recognized in a local publication.
- * ☐ 7. My architectural design has been recognized in a national publication.

5. Creative Writing

- ☐ 0. I do not have training or recognized talent in this area (Skip to Humor).
- ☐ 1. I have written an original short work (poem or short story).
- ☐ 2. My work has won an award or prize.
- ☐ 3. I have written an original long work (epic, novel, or play).
- ☐ 4. I have sold my work to a publisher.
- ☐ 5. My work has been printed and sold publicly.

- __ 6. My work has been reviewed in local publications.
 * __ 7. My work has been reviewed in national publications.

6. Humor

- __ 0. I do not have recognized talent in this area (Skip to Inventions).
 __ 1. People have often commented on my original sense of humor.
 __ 2. I have created jokes that are now regularly repeated by others.
 __ 3. I have written jokes for other people.
 __ 4. I have written a joke or cartoon that has been published.
 __ 5. I have worked as a professional comedian.
 __ 6. I have worked as a professional comedy writer.
 __ 7. My humor has been recognized in a national publication.

7. Inventions

- __ 0. I do not have recognized talent in this area.
 __ 1. I regularly find novel uses for household objects.
 __ 2. I have sketched out an invention and worked on its design flaws.
 __ 3. I have created original software for a computer.
 __ 4. I have built a prototype of one of my designed inventions.
 __ 5. I have sold one of my inventions to people I know.
 * __ 6. I have received a patent for one of my inventions.
 * __ 7. I have sold one of my inventions to a manufacturing firm.

8. Scientific Discovery

- __ 0. I do not have training or recognized ability in this field (Skip to Theater
 __ 1. I often think about ways that scientific problems could be solved.
 __ 2. I have won a prize at a science fair or other local competition.
 __ 3. I have received a scholarship based on my work in science or medicine.
 __ 4. I have been author or coauthor of a study published in a scientific journal.
 * __ 5. I have won a national prize in the field of science or medicine.
 * __ 6. I have received a grant to pursue my work in science or medicine.
 __ 7. My work has been cited by other scientists in national publications.

9. Theater and Film

- __ 0. I do not have training or recognized ability in this field.
 __ 1. I have performed in theater or film.
 __ 2. My acting abilities have been recognized in a local publication.
 __ 3. I have directed or produced a theater or film production.
 __ 4. I have won an award or prize for acting in theater or film.
 __ 5. I have been paid to act in theater or film.
 __ 6. I have been paid to direct a theater or film production.
 * __ 7. My theatrical work has been recognized in a national publication.

10. Culinary Arts

- __ 0. I do not have training or experience in this field.
 __ 1. I often experiment with recipes.
 __ 2. My recipes have been published in a local cookbook.
 __ 3. My recipes have been used in restaurants or other public venues.
 __ 4. I have been asked to prepare food for celebrities or dignitaries.
 __ 5. My recipes have won a prize or award.
 __ 6. I have received a degree in culinary arts.
 * __ 7. My recipes have been published nationally

Scoring of the Creative Achievement Questionnaire

1. Each check marked item receives the number of points represented by the question number adjacent to the checkmark.
2. If an item is marked by an asterisk, multiply the number of times the item has been achieved by the number of questions to determine points for that item.
3. Sum the total number of points within each domain to determine the domain score.
4. Sum all 10 domain scores to determine the total CAQ score.

FEMALE ENTREPRENEURS AND NEGOTIATION SELF-EFFICACY: A STUDY ON NEGOTIATION SKILL BUILDING AMONG WOMEN ENTREPRENEURS

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ABSTRACT

Entrepreneurial education includes the study of desired skills, knowledge and competencies necessary at various stages of the entrepreneurial continuum as well as effective pedagogies to address varying learning styles and modes of delivery. Women entrepreneurs commonly lack key business skills and competencies their male counterparts developed from professional experiences in corporate environments. This skillset includes negotiation efficacy, a competence that may be pivotal to launching and sustaining a new venture. During the launch period, venture financing, recruitment of management teams, and acquisition of resources require astute negotiation skills to establish a business. Entrepreneurs who are unable to secure the needed resources may never be able to move their venture beyond the conceptual stage. Studies show that women face greater challenges than men in securing venture financing and human capital resources. Therefore, greater negotiation efficacy could prove useful for women entrepreneurs during this resource building process. This study will explore how women entrepreneurs can develop increased levels of negotiation self-efficacy to maximize outcomes as they establish their businesses.

INTRODUCTION

Entrepreneurship has long been established as a vital component of a growing economy. In 2011, over 543,000 businesses were created each month (Fairlie, 2012). In the United States, 10.4 percent of the female population between 18-64 years of age are nascent entrepreneurs or current owners or managers of a business (Kelley, 2011). Women owned businesses account for \$1.2 trillion in sales/receipts and employed 7.6 million workers (Administration, 2010). Such a powerful economic force requires a myriad of resources. This includes effective training and development programs. Key stakeholders of this economic force continuously seek to understand the educational needs of female entrepreneurs, including curriculum requirements, effective teaching pedagogies, learning assessments, and modes of content delivery (A. C. L. Martinez, Jonathan; Kelley, Donna J.; Rognvaldur, Saemundsson J.; Schott, Thomas, 2008; Terjesen & Elam, 2012).

While a growing number of universities now offer degree programs in entrepreneurship, there are countless entrepreneurial training programs available to both nascent and seasoned entrepreneurs offered outside academic institutions (A. C. L. Martinez, Jonathan; Kelley, Donna J.; Rognvaldur, Saemundsson J.; Schott, Thomas, 2008). These programs provide entrepreneurs with the knowledge, skills and competencies necessary to launch, grow and sustain entrepreneurial endeavors (Raposo, 2011). Negotiation is a specific interpersonal skill in the development of social competence and has been recognized as an important skillset for entrepreneurs (Hoehn-Weiss, Brush, & Baron, 2004). Negotiation skills are typically taught with

in the context of leadership, communication or conflict management courses (Roy Lewicki, 1997). Due to this recognized skillset, a growing number of universities and professional training centers now offer negotiation skill building courses and seminars (Kenworthy, 2010; Thompson & Leonardelli, 2004).

Female entrepreneurs who lack career experiences where the skill of negotiation is commonly practiced and developed can find the process of negotiation to be intimidating and a significant obstacle to overcome in the pursuit of their entrepreneurial endeavors (D. M. Kolb, 2009; Martinez, 2008). As such, female entrepreneurs often lack confidence when entering a situation in the development of their business that requires astute negotiation skills. This impacts their ability to initiate the behaviors necessary to achieve successful outcomes in negotiating for resources to support their business.

Self-efficacy has emerged as a proven construct to evaluate learning and change (A. Bandura, 2012). Self-efficacy is based on Social Learning Theory and can be explained as the confidence an individual has for persevering through specific tasks in order to achieve desired performance outcomes (A. Bandura, 1999). The entrepreneurial self-efficacy construct has been utilized in the field of entrepreneurship education (Hao, Seibert, & Hills, 2005; Wilson, Kickul, & Marlino, 2007; Wilson, Kickul, Marlino, Barbosa, & Griffiths, 2009). However, there is little research available on negotiation self-efficacy among female entrepreneurs. This study will focus on the development of negotiation skills among women entrepreneurs in order to increase negotiation self-efficacy in their entrepreneurial endeavors.

This research will address the following questions:

- 1) How do female entrepreneurs assess their confidence in their negotiation skills?
- 2) What can educators do to increase entrepreneurial negotiation self-efficacy among women entrepreneurs?
- 3) What specific task areas among distributive and integrative negotiation strategies can be most impacted by negotiation skill building?

REVIEW OF LITERATURE

Entrepreneurial Education

According to a Special Report by the Global Entrepreneurship Research Association (A. C. L. Martinez, Jonathan; Kelley, Donna J.; Rognvaldur, Saemundsson J.; Schott, Thomas, 2008), entrepreneurship education is defined as “the building of knowledge and skills either ‘about’ or ‘for the purpose of’ entrepreneurship generally, as part of recognized education programs at primary, secondary and tertiary-level educational institutions” (p.8). The study of entrepreneurial education has explored the skills, knowledge and competency needs of entrepreneurs, as well as learning styles, effective pedagogies and modes of delivery (Honig, 2004; Kuratko, 2005; A. C. L. Martinez, Jonathan; Kelley, Donna J.; Rognvaldur, Saemundsson J.; Schott, Thomas, 2008; Neck & Greene, 2011; Plumly et al., 2008; Sexton & Bowman, 1984; Solomon, Fernald, & Dennis, 2003).

Within these areas, the gender-based education needs among entrepreneurs has been explored extensively (Birley, Moss, & Saunders, 1987). Despite the stronger educational background of today's female entrepreneurs, the need for viable and effective educational opportunities to support their endeavors continues to surface as a critical need (Bowen & Hisrich, 1986; Terjesen & Elam, 2012). The educational needs include competence in conflict resolution, interpersonal skills and social competence (Hoehn-Weiss et al. 2004; Plumly et al. 2008).

Gender, Negotiation & Entrepreneurs

Research in the area of gender and negotiation spans almost four decades (Deborah M. Kolb, 2009). Studies find gendered influence in negotiation situations favors men and negatively impacts the outcomes achieved by women (Miles & Clenney, 2010). Over time, research exploring gender influence in negotiations has shifted from a focus on female and male behavior differences and stereotypes to a broader analysis of situational and organizational norms and values (Deborah M. Kolb, 2009). This new direction explores the nuances of organizational behaviors and structures and the impact these factors play into negotiation outcomes (Kolb & McGinn, 2009). Through this perspective, the gendered role of an entrepreneur and its impact on women-owned businesses can be explored.

Numerous studies provide a context for the gendered role of the entrepreneur (Brush, 1992; Brush, de Bruin, & Welter, 2009; Brush, Wong-Mingji, & Sullivan, 1999; Gatewood, Brush, Carter, Greene, & Hart, 2009; Hisrich & Brush, 1984; Manolova, Brush, Edelman, & Shaver, 2012). Similar to negotiation situations, women entrepreneurs are competing in a landscape dominated by masculine norms and values (Brush, 2002; Brush et al. 2009; Brush et al. 1999). The gendered role perceptions are especially challenging for women as they strive to negotiate new venture funding (Nelson, Maxfield, & Kolb, 2009). Women-owned businesses receive a disproportionate amount of financing through the venture capital process (Brush, 2002). Most recently, Nelson et al. (2009) explored the gendered role of entrepreneurs and the impact on venture capital financing. The study found gendered norms within the venture capital landscape to favor the male entrepreneur. As such, women entrepreneurs are challenged to assimilate into the culture of the venture capital funding process and successfully obtain financing for their business (Nelson et al. 2009). This assimilation requires increased confidence in their ability to negotiate at every stage of a very complex process.

Negotiation Styles, Strategies and Tactics

In a negotiation situation, distributive tactics are used to gain concessions from the other party plus as much of the potential resources as possible; whereas, integrative tactics involve trade-offs and satisfying the interests of all the negotiation participants (Tak Wing Yiu; Sai On Cheung, 2012). Distributive situations are also known as zero-sum or win-lose negotiations, whereas one individual obtains their goal while the other person fails to achieve their respective goal (RJ Lewicki, Barry, & Saunders, 2011). Conversely, integrative situations are associated with non-zero sum or win-win negotiation scenarios where both parties can meet or exceed their targeted goal outcomes (RJ Lewicki et al., 2011). Generally, integrative or collaborative skills are involved in value-creation which occurs first, while distributive or competitive tactics are employed in the value-claiming stage which follows (RJ Lewicki et al. 2011). Normally negotiation involves a process of engaging in a combination of both creating and claiming value strategies (RJ Lewicki et al. 2011). Therefore, it is imperative that negotiators comprehend how to both create and claim value in order to maximize their targeted goal outcomes and refrain from leaving unclaimed value on the bargaining table.

Gender stereotypes categorize the male negotiator as strong, dominant, assertive plus rational versus the female as weak, submissive, accommodating and emotional (Hames, 2011). Women behave more collaboratively in negotiations and view negotiation in terms of ongoing relationships with greater concern for feelings and emotions. Thus, women may settle for lower outcomes than men as a result of their concern for preservation of the relationship. Men tend to utilize more persuasive tactics, which results in better outcomes than their female counterparts (Stuhlmacher & Walters, 1999). Amanatullah et al (2010) found that women negotiating on their own behalf are less assertive, perhaps due to fear of backlash or negative implications. Consequently, women tend to employ fewer competitive tactics and realize lower outcomes. This is especially relevant for female entrepreneurs who negotiate on their own behalf.

Self-Efficacy

Self-efficacy is at the center of social learning theory developed by Albert Bandura (A. Bandura, 1977), and has long been a construct used in numerous research studies to evaluate pedagogical effectiveness (Brady-Amoon & Fuertes, 2011; Celuch, Kozlenkova, & Black, 2010; Pollack & Lilly, 2008; Sargent, Borthick, & Lederberg, 2011). Bandura (1977) defines self-efficacy as “the conviction that one can successfully execute the behavior required to produce the outcomes (p. 79).” The theory provides a basis for predicting behavioral changes and is a proven construct to study learning and change among adult learners (A. Bandura, 2012).

Self-efficacy is focused on task specific actions taken by an individual to achieve a desired outcome. An individual’s self-efficacy for a specified task or series of tasks will determine the level of effort and perseverance put forth in completing the task. According to Bandura (1986), there are multiple levels of self-efficacy, which include task specific efficacy, domain efficacy, and general or global efficacy. Key to perceived self-efficacy is one’s knowledge, skills and competencies for a specific task or task domain. Accordingly, an individual’s perceived competence across a range of skills and capabilities for a specific task or task domain will impact their behavior for achieving desired performance levels (A. Bandura, 1986).

Bandura explains, “Performances that call for ingenuity, resourcefulness, and adaptability depend more on adroit use of skills and specialized knowledge than on effort (P. 371).” Further, the ambiguity and unpredictability of certain situations may have an impact on an individual’s predicted performance of a specific task or task domain. Sustained performance for complex tasks, such as negotiations, that are challenging, that require great effort, and that are not easily replicated may not automatically strengthen an individual’s perceived self-efficacy (A. Bandura, 1986). Individual self-efficacy depends on one’s belief that they are able to consistently perform at desired levels with shifting situational factors (A. Bandura, 2012). Due to the complex and ambiguous nature of negotiations, self-efficacy theory lends itself well to the evaluation of learning and skill development to predict an individual’s negotiation performance and belief in their ability to continually and proactively engage in negotiation opportunities (Roy Lewicki, 1997).

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negotiations, self-efficacy theory lends itself well to the evaluation of learning and skill development to predict an individual's negotiation performance and belief in their ability to continually and proactively engage in negotiation opportunities (Roy Lewicki, 1997).

Mastery of the set of skills and competencies associated with the task will determine the level of perceived efficacy an individual possesses. Personal mastery can be developed through a series of experiential activities, social modeling, and verbal persuasion (A. Bandura, 2012). Researchers have explored the utilization of negotiation self-efficacy to improve sustained individual performance levels for this complex task domain (Gist, Stevens, & Bavetta, 1991; Miles & Maurer, 2012). The variety of elements and skills required of the negotiation process combined with interdependence of individuals involved in a negotiation situation makes learning and mastery of the task domain a fairly complex and lengthy process.

In a recent study, Miles and Maurer (2012) explored negotiation skill self-efficacy at the domain level with promising results. Their research concluded that domain level self-efficacy may be an effective measurement of negotiation self-efficacy due to the complex nature of the tasks involved and the dynamic, unpredictable nature of negotiation situations. (A. Bandura, 2012).

"In the prototypical self-efficacy paradigm, people judge their efficacy in advance over a wide range of task demands within a meaningful domain of functioning. This assessment procedure is designed to identify the pattern, strength and upper limits of perceived self-efficacy (A. Bandura, 1986), P.362."

Therefore, learning environments that provide opportunities for individuals to participate in simulated negotiation situations and receive constructive feedback on their performance can be useful to increasing individual self-efficacy for the negotiation task domain (Gist et al., 1991; Stevens & Gist, 1997). Activities which support the development of knowledge, skills and competencies in the specific tasks involved in negotiation (interpersonal communications, empathy, assertiveness, etc.) may support success in mastery level experiences (Miles & Maurer, 2012). This can be highly relevant for women entrepreneurs who struggle with confidence and efficacy among complex entrepreneurial-related tasks and situations (Terjesen & Elam, 2012). "For women, however, the most significant factors predicting new business activity are perceptions of the self and the environment, including confidence, expectation of opportunities and fear of failure" (Terjesen & Elam, 2012, p.17). Female entrepreneurs tend to actively seek educational opportunities to develop the skills they associate with entrepreneurial success (Wilson et al., 2007; Wilson et al., 2009). As such, educational environments that provide opportunities for women to actively practice and develop the tasks and behaviors associated with negotiation skills should support the negotiation self-efficacy development of these entrepreneurial women.

METHODOLOGY

Sample & Data Collection

To collect data for this study, a negotiation skills workshop was developed and offered to clients of a local nonprofit organization supporting female entrepreneurs. Each workshop was scheduled for two hours and included a one-hour lecture, a case study role-play simulation and a debriefing discussion. An announcement was sent out to current clients of the organization inviting women to sign up for this skill development workshop. Each workshop was limited to 20 participants and the roster was filled on a first-come, first serve basis. There was no charge to attend the workshop. The absence of a fee helped to drive participation, as most other educational opportunities offered through the organization are fee-based.

The one-hour interactive lecture on the fundamentals of negotiation included: Strategies of distributive bargaining, the integrative negotiation process, closing the deal, goals, strategy, planning, plus creating and claiming value (RJ Lewicki et al., 2011). Thereafter, participants were randomly placed in triads and asked to study their assigned roles and script in preparation for a negotiation exercise, WineMaster.com (Subramanian, 2000). The effectiveness of negotiation entrepreneurship training can be enhanced when an approach is taken in which students' participate in working effectively in teams while exercising analytical and communication skills (Plumly et al. 2008). The role-play involved the potential sale of an e-commerce company, WineMaster.com from its three entrepreneur owners to a larger e-commerce company, HomeBase, looking to expand their product-line (Subramanian, 2000). A one-hour time constraint was imposed. To assist the attendees in engaging in additional preparation that encompassed identifying needs, priorities, resources and constraints, a planning tool was provided to them entitled, Planning for Negotiations (R. J. Lewicki, Saunders, & Minton, 2010). In addition, a Deal Value Calculation Worksheet was provided to the WineMaster.com team while an Acquisition Cost Calculation Worksheet was distributed to the HomeBase team (Subramanian, 2000). There were four issues to be negotiated: (1) Number of Shares. (2) Vesting for stock shares. (3) Board Seat. (4) Ownership of a lawsuit (Subramanian, 2000).

The Negotiation Simulation for the First Workshop

The role-play provided to participants at the first Workshop proved to be too complex for the entrepreneurs, which struggled with the financial aspects of the exercise that consisted of determining opening offers, targets, and resistance points (RJ Lewicki et al., 2011). The target point would be where the team realistically expected to achieve a settlement while a resistance or walk-away point is where the team would decide that they should stop the negotiation rather than continue (R. J. Lewicki, Barry, Bruce, Saunders, David M., 2010). None of the teams were able to finalize an agreement within the time constraints.

The Negotiation Simulation for the Second Workshop

Given the time constraint plus the level of difficulty for the entrepreneurs at the first workshop, the following changes were incorporated into the second workshop: (1) The respective teams were provided with their specific walk-away financial targets, thus establishing a zone of possible agreement (Subramanian, 2000). (2) One of the issues was eliminated, i.e., the ownership of a potential existing lawsuit against WineMaster.com source. The modifications proved beneficial as two of the three teams achieved satisfactory outcomes within the zone of possible agreement. The third group ended the simulation with an impasse because the women were unable to employ neither satisfactory concessions nor closing techniques.

Measures

A self-efficacy scale was designed to measure the strength of the participants' perceived degree of confidence in performing negotiation tactics on a 100-point scale (Bandura, 2006a). The descriptors utilize single unit intervals ranging from 0 to 100, with 0 equating to cannot do at all, 50 moderately can do and 90-100 signifying they are highly certain they can do (Bandura, 2006b). The statements included in the self-efficacy scale identify negotiation tactics that are either distributive or integrative (Tak Wing Yiu; Sai On Cheung, 2012). Question numbers 1 through 5 are associated with distributive negotiating tactics, while questions 6 through 10 are associated with

integrative negotiating tactics. Self-efficacy has been proven to be a powerful influence affecting negotiators' behaviors concerning the different outcomes achieved when distributive or integrative strategies are employed (Sullivan, 2006).

Participants completed the surveys at the very beginning of the workshop and then were asked to complete the survey again at the end of the workshop. The survey was paper-based for the first workshop. All 19 participants completed both the pre and post surveys. At the second workshop, the surveys were administered online which provided several advantages including, time benefits for both administration and access to the data for evaluation purposes (Keller, 2012). Twenty-three of the participants completed the pre-survey and twenty completed the post survey. Pre and post survey instruments included both open and closed-ended questions. The closed-ended questions included Likert scales while the open-ended questions were completely unstructured (Keller, 2012). The design provided participants of the workshops the opportunity to reflect on the learning experience. In all, 42 women participated in the workshops though not all completed the post-survey.

DATA ANALYSIS AND FINDINGS

Eighty-eight percent of respondents indicated they had not had prior training in negotiations before taking the workshop. Despite the lack of negotiation training, 91 percent of the participants agreed that negotiation skills were important to them in achieving their career and/or personal goals. Sixty-six percent of the participants indicated that they engaged in frequently in negotiations (daily to weekly) and 24 percent indicated being involved in negotiations somewhat frequently (monthly). The most common type of negotiation situations encountered by the entrepreneurs for both workshops consisted of: (1) Hiring employees/Job Offer. (2) Vendor or Job Contracts. (3) Customer Pricing. (4) Financial funding.

After taking the workshop, 87% of the women indicated they either Agree or Strongly Agree with the statement "When engaging in negotiations, I could be described as confident." In the pre-survey, only 54% of the women Agree or Strongly Agree with this statement. Further, 83% of the participants either Agreed or Strongly Agreed with the statement "When engaging in negotiations, I am likely to achieve my outcome goals" in the post-survey as opposed to 50% in the pre-survey. These increases support a perceived increase in the efficacy development among the participants within the negotiation skill domain.

There was very little shift in response to the statement "The relationship is more important to me than the outcome when I engage in workplace negotiations." In the pre-survey, 50% of the women indicated they Agree or Strongly Agree with the statement compared to 55% in the post-survey. This aligns with previous research on the tendencies of women in negotiation situations (Hames, 2011). Interestingly, 79% of the participants indicated they Agree or Strongly Agree with the statement "When engaging in negotiations, I could be described as effective in managing my emotions" in the post survey as opposed to 43% in the pre-survey. This is a significant shift and could be indicate a realization of how emotions impact their effectiveness in negotiating for their business.

Overall, the participants appeared to develop confidence in utilizing distributive strategies and understanding the value these strategies bring to negotiation situations. The women in the study indicated their intent to implement these strategies in future negotiation opportunities. In Table 1, the data indicates an increased intent to maximize information, implement deadlines and limiting information provided, including the bottom line. This shift is significant since these particular strategies and behaviors are typically associated with tactics utilized more effectively by men in

negotiation situations. The workshops provided an opportunity for the entrepreneurial women to not only learn how to implement distributive tactics but to better understand how the tactics are used by others with whom they are negotiating deals.

Table 1 DISTRIBUTIVE STRATEGIES				
Answer	Pre Mean Value (n=42)	Post Mean Value (n=38)	Pre Standard Deviation	Post Standard Deviation
1. I would object to an issue that was unfavorable to me (Churchman, 1993).	74.27	84.36	19.75	15.77
2. I would maximize the information received and minimize the information given (Churchman, 1993).	53.05	81	22.15	17.86
3. I would argue in support of my position (Olekalns, 1996).	70.29	85.07	24.44	17.79
4. I would attempt to increase the time pressure by indicating the negotiation deadline (Olekalns, 1996).	55.73	76.81	30.33	20.84
5. I would try and hide my bottom line (Barry, 1998).	47.15	78.37	33.37	23.22

The shift among integrative strategies was not as significant among the participants in this study. This is not surprising since females typically are more comfortable with tactics that focus on the relationship. Although the women indicated they would be more likely to initiate negotiations with easy issues and would make more attempts to exchange concessions after taking the workshop (Table 2), their confidence and practice of seeking to understand differing points of few and finding clarity around core issues did not shift much.

Table 2 INTEGRATIVE STRATEGIES				
Answer	Pre Mean Value (n=42)	Post Mean Value (n=38)	Pre Standard Deviation	Post Standard Deviation
6. I would begin with easy issues on common ground (Bordone, 2005).	67.95	88.45	23.44	15.34
7. I would try to identify the core issue and clarify where each party stood (Bordone, 2005).	72.79	84.45	24.50	16.77
8. I would attempt to exchange concessions with my opponent (Churchman, 1993).	65.27	85.45	29.20	14.12
9. I would try to understand the situation from my opponent's point of view (Churchman, 1993).	83.83	84.42	13.64	18.91
10. I would appear patient during the negotiation (Churchman, 1993).	81.76	87.61	16.39	16.26

Upon responding to the question, “Overall, after taking this workshop, when engaging in negotiations, I intend to be more.

Table 3
POST SURVEY RESULTS

#	Question	Strongly Disagree	Disagree	Neither agree nor disagree	Agree	Strongly Agree	Total Responses	Mean
1	Persuasive	0	1	3	26	7	37	4.05
2	Confident	0	2	3	19	14	38	4.18
3	Assertive	0	2	5	23	8	38	3.97
4	Likely to achieve my negotiation outcome goals	0	1	3	23	11	38	4.16
5	Effective in managing my emotions	0	2	6	21	9	38	3.97
6	Empathetic	0	0	8	22	8	38	4.00
7	Competitive	0	4	5	19	9	37	3.89
8	Collaborative	0	2	1	19	16	38	4.29

CONCLUSIONS

Due to the small sample size, this study should be considered exploratory and an opportunity to evaluate whether the insight gleaned warrants further study. Overall, findings support the idea that negotiation training and development can have a positive impact on the efficacy of women entrepreneurs when negotiating for their business. The research results suggest that specific educational pedagogies, i.e., experiential activities involving simulations and modeling supports the need to develop confidence in the tasks associated with effective negotiations.

After taking the negotiation workshop, participants overall intended to be more: Persuasive, confident, likely to achieve their negotiation outcome goals, competitive and collaborative in their future negotiations. The participants expressed a likelihood to more purposely employ both integrative (collaborative) and distributive (competitive) strategies to respectively create and to claim value. Further, the results of the research corroborates previous studies showing that entrepreneurship education can have an impact on participant propensity to learn (Kirby, 2006). Negotiation self-efficacy is important to entrepreneurs and education can lead to improvements (Kuratko, 2005). As such, educators may want to consider the inclusion of Negotiation training in designing curriculum for women entrepreneurial programs.

This study can provide support for entrepreneurial educators in designing curriculum for women entrepreneurs. This skill area is very masculine-based and can be intimidating for women. Research results that assist in uncovering effective educational methods to drive task specific negotiation behaviors among women can prove valuable for struggling female entrepreneurs who lack formal business education and career experience where negotiation

experience can be most prevalent. Negotiation situations involving the garnering of resources to launch or grow a business can be very complex. To develop efficacious behaviors in these situations, women should participate in learning experiences that allow them to actively practice the tasks associated with successful outcomes. This study provides some support for the use of case study simulations as effective for women in the area of negotiation skill development.

REFERENCES

- Administration, U. D. o. C. E. a. S. (2010). *Women-Owned Businesses in the 21st Century*. Washington D.C.: US Department of Commerce.
- Bandura. (2006a). Guide for Constructing Self-Efficacy Scales *Self-Efficacy Beliefs of Adolescents* (pp. 307-337).
- Bandura. (2006b, 2006). Guide for Constructing Self-Efficacy Scales [307-337].
- Bandura, A. (1977). *Social Learning Theory*. Englewood Cliffs, New Jersey: Prentice-Hall, Inc.
- Bandura, A. (1986). The Explanatory and Predictive Scope of Self-Efficacy Theory. *Journal of Social and Clinical Psychology*, 4(3), 14.
- Bandura, A. (1999). Social Cognitive Theory: An Agentic Perspective. *Asian Journal of Social Psychology*, 2(1).
- Bandura, A. (2012). On the Functional Properties of Perceived Self-Efficacy Revisited. *Journal of Management*, 38(1), 9-44. doi: 10.1177/0149206311410606
- Barry, B., and Friedman, R. A. (1998). Bargainer characteristics in distributive and integrative negotiation. *Personality Social Psychology*, 74(2), 345-359.
- Birley, S., Moss, C., & Saunders, P. (1987). Do Women Entrepreneurs Require Different Training? *American Journal of Small Business*, 12(1), 27-35.
- Bordone, R., and Todd, G. S. (2005). Have you negotiated how you'll negotiate? *Harvard Business Publishing Newsletters*.
- Bowen, D. D., & Hisrich, R. D. (1986). The Female Entrepreneur: A Career Development Perspective. *Academy of Management Review*, 11(2), 393-407. doi: 10.5465/amr.1986.4283366
- Brady-Amoon, P., & Fuertes, J. N. (2011). Self-Efficacy, Self-Rated Abilities, Adjustment, and Academic Performance. *Journal of Counseling & Development*, 89(4), 431-438.
- Brush, C. G. (1992). Research on Women Business Owners: Past Trends, A New Perspective and Future Directions. *Entrepreneurship Theory and Practice*, 16(4), 5-5.
- Brush, C. G. (2002). The Role of Social Capital and Gender in Linking Financial Suppliers and Entrepreneurial Firms: A Framework for Future Research. *Venture Capital*, 4(4), 305-323.
- Brush, C. G., de Bruin, A., & Welter, F. (2009). A gender-aware framework for women's entrepreneurship. *International Journal of Gender and Entrepreneurship*, 1(1), 8-24.
- Brush, C. G., Wong-Mingji, D. J., & Sullivan, S. E. (1999). Women Entrepreneurs: Moving Beyond the Glass Ceiling. *Academy of Management. The Academy of Management Review*, 24(3), 585-586.
- Celuch, K., Kozlenkova, I., & Black, G. (2010). An Exploration of Self-Efficacy as a Mediator of Skill Beliefs and Student Self-Identity as a Critical Thinker. *Marketing Education Review*, 20(3), 70-80. doi: 10.2753/mer1052-8008200306
- Churchman, D. (1993). *Negotiation tactics*.
- Fairlie, R. W. (2012). *Kauffman Index of Entrepreneurial Activity 1996-2011*. Kansas City, Missouri: Kauffman Foundation.
- Gatewood, E. J., Brush, C. G., Carter, N. M., Greene, P. G., & Hart, M. M. (2009). Diana: a symbol of women entrepreneurs' hunt for knowledge, money, and the rewards of entrepreneurship. *Small Business Economics*, 32(2), 129-144.
- Gist, M. E., Stevens, C. K., & Bavetta, A. G. (1991). Effects of Self-Efficacy And Post-Training Intervention on The Acquisition And Maintenance of Complex Interpersonal Skills. *Personnel Psychology*, 44(4), 837-861.
- Hames, D. S. (2011). *Negotiation: Closing Deals, Settling Disputes, and Making Team Decisions*: Sage Publications, Inc
- Hao, Z., Seibert, S. E., & Hills, G. E. (2005). The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology*, 90(6), 1265-1272. doi: 10.1037/0021-9010.90.6.1265

- Hisrich, R. D., & Brush, C. (1984). The Woman Entrepreneur: Management Skills and Business Problems. *Journal of Small Business Management*, 22(1), 30-30.
- Hoehn-Weiss, M. N., Brush, C. G., & Baron, R. A. (2004). Putting Your Best Foot Forward? Assessments of Entrepreneurial Social Competence from Two Perspectives. *Journal of Private Equity*, 7(4), 17-26.
- Honig, B. (2004). Entrepreneurship Education: Toward a Model of Contingency-Based Business Planning. *Academy of Management Learning & Education*, 3(3), 258-273. doi: 10.5465/amle.2004.14242112
- Keller, K. (2012). *Marketing Management* (14th ed.). Boston: Prentice Hall.
- Kelley, D. J. S., Slavica, Herrington, Mike. (2011). The Global Entrepreneurship Monitor 2011 Global Report. London: Global Entrepreneurship Research Association.
- Kenworthy, A. L. (2010). Service-Learning and Negotiation. *Journal of Management Education*, 34(1), 62-87.
- Kirby, D. A. (2006). Entrepreneurship education: can business schools meet the challenge? *International Entrepreneurship Education: Issues and Newness*, 35-54.
- Kolb, D., & McGinn, K. (2009). Beyond gender and negotiation to gendered negotiations. *Negotiation and Conflict Management Research*, 2(1), 1-16. doi: 10.1111/j.1750-4716.2008.00024.x
- Kolb, D. M. (2009). Too Bad for the Women or Does It Have to Be? Gender and Negotiation Research over the Past Twenty-Five Years. *Negotiation Journal*, 25(4), 515-531. doi: 10.1111/j.1571-9979.2009.00242.x
- Kolb, D. M. (2009). Too Bad for the Women or Does It Have to Be? Gender and Negotiation Research over the Past Twenty-Five Years. *Negotiation Journal*, 25(4), 515-531. doi:10.1111/j.1571-9979.2009.00242.x
- Kuratko, D. F. (2005). The emergence of entrepreneurship education: Development, trends, and challenges. *Entrepreneurship Theory and Practice*, 29(5), 577-598.
- Lewicki, R. (1997). Teaching Negotiation and Dispute Resolution in Colleges of Business: The State of the Practice. *Negotiation Journal*, 13(3), 253-269. doi: 10.1111/j.1571-9979.1997.tb00131.x
- Lewicki, R., Barry, B., & Saunders, D. (2011). *Essentials of negotiations*: McGraw-Hill Publishing Co.,
- Lewicki, R. J., Barry, Bruce, Saunders, David M. (2010). *Negotiation* (Sixth ed.): McGraw-Hill Irwin.
- Lewicki, R. J., Saunders, D. M., & Minton, J. W. (2010). *Negotiation: Readings, exercises, and cases* (6th ed.): McGraw-Hill Publishing Co.,
- Manolova, T. S., Brush, C. G., Edelman, L. F., & Shaver, K. G. (2012). One Size Does Not Fit All: Entrepreneurial Expectancies and Growth Intentions of US Women and Men Nascent Entrepreneurs. *Entrepreneurship and Regional Development*, 24(1-2), 7-27.
- Martinez. (2008). A Global Perspective on Entrepreneurship Education and Training. *Special Report*.
- Martinez, A. C. L., Jonathan; Kelley, Donna J.; Rognvaldur, Saemundsson J.; Schott, Thomas. (2008). A Global Perspective on Entrepreneurship Education and Training *Special Report*. London: Global Entrepreneurship Research Association.
- Miles, E. W., & Clenney, E. F. (2010). Gender differences in negotiation: A status characteristics theory view. *Negotiation and Conflict Management Research*, 3(2), 130-144. doi: 10.1111/j.1750-4716.2010.00054.x
- Miles, E. W., & Maurer, T. J. (2012). Advancing validity of self-efficacy in negotiation through focusing at the domain level. *Journal of Occupational & Organizational Psychology*, 85(1), 23-41. doi: 10.1348/096317910x531744
- Neck, H. M., & Greene, P. G. (2011). Entrepreneurship Education: Known Worlds and New Frontiers. *Journal of Small Business Management*, 49(1), 55-70. doi: 10.1111/j.1540-627X.2010.00314.x
- Nelson, T., Maxfield, S., & Kolb, D. (2009). Women entrepreneurs and venture capital: managing the shadow negotiation. *International Journal of Gender and Entrepreneurship*, 1(1), 57-76.
- Olekals, M., Smith, P.L., and Walsh, T. (1996). The process of Negotiating: Strategy and Timing as Predictors of Outcomes. *Organizational Behavior Hum*, 68(1), 68-77.
- Plumly, L., Marshall, L. L., Eastman, J., Iyer, R., Stanley, K., & Boatright, J. (2008). Developing entrepreneurial competencies: A student business. *Journal of Entrepreneurship Education*, 11, 17-28.
- Pollack, B. L., & Lilly, B. (2008). Gaining Confidence And Competence Through Experiential Assignments: An Exploration of Student Self-Efficacy And Spectrum Of Inquiry. *Marketing Education Review*, 18(2), 55-66.
- Raposo, M. d. P., Arminda. (2011). Entrepreneurship education: Relationship between education and entrepreneurial activity. *International entrepreneurship and Management Journal*, 23(3), 453-457.

- Sargent, C. S., Borthick, A. F., & Lederberg, A. R. (2011). Improving Retention for Principles of Accounting Students: Ultra-Short Online Tutorials for Motivating Effort and Improving Performance. *Issues in Accounting Education*, 26(4), 657-679. doi: 10.2308/iace-50001
- Sexton, D. L., & Bowman, N. B. (1984). ENTREPRENEURSHIP EDUCATION: SUGGESTIONS FOR INCREASING EFFECTIVENESS. *Journal of Small Business Management*, 22(2), 18-25.
- Solomon, G., Fernald, L. W., & Dennis, W. (2003). Self-Identified Management Deficiencies of Entrepreneurs. *Journal of Private Equity*, 7(1), 26-35.
- Stevens, C. K., & Gist, M. E. (1997). EFFECTS OF SELF-EFFICACY AND GOAL- ORIENTATION TRAINING ON NEGOTIATION SKILL MAINTENANCE: WHAT ARE THE MECHANISMS? *Personnel Psychology*, 50(4), 955-978.
- Stuhlmacher, A. F., & Walters, A. E. (1999). Gender differences in negotiation outcome: A meta-analysis. *Personnel Psychology*, 52(3), 653-677.
- Subramanian, G. (2000). WineMaster.com. *Harvard Business School Publishing* 9-800-249.
- Sullivan, B., O'Connor, Kathleen, Burris, Ethan. (2006). Negotiator confidence: The impact of self-efficacy on tactics and outcomes. *Journal of Experimental Social Psychology*, 42(567-581).
- Tak Wing Yiu; Sai On Cheung, A. M. A. S. C. E. a. L. Y. S. (2012). Application of Bandura's Self-Efficacy Theory to Examining. *Journal of Construction Engineering and Management*, 138.
- Terjesen, S., & Elam, A. (2012). women entrepreneurship A FORCE FOR GROWTH. *International Trade Forum*(2), 16-17.
- Thompson, L., & Leonardelli, G. J. (2004). Why negotiation is the most popular business school course. *Ivey Business Journal Online*, 1-1.
- Wilson, F., Kickul, J., & Marlino, D. (2007). Gender, Entrepreneurial Self-Efficacy, and Entrepreneurial Career Intentions: Implications for Entrepreneurship Education. *Entrepreneurship: Theory & Practice*, 31(3), 387-406. doi: 10.1111/j.1540-6520.2007.00179.x,
- Wilson, F., Kickul, J., Marlino, D., Barbosa, S. D., & Griffiths, M. D. (2009). AN ANALYSIS OF THE ROLE OF GENDER AND SELF-EFFICACY IN DEVELOPING FEMALE ENTREPRENEURIAL INTEREST AND BEHAVIOR. *Journal of Developmental Entrepreneurship*, 14(2), 105-119.

ENTREPRENEURSHIP EDUCATION AND THE ROLE OF THE REGIONAL UNIVERSITY

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ABSTRACT

Regional colleges and universities are integral to providing economic and workforce development resources that support local and regional economies. Similarly, nascent entrepreneurs create economic opportunities and build enterprises through deliberate planning and risk taking. By developing and supporting entrepreneurs, colleges and universities provide an important catalyst for new businesses and a flexible, creative, and well-educated workforce. Small businesses create nearly three fourths of the net new jobs added to the economy every year. Areas in the United States with the highest entrepreneurial activity in the last decade also had high employment growth, high wage growth, and high productivity. Entrepreneurs that remain within their local community and are supported by universities represent significant leverage in potential economic revitalization, particularly in rural communities that suffers high poverty and unemployment. This paper contributes to a growing body of academic literature on the role that universities play in the development of the economy. However, it adds a new dimension by articulating the role that entrepreneurially engaged regional universities may have in regards to improving their regional communities.

ENTREPRENUERIAL ACTIVITY AND REGIONALISM

Colleges and universities have long been important components to regional economic and workforce growth and development. Academic program offerings, faculty engagement and consultation, and professional development and support for small business have characterized much of this support. Lately, there has been a growing body of academic research on the role of universities in regional development. Much of which has been primarily concerned with two issues: economic analyses of the direct employment effects associated with staff and student spending in the local economy and technology transfer, particularly through the creation of spin off companies and the establishment of “industrial” and “science parks” (Goddard, J.B., Charles, D.R., Pike, A., Potts, G. and Bradley, D. 1994). However, recent research has shown that universities have not as been successful in creating sustainable environments that enhance technology transfer and the commercialization of intellectual property from the university (Bok, 2003; Slaughter and Leslie, 2001; Wright, M., Birley, S., and Mosey, S., 2004). In contrast, research universities have been able to capitalize on generating revenue from their research projects resulting in patents and other methods of technology transfer (Slaughter and Leslie, 2001). Furthermore, as a result of bias that exists in academia, regional universities may be viewed as institutions that repress the growth of human and social capital and they have not been able to capitalize on the large funding models (Wright, 2004).

More recently, the role of universities in regional development has been seen as transcending this narrow technical and economic approach to embrace the role of universities in enhancing human capital within a region. Examples include certificate and degree programs in entrepreneurship, workshops and seminars, technical and administrative assistance, and resource referral, but also including recruiting students from outside the region and placing them with local companies through internships, co-ops, and part-time employment; programs of continuing and professional development to enhance the skills and knowledge base of local managers; embedding international businesses by targeted training programs and research links; providing a gateway to the broader and international knowledge base for small and medium enterprises (SMEs); and providing strategic analysis and leadership within local civic society. The fact that expectations of and opportunities for colleges and universities is rising can be traced to fundamental shifts in the organization of production and the related regulation of the economy reflected in the processes of globalization and localization (Clinton, 2014). Effective engagement in regional economic and workforce development processes requires that institutions of higher education have an understanding of these dynamics.

ALLIANCES, ALLEGIANCES, AND REGIONAL DEVELOPMENT

Profound transformation of regional U.S. economies since the mid-1970s, have had major implications for economic and workforce development strategies. The stability of production systems, product markets and national corporate relations have been undermined by the rate of technological change, most notably through the widespread effects of generic or carrier technologies such as ICTs (information and communication technologies). Technological innovation and access to resources for innovation (skills, knowledge, and information) have become necessary and central to the competitive strategy of business and industry (Kanter, R.M., 1995). Many states have recognized the need to embrace, support, and sustain technology if they are to maintain employment and growth. As a result, there is a corresponding need to develop and implement policies and practices in the support and promote R&D, innovation and technology transfer. Notwithstanding this orientation, the diversification and internationalization of finance and of the organization of production allied to innovations in ICTs that permit the flexible reshaping and reconfiguring of investment and resources, has weakened the bargaining power of smaller, rural, businesses. Global bodies have encouraged greater freedom in the flow of goods and information such that now it is the nature of the production locality as much as national market characteristics that determines investment decisions.

Not only has regional and local intervention and support from universities become more important to economic and workforce success, there has also been a qualitative shift in the form of local policy towards nascent entrepreneurship and innovation, and to providing a more sophisticated environment for mobile capital so as to maximize local value added (R&D and other high status jobs) (Kuratko, 2005). The importance of this perspective for managing firms and localities has been promoted by Kanter in her recent book World Class: Thriving locally in the global economy. According to Kanter (1995), future success will come to those companies, large and small, that can meet global standards and tap into global networks. And it will come to those cities and regions that do the best job of linking the businesses that operate within them to the global economy. Kanter (1995) argues that forces

of globalization are so powerful that communities must connect the global and the local and create a culture conducive to attracting and retaining investment. The challenge is to find ways in which the global economy can work locally by unlocking those resources which distinguish one place from another. The basic argument presented here is that colleges and universities are uniquely positioned to provide technical, skills, and knowledge capital assets within the global economy – elements central to the success of regional entrepreneurial endeavors. Kanter (1995) posits that higher education faculty provide human capital elements that she has titled the “3 Cs” - Concepts, Competence and Connections. Kanter suggests that university faculty "can help grow these assets by offering innovative capabilities, production capabilities, quality skill, learning, networking and collaboration." (Kanter, R.M., 1995). The location of universities in regions is a powerful facilitator of these processes - concepts links to research; competence links to teaching and connections links to the transfer to and from a region of people and networks grown out of universities. In order to realize such policy shifts, local policy has needed to be innovative and entrepreneurial itself, drawing on a wider network of resources, negotiating and building alliances between local and state government, universities, private sector interests and non-profit organizations.

Regional economic and workforce success has been characterized by a variety of explanatory models, but with a common agreement as to the factors underpinning success: agglomeration economies, economies of scale and network effects, economies of scope, trust, networks of small firms and supportive institutions. Central to successful innovation are the structures and modes of interaction between knowledge producers, disseminators and users. Since technologies embody both people and ideas as well as tangible products, transactions involving extensive interaction and iterative communication are widely believed to be necessary as a means of facilitating exploitation. This 'organized' method of exchange can encompass both physical technology and/or employees - including producers, disseminators and users - moving between institutions while maintaining close linkages for instance, between universities and linked 'spin-off' companies.

COLLABORATION IN REGIONAL DEVELOPMENT AND PROGRESS

In the context of the role of universities in economic development, the most helpful approach to operationalize these ideas can be found in the concept of the learning economy which emerges from studies of innovation (Lundvall, B-Å., Johnson, B., 1994). Lundvall stresses the importance of interactive learning as a basis for innovation and change in local and regional developed economies. The learning economy is defined as an economy where the success of individuals, firms and regions, reflects the capability to learn; where change and transformation is rapid and old skills quickly become antiquated and new skills are in demand; where learning includes skills and the building of competencies, not just increased access to information; where identifiable and measurable learning is occurring in all aspects of the economy, not just high-tech sectors; and where net job creation is in knowledge intensive sectors (high R & D, high proportion with a university degree, and job situation worsens for the unskilled) (Venkataraman, 2003).

Within the learning economy different modes of knowledge can be identified. First, know what, that is facts and information. Second, know why, - principles and laws necessary to reduce trial and error; third, know how - the skills and capability to do something, skills that are traditionally acquired within the workplace; and finally know who - information

about who knows how to do what and the social capability to establish relationships to special groups in order to draw on their expertise. Each of these different forms of learning employs different channels for information exchange. In the case of know what and why, formal learning in school and universities is the normal channel. Know how depends on practical experience through tacit learning (for example, through apprenticeships) but also increasingly through network relationships with industrial and commercial partners. Finally, know who is learned from social interaction via professional associations, day to day dealings with customers, sub-contractors and a wide range of other actors and agencies.

Focusing on network knowledge, this is a hybrid form of knowledge that is neither completely public nor completely private. It depends on trust and is characterized by reliability, honesty, and co-operation. Network knowledge refers not only to the skills of individuals but the transfer of knowledge from one group to another to form learning systems - the institutional infrastructure of public and private partnerships. Because network knowledge is highly dependent on interpersonal relations, it can most readily be developed within a particular region. Florida (1995) argues, 'To be effective in this increasingly borderless global economy, regions must be defined by the same criteria and elements which comprise a knowledge-intensive firm: continuous improvement, new ideas, knowledge creation and organizational learning.

Regions must adopt the principles of knowledge creation and continuous learning; they must in effect become "knowledge-creating or learning regions." Key to such a learning region is the human infrastructure and the institutional mechanisms that foster interactive learning, and a central part of this infrastructure, in terms of the reproduction and adaptation of human resources, are universities. In the case of human capital, universities have traditionally produced new graduates for a labor market dominated by large employers, with little concern for SMEs or graduate retention in local labor markets. This traditional model often fails to respond to changing patterns of employer demands such as the decentralization of large corporations into clusters of smaller business units and the greater role of smaller businesses as sub-contractors, suppliers, franchisees etc. with subsequent implications for the skills required of graduates and the location of the recruitment decision. At the same time regional agencies are promoting graduate retention initiatives as a way of upgrading higher level local skills. This demand side changes the expansion of service provided by higher education with rising numbers experiencing the need to change career later on in life is leading to a growing supply of local students for undergraduate and graduate programs.

Notwithstanding these developments, little is known about the flow of students through higher education into local labor markets and how this relates to the overall economic performance of regions. Yet a key characteristic of the learning region is the way in which knowledge is transferred from one group to another to create learning systems. In terms universities this includes knowledge of the appropriate skills and competencies required of the workforce. What constitutes "appropriate skills" will depend on the overall regional development strategy, be it indigenous development based on local enterprise, exogenous development based on attracting inward investment, or a combination of the two, for example by upgrading local suppliers to support and "embed" inward investment. In this context, the analogy between regions and organizations is one where the shift from personnel management based around handling individual employment contracts and personal development shifts to human resource management which harnesses people development to the strategic objective of the organization.

The key question here becomes: "Does the region include human resource development as part of its overall strategy?" The question raises specific challenges concerning the type of training programs, the qualification of institutions best placed to provide the program, and where within the region should this provision occur. An obvious requirement of a regional human resource strategy is information about future labor market needs. Given the long time lag between the identification of needs and the development of the necessary skills, one of the fundamental requirements of a learning region is the sharing of intelligence between higher education and training and human capital development programs and employers. Because of the inherent difficulties of forecasting future demands, the inevitable priority will be to ensure that education and training systems produce people with the flexibility to respond to stronger changing circumstances alongside specific skills and competencies required by particular industries and/or occupations.

Although research has focused on the direct contribution of universities to the economic success of the regions in which they are located, a further question concerns the indirect contribution of universities to the social and cultural basis of effective democratic governance and, ultimately, economic success. For example, Putnam (1993) has shown the strong relationship between a civic culture and institutions (understood as "norms of reciprocity and networks of civic engagement") and wider socio-economic performance. Regions are rich in such networks 'encourage social trust and co-operation because they reduce incentives to defect, reduce uncertainty, and provide models for future co-operation'. In so far as universities are by tradition classically "civic" institutions, they can play a key role in the development of the cultural and political determinants of socio-economic success. A key challenge is to enhance the role which universities, including their faculty and students, play in the development of such networks of civic and entrepreneurial engagement, and in the wider political and cultural leadership of their regions.

THE ROLE AND SCOPE OF COLLEGE AND UNIVERSITY ENGAGEMENT

The implications of many of the processes outlined here have yet to be successfully resolved by universities. Kanter (2001) refers to four aspects of globalization - simultaneity, multiple choice, pluralism and resource mobility. Simultaneity refers to the fact that we can no longer rely on spatial and temporal lags associated with the diffusion of new education products and services - universities can no longer hide behind the barriers of time and space. Multiple choice or by pass refers to the way in which local or regional monopolies are broken down, such that universities can no longer rely on local monopoly in education as new providers using distance learning techniques enter their realm. Pluralism is the process by which old centers of power are continually challenged such that many universities can no longer guarantee their dominant position as students and firms exert consumer choice (Shane, 2004). Finally, mobility, particularly of the elite or so called "cosmopolitans", are shifting their place of residence and business more frequently, and this applies no less in academia than in the private sector. In the face of these threats, universities have no option but to attempt to tie down the global within the local; in so doing they will find willing partners in the public and corporate sector where similar pressures are being exerted. Universities must reconsider their administrative structures and management processes and practices in the light of this challenge.

The scale of the challenge should not be underestimated. Developing and evolving the curriculum to rapidly changing needs of employers and labor markets provides a good example. In terms of Lundvall's description of the learning economy, universities have been good at the know what and know why aspects of education, and are improving on the know how aspects through integration of the tacit learning acquired via work placements into teaching programs, the know who dimension is altogether more problematic. Progress on this front implies a deep relationship between research and teaching based on the sharing of the network knowledge of the research endeavor with students at all levels. Additionally, there is a need for a paradigm shift in the academy that will allow for human and social capital to be cultivated within the walls of the academy and encourage economic development within the region (Binks M., Starkey, K., and Mahon, C. L., 2006).

Further research has shown that by modifying their curriculum to meet the needs of the labor market, universities are able to cultivate human and social capital with greater skill-sets and they create value-added networks for current students and alumni as well as faculty members (Sager B., Fernandez, M. G., and Thursby, M., 2006; Westhead P. and Matlay, H., 2006; and Mosey S., Lockett, A., and Westhead, P., 2006). Universities should move away from their traditional approach and utilize a more constructivist approach which would build their core curriculum around entrepreneurship education (Binks, M., Starkey, K. and Mahon, C. L., 2006). Graduates of an entrepreneurship based education would have the relevant skill sets (human and social capital) that would allow them to support and leverage economic development in their local communities and build a sustainable competitive advantage for their region. Schumpeter offered the insight that economic development is a result of entrepreneurship (Schumpeter, J. A., 1934); hence, in order to promote economic development universities must provide a service to their region by promoting and sustaining entrepreneurial education.

When considering their relationship with industry in a regional context universities should consider themselves as being located at the head of a supply chain, devoted to the creation, provision, and application of knowledge. The distribution channels for this knowledge are through students (projects and placements), graduates and post-graduates, as well as through published and contract research and consultancy that leads to new and improved technologies and management processes. But unlike a business enterprise situated in a similar supply chain position, universities devote relatively little resources to marketing their products in the form of graduates or to responding to signals about what the market wants. They simply have a sales department, in the form of the career placement offices, which have limited ability or mechanisms to match output (quality, quantity or specification) to customer needs.

The market place is, of course, extremely complex because it is composed of the totality of organizations that currently, or might in the future, employ graduates. At one end of the spectrum are tightly regulated vocational markets like medicine, architecture, law and engineering. (Arguably universities have been overly responsive to this segment of the market to the extent of having been 'captured' by some professional bodies). At the other end of the spectrum are the largely unarticulated demands of SMEs. If universities are to play a more active role in economic development, it is vital that they understand the market segment and inform their teaching activities by its needs. This means not simply responding to currently expressed wants but actively researching the dynamics underlying changing employer needs and treating students as clients and employers as the end customer.

In some countries the fact that this approach is far from universal can be partly attributed to the student funding regime which currently rewards "production" but not "sale". In consequence the marketing function is often poorly developed. If universities were in part rewarded for the delivery of graduates into employment, including local employment, they would clearly have an incentive to put more effort into marketing and economic development. But becoming a market led organization requires a major change in university culture. It implies a strong sense of institutional purpose whereas universities remain dominated by academics whose principle professional loyalty is to their national or international invisible college rather than their parent institution. The new production of knowledge involving partnerships with the users and beneficiaries of research also transcends institutional boundaries and is difficult to integrate with formal institutional planning and resource allocations. New patterns of strategic alliances between academic groups based on complimentary competencies may occur but not between institutions within a region. In short, improved integration of universities with regional development will not be readily achieved by top down planning mechanisms at either the institutional or regional level but by ensuring the various stakeholders in the regional development process - education and training providers, employers and employers organizations, trade unions, economic development, labor market agencies and individual learners - have an understanding of each others role and the factors encouraging or inhibiting greater regional engagement. For example understanding that universities and labor market agencies work in the context of national higher education policy and labor market training targets, employers of global competitive pressures to downsize, outsource etc. and students of personal financial constraints on investment in learning.

While local and state governments may seek to increase the engagement of universities with economic development, the means of achieving this goal is far from clear, particularly in the context of the value universities attach to individual autonomy. Such autonomy is associated with a diversity of institutions, often on a regional as well as a national scale that has evolved historically. For those universities with a strong research base, regional issues may be of minor concern. Such institutions see themselves as serving the region by attracting students from outside with those who remain adding to the local stock of human capital. They also contribute to attracting inward investment and possibly embedding that investment through training and research links. Such institutions thus contribute to exogenous regional development. Nevertheless, even within research based universities, certain departments, degree programs and research activities have strong regional linkages.

Alongside such institutions in most regions are those where serving the local and regional communities remains a central component of their mission. Regional universities also have national and international links that can provide gateways for local firms and students to the wider world. Finally, between these extremes there may be universities which are trying to develop their research base in selected fields and in the process devoting considerable resources to "going global". Determining which particular mix of institutions and more importantly mix of teaching and research programs would best underpin the economic development of a region is a key challenge. With the right form of incentives in terms of university assessment procedures and leadership development programs, it might be possible to ensure that the appropriate signals reach and are embedded into the programs of individual universities.

With regards to assessment, in addition to the inclusion of regional criteria into national teaching and research assessment exercises, a strong case can be made for establishing a regional assessment process undertaken by universities themselves. Such assessments could be done with the aid of consultants with expertise in economic development and higher education management. These assessments would cover institutional organization, teaching, research and other services actually or potentially relevant to regional needs. The outcome of the assessment could be linked to a development fund for pump priming initiatives and which aims to enhance the university's contribution to economic development. Institutions would be free to participate in such a scheme and/or confine it to those parts of their activity that they deem to be regionally relevant. Alongside such assessments it would be necessary to have a program of human resource development targeting those individuals inside and outside of universities that have boundary spanning functions relevant to joint working on economic development. One of the key factors of success in regional partnerships merely act as gatekeepers between different organizations/networks. A small number of staff in universities, labor market and economic development agencies and dynamic businesses hold positions in which extra-organizational networking is a central feature of their job.

Those people who hold such position will do so by virtue of their personal and professional competency; they nevertheless require developmental support for their own professional improvement, and moral support from individuals and groups around them. For the most part the necessary skills and attributes are intuitive and learned through practice; however the growing need for such people suggests that some more fundamental training and support is required. Relevant skills include: networking; facilitation; working with alternative cultures; setting up projects; planning and contract management; raising financial support; personal organization; supervision and personal support techniques; insight into organizational policies and dynamics. The establishment of such a development program for individuals engaged in the university/regional interface would be a further small positive step towards its improved management. Furthermore this interface would allow for an "entrepreneurial development system" to be created that would be regional in scope and systematic in approach (Lyons, T.S., 2003). As a result economic development in the regions would be enhanced due to these sustainable partnerships. Similar strictures apply to other stakeholders concerned to raise regional competitiveness.

CONCLUSION

Technological innovation and access to resources for innovation (skills, knowledge, and information) have become vitally necessary and central to the competitive strategy of business and industry. Not only has regional and local intervention and support become more important to economic and workforce success, there has also been a qualitative shift in the form of local policy towards nascent entrepreneurship and innovation, and to providing a more sophisticated environment for mobile capital so as to maximize local value added (R&D and other high status jobs, successful and therefore growing firms).

The location of universities in regions is a powerful facilitator of these processes - concepts links to research; competence links to teaching and connections links to the transfer to and from a region of people and networks grown out of universities. As a result, the academy will need to undergo an elemental paradigm shift that will allow for human and

social capital to be cultivated within the walls of the academy and encourage economic development within the region (Binks, M., Starkey, K. and Mahon, C. L., 2006).

The distribution channels for this knowledge are through students (projects and placements), graduates and post-graduates, as well as through published and contract research and consultancy that leads to new and improved technologies and management processes. Regional universities should take the lead in creating economic development in their regions by supplying the knowledge chain that will produce the human capital and by increasing the quality of life which will provide the social capital.

By fostering entrepreneurship, regional universities provide the catalyst for new businesses and a flexible, creative, motivated, and well-educated workforce that will enhance the economic development of the regions they serve. In essence, the expectations of and opportunities for colleges and universities is rising and can be traced to fundamental shifts in the organization of production and the related regulation of the economy reflected in the processes of globalization and localization. The 'ivory tower' of traditional academe has to continue to move forward and embrace the concept of leading their regions to become more entrepreneurial and competitive in this global economy.

REFERENCES

- Amin, A. and Thrift, N. (eds.) (1994). *Globalization, Institutions and Regional Development in Europe*. Oxford University Press, Oxford.
- Bok, D. (2003). *Universities in the marketplace: The commercialization of higher education*. Princeton, NJ: Princeton University Press.
- Binks, M., Starkey, K. and Mahon, C. L. (2006). Entrepreneurship education and the business school. *Technology Analysis & Strategic Management*, 18(1), 1-18.
- Clinton, A. (2014). *The Role of Higher Education in Innovation and Entrepreneurship*. Nova Science Publishers.
- Florida, R. (1995). Toward the learning region. *Futures*, 27(5), 527-536.
- Goddard, J.B., Charles, D.R., Pike, A., Potts, G. and Bradley, D. (1994). *Universities and Communities*. Committee of Vice Chancellors and Principals, London.
- Kanter, R.M. (1995). *World Class: Thriving Locally in the Global Economy*. Simon and Schuster, New York.
- Kuratko, D. (2005). The Emergence of Entrepreneurship Education: Development, Trends, and Challenges. *Entrepreneurship Theory and Practice*, Vol. 29 (5), 557-598.
- Lundvall, B-Å. (ed.) (1992). *National Systems of Innovation. Towards a theory of innovation and interactive learning*. Pinter, London.
- Lundvall, B-Å., Johnson, B. (1994). The learning economy. *Journal of Industry Studies*, 2, 23-42.
- Lundvall, B-Å. (1988). Innovation as an interactive process: from user-producer interaction to the national systems of innovation, in G. Dosi et al, *Technical Change and Economic Theory*. Frances Pinter, London.
- Lyons, T.S. (2003). Policies for creating an entrepreneurial region. *Main Streets of Tomorrow: Growing and Financing Rural Entrepreneurs*, a conference sponsored by the Center for the Study of Rural America, Federal Reserve Bank of Kansas City, 97-106.
- Mosey, S., Lockett, A., and Westhead, P. (2006). Creating network bridges for university technology transfer: The medici fellowship programme. *Technology Analysis & Strategic Management*, 18(1), 71-91.
- Putnam, R.D. with Leonardi, R. and Nanetti, R.Y. (1993). *Making Democracy Work: Civic Traditions in Modern Italy*. Princeton University Press, Princeton, NJ.
- Sager, B., Fernandez, M. G., and Thursby, M.(2006). Implications of a multi-disciplinary educational and research environment: Perspectives of future business, law, science, and engineering professionals in the technological innovation: generating economic results program. *Technology Analysis & Strategic Management*, 18(1), 57-69.

- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Harvard Business School Press, Cambridge, MA.
- Shane, A. (2004). *Academic Entrepreneurship: University Spinoffs and Wealth Creation*. Edward Elgar Publishing, Ltd., Cheltenham.
- Slaughter, S. and Leslie, L.L. (2001). Expanding and Elaborating the Concept of Academic Capitalism. *Organization* 8(2): 154-161.
- van der Meer, E. (1996). *Knowledge on the Move: The University as a Local Source of Expertise*. University of Amsterdam.
- Venkataraman, S. (2003). Regional Transformation through technological entrepreneurship. *Journal of Business Venturing*, Vol 19, (1), 153-167.
- Westhead, P. and Matlay, H. (2006). Skills associated with employment positions in SMEs and favourable attitudes toward self-employment: longitudinal evidence from students who participated in the Shell Technology Enterprise Programme. *Technology Analysis & Strategic Management*, 18(1), 93-124.
- Wright, M., Birley, S., and Mosey, S. (2004). Entrepreneurship and university technology. *Journal of Technology Transfer*, 29, 235-246.

THE DRIVERS OF ENTREPRENEURIAL INTENTIONS - AN EMPIRICAL STUDY AMONG INFORMATION SYSTEMS AND COMPUTER SCIENCE STUDENTS

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ABSTRACT

The increase in entrepreneurial activity around the globe has been accompanied by a growth in the number of articles on entrepreneurship education. However, to date there has been little research on entrepreneurship education in the field of information technology in general and on software entrepreneurship education in particular. To address this research gap, we conducted an empirical study based on an extended model of the Theory of Planned Behavior among Information Systems and Computer Science students. We found that Attitude, i.e. whether a person evaluates founding a software company favorably or unfavorably, is the main driver of Information Systems students. In contrast, having a Business Idea is the most influential factor for Computer Science students. A more detailed analysis identified the perception of entrepreneurship as an opportunity for self-fulfillment and a high monetary reward, along with not associating entrepreneurship with a high risk of failure, to have the strongest impact on Information Systems students' Attitude. Based on our findings, we derive recommendations for a more data-driven curriculum design and discuss the implications for developing more entrepreneurially oriented courses tailored to both groups of students.

INTRODUCTION

There has recently been an enormous increase in information technology (IT) and high-tech entrepreneurship. This growth in entrepreneurial activity has even been likened to the “Cambrian explosion” 540 million years ago, where life on earth started to flourish and became much more varied (The Economist, 2014). This expansion of entrepreneurship has not remained limited to Silicon Valley, a region which is often depicted as the archetype of an entrepreneurial region and has given birth to many successful web-based companies. Rather, cities all over the world, such as London in England, Tel Aviv in Israel, or Bangalore in India now compete for establishing themselves as entrepreneurial hubs (The Economist, 2014; USA Today, 2014).

This upswing in entrepreneurial activity has been accompanied by a considerable increase in the number of articles published on entrepreneurship education in the last decade (Kozlinska, 2011). Entrepreneurship education has been defined as “the process of providing

individuals with the ability to recognize commercial opportunities and the insight, self-esteem, knowledge and skills to act on them” (Jones & English, 2004, p. 416). Although IT has played a major role in more recent entrepreneurial activity (Foster & Lin, 2003) and entrepreneurship has been increasingly taught to non-business students (Connors & Ruth, 2012), there is surprisingly little research on entrepreneurship education tailored to IT students. However, given the development that we have outlined above, IT students are likely to represent a population of students where entrepreneurship education is likely to meet fertile ground.

Existing research in the IT context mostly focuses on the need for more practice-oriented, also termed “hands-on”, courses when teaching entrepreneurship (Abrahams & Singh, 2010; Foster & Lin, 2003; Kor & Abrahams, 2007; Kuckertz, 2013; Schilling & Klamka, 2010). This development resonates with the shift from passive and formal modes of transferring knowledge to an approach more focused on “learning by doing” (Kozlinska, 2011) and “experiential learning” (Welsh and Tullar, 2014). An important aspect that could guide the design of such entrepreneurship courses for IT students has received no explicit attention. It has been acknowledged that differences in prior knowledge can impact the learning of entrepreneurial content (Foster & Lin, 2003). Besides, recent research has called for a more detailed analysis on how to maximize the effectiveness of designing curricula for non-business majors (Connors & Ruth, 2012). However, there is a lack of research on how different entrepreneurial intentions are formed in two highly relevant groups regarding their intention to establish a company in the IT industry: more business-oriented Information Systems (IS) students and more technically oriented Computer Science (CS) students. Owing to their different educational backgrounds, these two groups of students might be driven by different factors to engage in entrepreneurial activities.

Furthermore, “[i]n the rapidly changing field of Information Systems, educational programs must be continually reevaluated and revised” (Noll & Wilkins, 2002, p.143). However, research that follows this recommendation (Bell, Mills & Fadel, 2013; Carlsson, Hedman & Steen, 2010; Crowley, 2003; Topi et al., 2010) neither addresses entrepreneurial aspects nor differentiates between IS and CS students. Our empirical study focuses on this research gap and thereby hopefully contributes to a data-driven curriculum design in entrepreneurial IT education.

Our study focuses on students’ intention to start a new business in the software industry. This focus is especially relevant as potential entrepreneurs in the software industry face low barriers to entry (Giarratana, 2004). Improvements in software entrepreneurship curricula might therefore be able to foster entrepreneurial activity more easily than in other fields.

The remainder of this study is structured as follows. First, we present the theoretical background and related work identifying the research gap that our study strives to close. We then provide details on the Theory of Planned Behavior (TPB), from which we derive our hypotheses and formulate our exploratory research question. After explaining the scale development and the item refinement process, we present the results of the comparison between the groups of CS and IS students. We conclude with a summary of the results and by pointing out the study’s potential limitations and avenues for further research.

BACKGROUND

Definitions

Given the abundance of different fields of entrepreneurship research, it is difficult to derive an all-embracing definition of the term “entrepreneurship”. We follow the widely cited definition of entrepreneurship as “the identification, evaluation, and exploitation of opportunities” (Shane, 2012, p. 12). In our study, the focus is on creating a new enterprise in the software industry as a specific institutional arrangement of entrepreneurship, as opposed to other possible arrangements such as in-firm entrepreneurship (Shane, 2012).

This study’s focus lies on “opportunity entrepreneurship”. Stephan (2008) suggests that individuals engage in entrepreneurial activity to take advantage of an opportunity and achieve their personal goals. Our understanding of an entrepreneur is therefore based on a behaviorally oriented definition, which states that “entrepreneurship is concerned with the discovery and exploitation of profitable opportunities” (Stephan, 2008, p. 10).

We draw on Jones and English’s (2004, p. 416) definition of entrepreneurship education. They define entrepreneurship education as “the process of providing individuals with the ability to recognise commercial opportunities and the insight, self-esteem, knowledge and skills to act on them. It includes instruction in opportunity recognition, commercialising a concept, marshalling resources in the face of risk, and initiating a business venture”. This definition is also in line with our study’s focus, as it relates entrepreneurship education to the specific purpose of creating a company. By concentrating on university-educated IT students as potential entrepreneurs, we limit our study to a subset of individuals who might aspire to become entrepreneurs in the software industry. However, this emphasis allows us to analyze this group in more detail and derive important implications for future entrepreneurship education programs.

Related Work and Research Gap

In entrepreneurship research, two influential streams can be distinguished: person-centric and intention-based models. In the first stream, research’s main interest lies in the entrepreneur as a person and his/her motivation to create a company. The trait approach, which focuses on an entrepreneur’s character traits, has dominated this perspective (Wanberg & Banas, 2000). Nevertheless, no character traits that lead to the foundation of a business have been clearly identified, and behavioral scientists could not determine definitive correlations between personality traits and specific entrepreneurial behavior (Wanberg & Banas, 2000). Consequently, the trait approach has been frequently criticized.

The second stream, intention-based models, has evolved as the most frequently used type of models explaining entrepreneurial behavior. In these models, intention mediates the influence of specific factors on actual behavior. Ajzen’s (1991) TPB and Shapero’s model of the entrepreneurial event (Shapero, 1982) are two important instances of these intention-based models.

Krueger et al. (2000) state that entrepreneurship is a way of thinking, emphasizing opportunities over threats, which clearly indicates an intentional process. Further, they underline

that in the psychological literature, intentions have proven to be the best predictor of planned behavior. Ajzen (1991) argues that intentions depend on perceptions of personal attractiveness, social norms, and feasibility. Shapero (1982), on the other hand, shows that entrepreneurial intentions depend on the perceptions of personal desirability, feasibility, and propensity to act. Over time, especially Ajzen's TPB has become widely accepted in entrepreneurship research (Engle et al., 2010; Shook & Bratianu, 2010; Kautonen, van Gelderen & Tornikoski, 2013).

However, the TPB has not been applied to study IT students' intention to become entrepreneurs in general, nor the difference between CS and IS students in particular. Our study therefore sets out to close this research gap.

RESEARCH MODEL AND HYPOTHESES

Intentions toward a behavior are the best predictor of a particular behavior, even more effective than attitudes, beliefs, personality, or demographics (Krueger et al., 2000). In addition, MacMillan and Katz (1992) emphasize that understanding intentions is particularly valuable where the phenomenon is rare, obscure, or involves unpredictable time lags. Clearly, this seems to be the case for entrepreneurial activity. Ajzen (1991) states that intentions predict behavior and serve as a conduit to better understand the act itself. Thus, intention is an important predictor concerning new venture creation. TPB is widely accepted in entrepreneurship research as a way to understand the intention to found a company (Stephan, 2008).

The TPB postulates three conceptually independent determinants of intention: Subjective Norm, Attitude, and Perceived Behavioral Control. The first predictor, Subjective Norm, relates to whether those in an individual's social environment deem the respective behavior desirable. The second predictor, Attitude, relates to whether a person evaluates the behavior under consideration favorably or unfavorably. The third antecedent of Intention is the degree of Perceived Behavioral Control, which refers to the perceived ease or difficulty of conducting behavior, and is assumed to reflect past experience, as well as the anticipated impediments and obstacles. TPB predicts that the more favorable the Attitude, the stronger the Subjective Norm, and the greater the Perceived Behavioral Control, the higher an individual's intention to conduct the behavior under consideration (Ajzen, 1991).

Based on TPB's general propositions, we derive the following hypotheses:

- H₁ Subjective Norm has a positive impact on students' Intention to start a new business in the software industry.*
- H₂ Attitude has a positive impact on students' Intention to start a new business in the software industry.*
- H₃ Perceived Behavioral Control has a positive impact on students' Intention to start a new business in the software industry.*

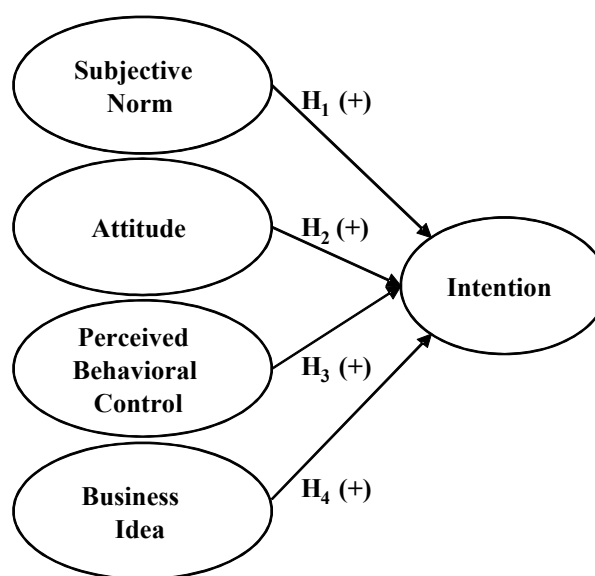
In addition to the three predictors that we derived from the TPB, we propose that an additional factor has a positive impact on students' Intention. Shane and Venkataraman (2000) emphasize the role of the "entrepreneurial opportunity", which itself is an objective phenomenon, and which is often discovered by actively searching for it (Boyles, 2012).

However, not everybody is aware of this opportunity. Business ideas, on the other hand, are “plans created and enacted in response to the entrepreneurs’ beliefs about opportunities” (Shane, 2012, p. 15). These “decisions about how to recombine resources are subjective and creative” (Shane 2012, p. 16) and can be considered a means to exploit an entrepreneurial opportunity. Based on these considerations, one can assume that students who are able to develop a specific business idea based on an entrepreneurial opportunity are more likely to start a company than their peers who lack a specific business idea. We therefore propose:

H₄ Having a Business Idea has a positive impact on students’ Intention to start a new business in the software industry.

Figure 1 summarizes the four hypotheses in a path diagram based on the TPB’s base model extended by the construct Business Idea.

Figure 1. Research Model



From an exploratory perspective, we set out to compare the importance of the four factors (i.e. the respective path coefficients) for the groups of CS and IS students. Identifying inter-group differences could subsequently guide decisions to develop more effective entrepreneurship curricula based on the most influential factors. We therefore formulate the exploratory research question:

Do CS and IS students differ regarding the relative impact that the four factors – Subjective Norm, Attitude, Perceived Behavioral Control, and Business Idea – have on their Intention to start a new business?

SCALE DEVELOPMENT AND ITEM REFINEMENT

Conceptualization and Development of the Indicators

The constructs in the TPB are usually measured reflectively and have been used in previous research. We could therefore adapt items that had already been developed and validated before (cf. Venkatesh et al., 2003). We also measured the constructs Subjective Norm, Attitude and Perceived Behavioral Control formatively. This approach helps us to draw a general conclusion (MacCallum & Brown, 1993) regarding whether students believe that their social environment approves of their decision to start a new company (Subjective Norm), whether these students view entrepreneurship positively (Attitude), whether they believe that they are capable of starting a new company (Perceived Behavioral Control), and the specific influences from which these beliefs stem.

In order to generate formative indicators, we first analyzed studies which had already developed a measurement instrument based on the Theory of Planned Behavior. The formative items from these studies were collected and, if necessary, complemented with information from qualitative interviews with several founders of software companies. Based on these steps, the formative indicators were chosen to measure Subjective Norm, Attitude, and Perceived Behavioral Control.

In contrast, the construct “Business” Idea had not yet been operationalized and validated. As we could not revert to an already verified construct in the literature, we created seven reflective items and tested their unidimensionality and reliability in a pre-test (see the following paragraph). Sample items are “I have discovered a market niche in the software industry” or “I have an idea for a software product or a software service”.

Refinement of the Indicators

A pre-test (N=21) was undertaken in December 2011 to test the developed questionnaire in preparation for the main survey and to ensure that all items are understood by survey participants as intended. The pre-test generated positive feedback concerning the questionnaire’s length and comprehensibility. Based on the pilot study, we slightly revised the survey (e.g. changing the Likert scale from seven to five points and reducing the constructs’ number of reflective items to three items per construct), but maintained the basic structure of the survey. We found that multicollinearity was not an issue regarding the formative indicators, as the variance inflation factors were smaller than 10 and the condition indices smaller than 30 (Diamantopoulos & Winklhofer, 2001). Additionally, principal component analysis showed that all seven reflective items of the Business Idea load on a single factor.

SURVEY RESULTS

In this section, we first describe the survey setting. We thereafter provide the results of the descriptive analysis, the analysis of the measurement and path model, and the group comparison of CS and IS students. To account for measurement errors, we employ structural equation modeling instead of multiple linear regression for the data analysis (Chin, 1998). Since

our study focuses on identifying the key drivers of entrepreneurial intentions, we employ partial least squares structural equation modeling (PLS-SEM), which also makes no distributional assumptions such as multivariate normality (Hair, Ringle & Sarstedt, 2011).

Setting and Descriptive Results

We distributed a two-page printed questionnaire to students from three German public universities regarding their intention to start a new company in the software industry. We focused on bachelor and master-level students, who participated in nine selected lectures during the 2011/2012 winter term. To achieve a high response rate, the questionnaire was handed out to the students at the beginning of the lecture. The data was collected during January and February 2012. A total of 598 questionnaires were distributed and 402 completed responses were received, yielding a response rate of 67.2%. The sample (N=402) consists of 295 (73.4%) male and 107 (26.6%) female students in IS (44.3%), CS (20.4%), and Media Informatics (27.9%). Furthermore, 7.4% of the respondents took CS as a minor. 24.4% of the students pursued a master's and 75.6% a bachelor's degree. In addition to the constructs specified above, the questionnaire included control variables for the students' backgrounds and sociodemographics.

Test of the Reflective Measurement Model

The reflective measurement model for the five constructs, which were measured on a 5-point Likert scale, was assessed in terms of their respective factor loadings. The range of each construct's factor loadings is shown in Table 1.

Table 1 Range of Factor Loadings per Construct and Student Group	Factor Loadings	
	IS students	CS students
Intention (3 items)	.948 - .970	.945 - .969
Subjective Norm (3 items)	.911 - .927	.869 - .918
Attitude (3 items)	.866 - .904	.791 - .852
Perceived Behavioral Control (3 items)	.846 - .930	.815 - .870
Business Idea (7 items)	.832 - .949	.867 - .922

To assess the internal consistency reliability and convergent validity, we calculated the composite reliability (CR) and average variance extracted (AVE) scores. The results are shown in Table 2.

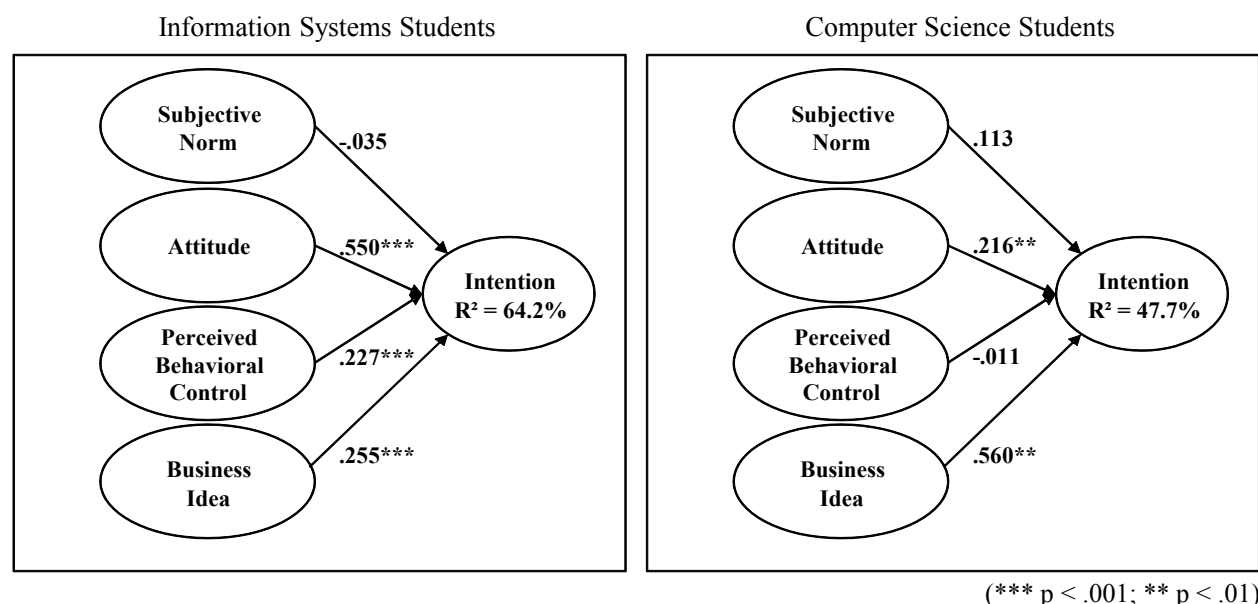
Table 2 CR and AVE per Construct and Student Group	CR		AVE	
	IS students	CS students	IS students	CS students
Intention	.97	.97	.92	.92
Subjective Norm	.94	.93	.84	.81
Attitude	.91	.86	.78	.68
Perceived Behavioral Control	.91	.89	.78	.73
Business Idea	.97	.97	.81	.82

The analysis shows that the factor loadings are all well above .7, indicating indicator reliability (Hair et al., 2011) for both groups of IS and CS students. The CR scores range between .86 and .97, exceeding the recommended threshold of .7 (Fornell & Larcker, 1981). The AVE values lie between .68 and .92. Since the square root of all AVE values also exceeds the respective inter-construct correlations, there is strong evidence of convergent and discriminant validity (Fornell & Larcker, 1981).

Analysis of the Path Model

We analyzed the path model for each of the two groups using the SmartPLS 2.0 (Ringle, Wende & Sinkovics, 2005) software. The values displayed in Figure 2 were obtained using casewise replacement, which resulted in samples of 175 IS students and 81 CS students. The significance levels were obtained by bootstrapping with 5,000 samples.

Figure 2. Path Coefficients for IS and CS Students



Attitude, Perceived Behavioral Control, and Business Idea were found to have a significant impact on IS students' Intention. Attitude and Business Idea have a significant impact on CS students. Although we therefore have to reject H1, we can accept H2, can partially accept H3 (as Perceived Behavioral Control only has an impact on IS students), and can accept H4.

To answer the exploratory research question of whether the factors' impact on Intention differs between the two groups, we conducted a group comparison of the path coefficients based on Henseler and Fassott (2010) for the constructs Attitude, Perceived Behavioral Control, and Business Idea. The results of this analysis can be found in Table 3.

Table 3
Group Comparison of Path Coefficients

Paths	Path Coefficients		p values for difference
	IS students	CS students	
Intention	.550	.216	.000
Subjective Norm	.227	-.011	.016
Attitude	.255	.560	.001

The analysis shows that Attitude and Perceived Behavior Control have a stronger impact on IS students' Intention than on CS students' Intention, while Business Idea has a stronger impact on CS students.

As we integrated the Business Idea as a fourth construct into the TPB, we analyzed the magnitude of this construct's impact on Intention by calculating the effect sizes for both groups of students. Business Idea had a small to medium effect of .13 on IS students and a large effect of .52 on CS students (Chin, 1998; Cohen, 1988). We therefore conclude that integrating the Business Idea construct can considerably increase TPB's explanatory power regarding students' behavioral intention.

Drivers of IS Students' Attitude

Attitude was identified as having the strongest impact on IS students. Since we also measured the construct with formative indicators, we identified the strongest drivers for Attitude by means of a redundancy analysis (Cenfetelli & Bassellier, 2009) by analyzing the formatively measured construct's impact on the reflectively measured construct. T-values were generated for the formative items through the SmartPLS bootstrapping procedure with 5,000 samples. The results are displayed in Table 4.

Table 4
Drivers of Attitude (* p < .001; ** p < .01; * p < .05; n.s.: not significant)**

Formative Indicators	Indicator Weights
Self-fulfillment	0.650***
High monetary reward	0.388*
High risk to fail (negatively coded)	0.313*
Working Independently	0.131 ^{n.s.}
High social status	0.038 ^{n.s.}
High work load (negatively coded)	-0.035 ^{n.s.}

Only the perception of a high risk of failure, an opportunity for self-fulfillment, and the chance of a high monetary reward were found to be significant drivers of Attitude; working independently, achieving a high social status, and the expectation of a high work load were not found to have a significant impact. The analysis of the variance inflation factors, which were all below 1.4, indicated no issues of multicollinearity that might have confounded our analysis.

DISCUSSION AND LIMITATIONS

Discussion

The results of our study show that different factors drive IS and CS students' intention to start a company in the software industry. Attitude emerged as the most influential factor for IS students, whereas having a Business Idea turned out as the most important aspect for CS students.

The results could have consequences for the development of entrepreneurship curricula for IT students. Above all, different factors drive IS and CS students' entrepreneurial intentions. Therefore, designing effective curricula for both groups needs to take these differences into consideration. Entrepreneurship courses for IS students should focus on fostering a positive Attitude towards founding a company. In general, this may include presenting entrepreneurship as an attractive career choice for students after graduation. More specifically, recommendations based on the three formative drivers that were found to shape students' Attitude may hold the most promise. First, courses should emphasize that being an entrepreneur is not necessarily a high-risk endeavor if certain steps are followed, such as creating a detailed business plan, conducting a thorough market and competitor analysis, and choosing co-founders who complement one's strengths and competences. Second, entrepreneurship should be clearly depicted as a great route to fulfill one's own dream. Entrepreneurship provides a unique opportunity to build a company that delivers products or services that a founder can be proud of. Third, our analysis shows that not only intrinsic factors motivate potential founders. The expectation of a high extrinsic monetary reward turned out to be a driving factor. Therefore, courses could improve students' Attitude by providing examples of founders who sold their company successfully. However, even the drivers that were not found to be significant can guide future entrepreneurial curricula. For example, courses do not need to downplay an entrepreneur's high work load, as it has no negative impact on students' Attitude.

In contrast, having a Business Idea emerged as the strongest predictor for CS students. Since having a Business Idea combines technological knowledge with the knowledge of how to exploit it commercially, courses for CS students should not be limited to only teaching the latest technologies. Rather, courses should present these technologies in a business-relevant way and clearly show how these technologies might affect current businesses' operations and may have the potential to disrupt whole industries. We explicitly do not demand that CS courses be less technical. Instead, we recommend embedding the technical content in a way that fosters the perception of technology as a means and not as an end. This could mean a stronger focus on the teaching of business models (Osterwalder, Pigneur & Tucci, 2005) and how new technologies might have an impact on them. Moreover, courses in creative thinking could help CS students connect different areas of their expertise in order to create innovative entrepreneurial ideas.

From a theoretical point of view, our study also indicates that studies that analyze entrepreneurship can benefit from including the construct Business Idea in TPB's base model. Since the Business Idea turned out to be a significant predictor for both groups of students, incorporating this construct can increase the predictive power of models based on the TPB.

In summary, we hope that our study can provide valuable input for more data-driven curriculum development efforts. It can help tailor entrepreneurship curricula to the specific needs of different groups of IT students, which can in the long run influence a nation's entrepreneurial activity positively.

Limitations

There are some potential limitations to our study. First, we confined our study to students of three German public universities. Further research with a more representative sample could reveal whether this might have biased the results. Second, a replication of our study in different countries could show if our results are culturally influenced, especially whether IS and CS students in other countries are driven by different factors or whether aspects of the German culture, such as Germany's higher uncertainty avoidance and lower individualism compared to the USA (Hofstede, 2001), could have had an impact. Third, since our study is cross-sectional, a longitudinal study could show whether students' intentions to become entrepreneurs actually translate into starting a new company and whether the patterns identified as driving entrepreneurial intentions turn out to be valid predictors. Fourth, although IS and CS students are an important source of entrepreneurial activity in the software industry, our study did not include students from other fields, such as business, economics, or mathematics. Further research should examine whether these groups of students might be motivated by other factors than IS and CS students. Fifth, regarding the impact of the Business Idea on students' entrepreneurial intentions, we would like to point out that the creation of a Business Idea is only one among the first steps in a process-oriented view of teaching entrepreneurship. Our study therefore neglects the steps following the creation of a Business Idea, among which are conducting a feasibility analysis, creating a business plan, and developing financial forecasts (Neck & Greene, 2011). Further research could analyze how an initial idea changes as it is developed throughout the different steps and how this affects entrepreneurial intentions.

In addition to these points, further research could try to shed light on the costs of developing an IS or CS entrepreneurship major and the question whether there would actually be enough qualified teachers available. Further questions worth pursuing might be if deans would be in favor of such a specialized major, if there is even enough demand, and whether our findings hold true for the whole IT industry and not only for software companies.

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REFERENCES

- Abrahams, A. & T. Singh (2010). An Active, Reflective Learning Cycle for E-Commerce Classes: Learning about E-commerce by Doing and Teaching. *Journal of Information Systems Education*, 21(4), 383-390.
- Ajzen, I. (1991). The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Bell, C., R. Mills & K. Fadel (2013). An Analysis of Undergraduate Information Systems Curricula: Adoption of the IS 2010 Curriculum Guidelines. *Communications of the Association for Information Systems*, 32(2), 73-94.
- Boyles, T. (2012). 21st Century Knowledge, Skills, and Abilities and Entrepreneurial Competencies: A Model for Undergraduate Entrepreneurship Education. *Journal of Entrepreneurship Education*, 15, 41-55.
- Carlsson, S.A., J. Hedman & O. Steen (2010). Integrated Curriculum for a Bachelor of Science in Business Information Systems Design (BISD 2010). *Communications of the Association for Information Systems*, 26(24), 525-546.
- Cenfetelli, R.T. & G. Bassellier (2009). Interpretation of Formative Measurement in Information Systems Research. *Management Information Systems Quarterly*, 33(4), 689-708.
- Chin, W.W. (1998). Issues and Opinion on Structural Equation Modeling. *Management Information Systems Quarterly*, 22(1), vii-xvi.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences (Second Edition)*. Hillsdale, NJ: Lawrence Erlbaum.
- Connors, S.E. & D. Ruth (2012). Factors Influencing Success in an Introductory Entrepreneurship Course. *Journal of Entrepreneurship Education*, 15(SI), 63-73.
- Crowley, E. (2003). Information System Security Curricula Development. *Proceedings of the 4th Conference on Information Technology Curriculum*, 249-255.
- Diamantopoulos, A. & H.M. Winklhofer (2001). Index Construction with Formative Indicators: An Alternative to Scale Development. *Journal of Marketing Research*, 38(2), 269-277.
- Engle, R.L., N. Dimitriadi, J.V. Gavidia, C. Schlaegel, S. Delanoe, I. Alvarado & B. Wolff (2010). Entrepreneurial Intent: A Twelve-country Evaluation of Ajzen's Model of Planned Behavior. *International Journal of Entrepreneurial Behaviour & Research*, 16(1), 35-57.
- Fornell, C. & D.F. Larcker (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research*, 18(1), 39-50.
- Foster, J. & A. Lin (2003). Individual Differences in Learning Entrepreneurship and Their Implications for Web-Based Instruction in E-Business and E-Commerce. *British Journal of Educational Technology*, 34(4), 455-465.
- Giarratana, M.S. (2004). The Birth of a New Industry: Entry by Start-ups and the Drivers of Firm Growth: The Case of Encryption Software. *Research Policy*, 33(5), 787-806.
- Hair, J.F., C.M. Ringle & M. Sarstedt (2011). PLS-SEM: Indeed a Silver Bullet. *Journal of Marketing Theory and Practice*, 19(2), 139-151.
- Henseler, J. & G. Fassott (2010). Testing Moderating Effects in PLS Path Models: An Illustration of Available Procedures. In V. Esposito Vinzi, W.W. Chin, J. Henseler, & H. Wang (Eds.), *Handbook of Partial Least Squares* (pp. 713-735). Berlin, Germany: Springer.
- Hofstede, G. (2001). *Culture's Consequences – Comparing Values, Behaviors, Institutions, and Organizations Across Nations (Second Edition)*. Thousand Oaks, CA: Sage.
- Jones, C. & J. English (2004). A Contemporary Approach to Entrepreneurship Education. *Education + Training*, 46(8), 416-423.
- Kautonen, T., M. van Gelderen & E.T. Tornikoski (2013). Predicting Entrepreneurial Behaviour: A Test of the Theory of Planned Behaviour. *Applied Economics*, 45(6), 697-707.
- Kor, P. & A. Abrahams (2007). Teaching Information System Students to be Entrepreneurs: A dot.com Case Study. *Communications of the Association for Information Systems*, 20, 497-517.
- Kozlinska, I. (2011). Contemporary Approaches to Entrepreneurship Education. *Journal of Business Management*, 4, 205-220.

- Krueger Jr, N.F., M.D. Reilly & A.L. Carsrud (2000). Competing Models of Entrepreneurial Intentions. *Journal of Business Venturing*, 15(5-6), 411-432.
- Kuckertz, A. (2013). Entrepreneurship Education: Status Quo and Prospective Developments. *Journal of Entrepreneurship Education*, 16(SI), 59-71.
- MacCallum, R.C. & M.W. Brown (1993). The Use of Causal Indicators in Covariance Structure Models: Some Practical Issues. *Psychological Bulletin*, 114(3), 533-541.
- MacMillan, I. & J. Katz (1992). Idiosyncratic Milieus of Entrepreneurship Research: The Need for Comprehensive Theories. *Journal of Business Venturing*, 7, 1-8.
- Neck, H.M. & P.G. Greene (2011). Entrepreneurship Education: Known Worlds and New Frontiers. *Journal of Small Business Management*, 49(1), 55-70.
- Noll, C. & M. Wilkins (2002). Critical Skills of IS professionals: A Model for Curriculum Development. *Journal of Information Technology Education: Research*, 1(1), 143-154.
- Osterwalder, A., Y. Pigneur & C.L. Tucci (2005). Clarifying Business Models: Origins, Present, and Future of the Concept. *Communications of the Association for Information Systems*, 16, 1-40.
- Ringle, C.M., S. Wende & R.R. Sinkovics (2005). SmartPLS 2.0. Retrieved September 4, 2013, from <http://smartpls.de>
- Schilling, J. & R. Klamma (2010). The Difficult Bridge between University and Industry: A Case Study in Computer Science Teaching. *Assessment & Evaluation in Higher Education*, 35(4), 367-380.
- Shane, S. (2012). Reflections on the 2010 AMR Decade Award: Delivering on the Promise of Entrepreneurship as a Field of Research. *Academy of Management Review*, 37(1), 10-20.
- Shane, S. & S. Venkataraman (2000). The Promise of Entrepreneurship as a Field of Research. *The Academy of Management Review*, 25(1), 217-226.
- Shapero A. (1982). Social Dimensions of Entrepreneurship. In C. Kent, D. Sexton, & K. Vesper (Eds.), *Encyclopedia of Entrepreneurship* (pp. 72-90). Englewood Cliffs: Prentice-Hall.
- Stephan, U. (2008). *Culture of Entrepreneurship (C-ENT)/Kultur der Selbständigkeit: Konzeptualisierung und erste Validierung eines Fragebogens zur Erfassung einer unternehmertumsförderlichen Kultur*. Marburg, Germany: Philipps-Universität Marburg.
- Shook, C. L., & C. Bratianu (2010). Entrepreneurial Intent in a Transitional Economy: An Application of the Theory of Planned Behavior to Romanian Students. *International Entrepreneurship and Management Journal*, 6(3), 231-247.
- The Economist. (January 18, 2014). *A Cambrian Moment*. Retrieved September 16, 2014, from <http://www.economist.com/news/special-report/21593580-cheap-and-ubiquitous-building-blocks-digital-products-and-services-have-caused>
- Topi, H., J.S. Valacich, R.T. Wright, K. Kaiser, J.F. Nunamaker Jr., J.C. Sipior & G.-J. de Vreede (2010). IS 2010: Curriculum Guidelines for Undergraduate Degree Programs in Information Systems. *Communications of the Association for Information Systems*, (26)18, 359-428.
- USA Today. (August 10, 2014). *Look Out, Silicon Valley: London Tech is on the Rise*. Retrieved September 16, 2014, from <http://www.usatoday.com/story/tech/2014/08/10/london-tech-scene-on-the-rise/13665993/>
- Venkatesh, V., M.G. Morris, G.B. Davis & F.D. Davis (2003). User Acceptance of Information Technology: Toward a Unified View. *Management Information Systems Quarterly*, 27(3), 425-478.
- Wanberg, C.R. & J.T. Banas (2000). Predictors and Outcomes of Openness to Changes in a Reorganizing Workplace. *Journal of Applied Psychology*, 85(1), 132-142.
- Welsh, D.H., & W.L. Tullar (2014). A Model of Cross Campus Entrepreneurship and Assessment. *Entrepreneurship Research Journal*, 4(1), 95-115.

THE 'BUSINESS CONCEPT' COMPETITION AS A 'BUSINESS PLAN' ALTERNATIVE FOR NEW AND GROWING ENTREPRENEURSHIP PROGRAMS: WHAT'S THE BIG IDEA?

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ABSTRACT

'Business Plan' competitions are a proven way to create buzz for entrepreneurship programs. They generate significant excitement and interest among students, and increase awareness of the program among the larger community. Unfortunately the expense, complexity and resource requirements of such competitions puts them out of the reach of new and small programs. In this presentation we will discuss the benefits and challenges of business competitions. We will also describe an innovative approach - the 'Business Concept' competition, which emphasizes the basic ideas driving a business without requiring a full 'Business Plan'. Additionally we will outline some of the essential activities and key lessons learned from our competition process. The proposed method has been successfully piloted. We found that it fostered creativity and involvement among students, strengthened relationships with other schools within the university and resulted in positive publicity for our new entrepreneurship program.

INTRODUCTION

'Business Plan' competitions foster creativity and involvement among students, and publicity for an entrepreneurship program. Unfortunately the complexity and expense of such competitions make them out of the reach of small and new programs. In this paper we will describe an alternative for growing programs that still generates significant excitement and interest - the 'Business Concept' competition - as successfully run at William Paterson University.

The primary difference between our 'business concept' and 'business plan' competitions is in the degree of rigor and development. In the 'concept' competition, the primary idea was of utmost importance and the judging criteria were very flexible. Participants did not have to fully develop all aspects of the idea. The initial stages of the competition required only a one page description. The intent was that by leaving the requirements simple, students with all types of ideas at any stage of development could enter. The result was a large number and variety of ideas submitted, and a lot of interest across the school. From approximately 80 entries, 8 finalists were chosen. They worked with faculty mentors to more fully develop their idea. Each

of the finalists was given a half hour to present their idea to an audience of judges, students, faculty and invited guests.

ENTREPRENEURSHIP PROGRAMS

Entrepreneurship programs are among the fastest growing initiatives in modern colleges and universities (Mattare, 2010; Yu & Man 2009). For the student, they tap into the dream of starting a business and watching it grow and develop. The programs provide training and opportunities to make those dreams come true. To the college the programs mean a chance to connect with the outside community, to facilitate meaningful projects, attract the best and brightest students and gain prestige and recognition. There are examples of successful and prospering entrepreneurship programs that can serve as aspirational reference points. The challenge is getting from a standing start to becoming an established program. This can be easy if a donor or set of donors share the college's vision and will bankroll the program as it grows. More often than not, benefactors get involved as a result of initial success, not before. So how does a college with few resources develop a program? In this paper we will address one of the strategies used by William Paterson University – a 'Business Concept' competition.

An ideal entrepreneurship program has significant funding, external stakeholders in a variety of fields, such a venture capital, that get involved in programs and activities, students interested in entrepreneurship and professors who teach and conduct research about entrepreneurship, as well as provide assistance to entrepreneurs at various stages in their venture, perhaps even a business incubator to help start businesses. However very few, if any, schools can jump directly to this ideal state. The challenge is to develop and implement a plan to get there.

Successful established programs often have a business plan competition. Planning is a key success factor in small entrepreneurial firms (Botha & Robertson, 2014), Nunn & McGuire, 2010; Becherer & Helms, 2009; Hormozi, Sutton, McMinn & Lucio 2002). Nascent entrepreneurs are more than 2 ½ times more likely to follow through on starting a business if they have a business plan (Liao & Gartner, 2006). There also is wide agreement that entrepreneurial education need to have experiential components (Vincent & Farlow, 2008), and business plans are experiential learning (Kraus, Harms & Schwarz, 2006). There are a great variety of these competitions. Some allow participation from external stakeholders, others are limited to students. Some competitions have a theme or are associated with a cause such as water (Anonymous, 2010a) or urban enterprise (Anonymous, 2011b). Companies have found innovation competitions to generate ideas that they can sponsor (MacCormack, Murray & Wagner, 2013). Many have significant prize money. The University of Maryland annual competition gives away \$75,000 (Anonymous, 2012b). Competitions often have an organization or individual that sponsors it. The Florida Venture Forum sponsors a clean energy business plan competition with \$200,000 in prize money (Anonymous, 2012a). Another characteristic of these competitions is that they are ongoing and repeated year after year. A culture and set of expectations builds around them, as do ancillary activities. The University of Maryland has over 30 initiatives related to entrepreneurship (Anonymous, 2011a). Unfortunately such competitions

are difficult to start if there is no existing culture and little available funding to support it. The creative solution that we implemented was a business concept competition that concentrated on the basic idea and did not require extensive planning and analysis on the part of the student to participate.

‘BUSINESS CONCEPT’ COMPETITION

Our business concept competition was to be an outlet for our students to show their entrepreneurial side. For the College of Business it is meant as a stepping stone or even a launch pad to reaching higher level goals. From the start we had competing objectives and concerns. We would like the competition to succeed, but we do not want to risk an embarrassing failure. We would like to have many participants, but we also want high quality ideas. We ultimately want involvement from a variety of internal and external stakeholders in our program, however we are cautious about outside involvement in our first foray into this type of activity.

The key to the success of the competition was careful and deliberate planning. From the start a set of coordinated goals and plans were developed. A flow chart and detailed task list was developed. Table 1 shows the categories of tasks. Each category had a number of distinct actionable tasks. As an example the ‘Flyer’ tasks are listed. It tells what needed to be done, in this case where the flyers are distributed. It also included explanations and details such as who the contact person is in the copy center, as well as the person on the ‘team’ that is responsible and due dates. The core ‘team’ was two professors, a graduate assistant and additional help from the dean’s office and other professors as needed. Activities were tracked and adjustments made along the way.

One basic question was ‘can we get involvement?’ In order to foster involvement of both students and faculty, workshops were given for each. There were class visits in targeted courses informing students of the competition, as well as flyers and announcements. These were augmented by workshops for developing ideas. Professors from a broad array of courses and disciplines were recruited to help. Professors were needed initially to encourage students to participate. Some professors held small preliminary competitions in their own courses in order to generate student interest, others gave students extra credit. Once the finalists were determined, professors volunteered to mentor students. Lastly, professors were encouraged to bring their classes to the final presentations.

Table 1 BUSINESS CONCEPT COMPETITION TASK LIST				
TASK	Activity	Responsibility	Due Date	Comment
Entrepreneurial Brief				
Flyer*				
Print and distribute	Xerox			
Contact John Smith (x1234) for gloss copies				
Post in COB, Main Campus	Scott-other	9/19	Need Rajiv to id additional temp help	

<i>Student paper</i>	<i>Post in student newspaper</i>	<i>Scott</i>	<i>9/28</i>	
<i>Other locations</i>	<i>Any other places for students--Announcements</i>	<i>Scott</i>	<i>9/21</i>	
<i>Main campus faculty</i>	<i>Send to main campus faculty—through deans</i>	<i>Sam</i>	<i>9/2--22</i>	<i>Visits by Sam and Bob</i>
Plasma Screens				
Website				
Discussion -Main Campus Deans				
Class Visit				
Competition Sponsorship				
Professional Enrichment				
Application Review				
Judging				
Awards				
Other Advertising				
Nov. 17 Event				

*note – subtasks items under ‘flyer’ are filled in. Each other task had similar sub-tasks.

The goal was to keep the barriers to participate as low as possible. The rules to the contest were readily available online. A full business plan was not necessary, just a ‘business concept’ – a good idea that could be developed. An online application process made it easy to enter the competition. The initial application required very little information, although participants could augment the one page form. There were over 75 entries, each representing one or a team of students. A panel of professors reviewed the entries and narrowed it down to 8 finalists. The finalists were a cross-section of the kinds of ideas submitted. Among the finalists were A riding academy, a robot that cleared snow and an online digital school yearbook. The eventual winner was ‘Beyond Bingo’, a place for senior citizens who lived on their own where they could go on a daily basis to participate in all of the activities usually found in an assisted living facility.

Finalists were paired with professors to develop their concepts. Some students worked with 3 or 4 faculty members. Several classes of MBA students gave feedback to practice presentations. The Assistant Director of a local New Jersey Small Business Development Center stepped up to coach finalists, and the Dean of the College of Business helped with the financial analyses. On the day of the competition the finalists gave 20-30 minute presentations to a panel of judges and an audience. The judges were local bankers, a small business advisor and a faculty member. The audience varied from about 50 people to over 120 at times during the day, including faculty, students and administrators from all over the campus as well as guests. The winning concept was awarded \$4,000, the runner up got \$2,000 and the third place got \$1,000. The competition was an unqualified success – the quality of the projects exceeded all expectations and the attendance at the event was greater than anticipated.

CONCLUSIONS AND LESSONS LEARNED

After the competition, faculty, administration and graduate assistants met to ‘debrief’ and discuss the future. It was important to discuss the process to see what worked, what needs improvement and to make preliminary plans for the next year’s competition.

1. Start small. Full business plan competitions are too big. A ‘concept’ competition allows for greater participation
2. Plan everything. Use process flow charts. Have regular status reports.
3. Remain flexible. Things will not go as planned. Be prepared to make adjustments.
4. Recruit key faculty members from a variety of disciplines. Have them talk about it in class, mentor the finalists and encourage their students to attend the final competition.
5. Keep barriers to participation as low as possible. Require a good idea, not a full plan. Have a one page entry form
6. Hold workshops for students and faculty. This generates interest and greater quantity and quality of entrees.
7. Follow up. Do not let this be a one-time event. Start planning on how to improve it for next time.

Our first competition was held in the Fall semester. We intend on holding our second competition in the Spring. The planning is already underway. Currently we are seeking external partners that can be involved. In our first competition we avoided this because we did not know the quantity and quality of the ideas that would be submitted. We chose Spring to give more lead time for everyone involved. In retrospect we accomplished all that we wanted to and more. Students have already begun to discuss their ideas with us. This indicates to us that we were successful in moving towards creating awareness and establishing an entrepreneurial culture.

REFERENCES

- Anonymous (2012a, Feb 28). The Florida venture forum to host the 2012 statewide collegiate business plan competition. *Business Wire*,
- Anonymous (2012b). First look west searches for university students for clean energy business competition *Manufacturing Close - Up*.
- Anonymous (2011a, Nov 4). White house recognizes Mtech's David Barbe as champion of change. *PR Newswire*.
- Anonymous.(2011b, Oct 4, 2011). MillerCoors prepares to award \$150,000 to small business owners, extends application deadline *PR Newswire*.
- Anonymous (2010a). Imagine H2O water prize announces winners. *American Water Works Association Journal*, 102(5), 59-59.
- Becherer, R., & Helms, M. (2009). The value of business plans for new ventures: Company and entrepreneur outcomes. *Journal of Small Business Strategy*, 20(2), 80-96.
- Botha, M., & Robertson, C. L. (2014). Potential entrepreneurs' assessment of opportunities through the rendering of a business plan. *South African Journal of Economic and Management Sciences*, 17(3), 249-265.
- Hormozi, A., Sutton, G., McMinn, R., & Lucio, W. (2002). Business plans for new or small businesses: Paving the path to success. *Management Decision*, 40(7), 755-763.
- Kraus, S., R. Harms & E. Schwarz (2006). Strategic planning in smaller enterprises - new empirical findings. *Management Research Review*, 29(6), 334-344.
- Liao, J., & W. Gartner (2006). The effects of pre-venture plan timing and perceived environmental uncertainty on the persistence of emerging firms. *Small Business Economics*, 27(1), 23-23.

- MacCormack, A., Murray, F., & Wagner, E. (2013). Spurring innovation through competitions. *MIT Sloan Management Review*, 55(1), 25-32.
- Mattare, M. (2010). Use of self 101: The case for teaching personal development in the entrepreneurship curriculum. *New England Journal of Entrepreneurship*, 13(1), 17-28.
- Nunn, L., & McGuire, B. (2010). The importance of a good business plan. *Journal of Business & Economics Research*, 8(2), 95-105.
- Vincett, P., & Farlow, S. (2008). "Start-a-business": An experiment in education through entrepreneurship. *Journal of Small Business and Enterprise Development*, 15(2), 274-288.
- Christina W.M. Yu, & Thomas W.Y. Man. (2009). Social interaction and the formation of entrepreneurial characteristics. *Journal of Workplace Learning*, 21(8), 595-613.

PUBLISHING CHILDREN'S BOOKS WITH INTERDISCIPLINARY TEAMS: REFLECTING ON STUDENT INNOVATION THROUGH THE LENS OF TONY WAGNER

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ABSTRACT

Given the interdisciplinary nature of entrepreneurship, a model is shared for writing, illustrating, and publishing children's books through a collaborative/interprofessional team of students and faculty mentors across colleges at Butler University. While recognizing the intrinsic benefits of having diverse groups of students work on self-defined projects, the creators of this model also recognized the alignment between such a project and the potential for nurturing innovation. Specifically, such an approach is consistent with the seven survival skills and need for an innovation mindset put forth by Tony Wagner (2010, 2012). Therefore, we present our project through the lens of his framework. The process for implementing the project is discussed, as well as challenges and ways in which the project could be customized for other universities.

INTRODUCTION

In his examination of the global achievement gap, Tony Wagner (2010) outlined a set of seven survival skills needed by our youth in order to contribute in today's workplace and society: critical thinking and problem solving, collaboration across networks and leading by influence, agility and adaptability, initiative and entrepreneurialism, effective oral and written communication, accessing and analyzing information, and curiosity and imagination. In his 2012 book, *Creating Innovators*, Wagner followed up through emphasizing how these survival skills needed to be coupled with the development of an innovation mindset. The irony of the situation is that many educational institutions themselves are not focusing on these skillsets in their strategies for instilling the skills in their students. While rigid academic structures and the increased pressure for quantifiable evidence of learning may be partly to blame, being able to develop learning environments that embrace all of these survival skills is difficult and requires us, as academicians, to become innovators ourselves. It requires pushing against the existing structure and design of our classes and departments to experiment, fail, learn, and start all over again.

We propose that entrepreneurship serves as a context in which such a learning environment can be developed, and offer a model developed at Butler University where collaborative teams of college students and faculty mentors work together to write, illustrate, and publish children's books. This project started in 2007 as an innovative senior thesis project within the College of Pharmacy and Health Sciences and the Jordan College of the Arts, and has since evolved into an annual project involving four colleges (College of Pharmacy and Health Sciences, College of Business, College of Education, and Jordan College of the Arts). Five books

have been successfully published, and one has failed (see Exhibit A for a complete list). Along the way, learning has taken place—for both the students and faculty mentors involved. In the space that follows, we share the background and history of the project. We then outline how this project meets the survival skills and innovation principles put forth by Tony Wagner. Finally, we discuss challenges and possible extensions.

OVERVIEW OF THE CHILDREN'S BOOK PROJECT

The original idea for the children's book project dates to 2007, as an innovative option for pharmacy students to use for their capstone course, which requires a health-focused project that is presented at the annual Butler University Undergraduate Research Conference. In this initial year, only pharmacy students were involved, and art students co-developed the cover art for this project through a class collaboration. In subsequent years, education students were added in order to leverage their respective expertise. Eventually, business students were added. Students from each of these areas bring a distinct set of skills to the creation and production of children's books on health-related topics. Pharmacy students provide research-based knowledge of health issues; education students utilize their understanding of high-quality children's literature and curriculum development; business students provide the understanding of business planning, marketing, and fundraising; and art students bring their experience with the illustrative process. While the books have primarily focused on health topics for pre-Kindergarten to early elementary-aged students, we have recently experimented with other topics and age levels with a book this year that focused on Indiana history, in line with and endorsed by the Indiana Bicentennial Commission and designed specifically for the fourth-grade state history curriculum. All of the book projects, from 2008 through 2015, are listed in Exhibit A.

The book project crosses semesters and currently runs on an annual cycle starting in May. The initial task is determining the number of book projects being taken on, as well as their general topics, and finding faculty mentors. In our experience, faculty members have been excited to participate in the project because of the opportunity to work with colleagues outside their typical areas of expertise. The involvement of multiple faculty members also spreads out the time commitment and allows fresh ideas into the process. The ultimate goal is for the time commitment to be minimal on the part of the faculty mentors, as this is truly meant to be a student-designed and student-driven project. However, faculty do respond to bi-weekly team updates, provide guiding thoughts and questions, assist in editing, review any legal agreements with the publisher, and help to mediate the inevitable challenging conversations that are part of the creative process. The student recruitment process varies by college; some colleges issue a general call for applications and others invite specific students to participate. In the College of Pharmacy and Health Sciences, where the project is part of a specific course, interest in this project type has become so high that students now have to apply by submitting an application and writing sample. In the other colleges, students can receive independent study credit and/or the opportunity to position themselves uniquely in the job market because of the experience. When applicable, the grading of the course also varies by college. For example, business students are assessed by their level of professionalism, a final reflection paper, and the development of a portfolio showcasing the experience that is meant to be shared with potential employers.

The kick-off meeting for each project takes place in May. This is an important event because it is the first time the entire team is together. This meeting incorporates the sharing of

previous book projects' histories and lessons learned. Students then meet in teams to get to know each other and to work out their initial plan for the project. We recognize that due to the scope of the project and the number of our students who are participating in clinical and internship experiences during this point in their college careers, project execution also needs to be innovative. Therefore, after the initial face-to-face meeting, most of the collaborative process takes place via Skype, Google+, a closed Facebook group, Dropbox, or other electronic mechanisms. These virtual workspaces allow for meetings to take place regardless of location, for editing to take place and be shared continually during the writing process, and for all members of the group to have access to all parts of the project development, regardless of their area of expertise.

Throughout the summer, students collaboratively develop the storylines. This work is accompanied by a market research process by the business students so that there is solid background information regarding what is already being done on a given topic, as well as evidence for the success factors applicable to a specific customer target. We have found it useful to have teams break up into two groups to come up with two different story ideas, in order to reduce groupthink (Janis, 1972) and offer more ideas with which to develop the storyline. The full team generally includes two students from each college (eight students), so by splitting the team into two work groups it provides the opportunity for each storyline to be developed through an interdisciplinary lens (four students, one from each college). In some cases, one story idea will be chosen for the project, while at other times there is a blend of the two ideas. Once the main storyline is selected, the writing begins and a storyboard, including initial sketches of the characters, is constructed.

In the fall, the project shifts from writing to editing and finalizing. The art is also completed and approved. In addition, price quotes are worked out and a contract is signed with a publisher. Historically, we have worked with the same publisher for each of the books, due to the fact that only certain publishers are able to accommodate the size, layout, and imaging needed for a children's book. However, student teams are given the opportunity to explore alternative publication options, including e-books and traditional print publications. Students also need to start thinking about how they will finance the project (either with a loan or pre-sales). In some instances, online crowdfunding has been used. Drawing on small contributions from a relatively large number of people, crowdfunding leverages the "wisdom of crowds" in validating the quality of the proposed product, which drives the project's success (Mollick, 2014; Surowiecki, 2014). Students in the 2012-2013 book project ran a successful Kickstarter campaign, while one of our 2014-2015 book projects used Indiegogo. The goal is to always have everything finalized with the publisher by the first of December. It should be noted that students are responsible for the funding required to put the book into production, regardless of the publisher they choose. Exploration of the risk/reward of utilizing things like crowdfunding sites is part of the learning experience. If the money is not raised, the option of self-publishing through a minimal-cost service such as an e-book on Amazon.com is an option, but so is the possibility of the book not being published at all. This is not a fail-safe project, and the realities that exist in the complicated world of book writing and publishing provide the very real possibility that the book may not make it all the way to production. However, to date only one out of the six books has failed to be published.

The spring semester is exciting, as the final product is delivered. However, there is still more work to be done by the student authors. Books need to be delivered to those who had

purchased them through the pre-sale process. In addition, there is a heavy push for continuous marketing and sales. There are presentation opportunities for students to share their observations and experiences in an academic setting, such as the Butler University Undergraduate Research Conference, as well as with local and national organizations that are interested in supporting and/or purchasing copies of the books. Students typically schedule a book-signing event.

A more detailed description of the steps and timeline used at Butler University for the children's book project is seen below. This is an approximate timeline as each project is different, and we continue to innovate and experiment each year.

Table 1 TYPICAL TIMELINE AND TASKS FOR CHILDREN'S BOOK PROJECT	
End of Spring Semester	Establish faculty mentors Recruit students and set up structure for accountability Convene initial team meeting
Summer	Conduct research and choose overarching topic Divide into two subgroups to come up with ideas (reduce groupthink) Meet again to finalize idea (or variation); storyboard this concept Start developing drawings of main characters
Fall Semester	Finish writing and art Present project at Senior Project Poster Session (pharmacy students) Contract with publisher Develop marketing plan and start pre-sales (possibly through crowdfunding) Develop and finalize financial plan
Spring Semester	Market and sell book Present book at Butler University Undergraduate Research Conference Organize book-signing party Deliver books Take advantage of presentation opportunities

APPLICABILITY: SURVIVAL SKILLS AND INNOVATION MINDSET

In *The Global Achievement Gap*, Tony Wagner unveiled a “core set of survival skills for today’s workplace, as well as for lifelong learning and active citizenship” (Wagner, 2010, p. 14) that are not being adequately taught even in our best school systems. These skills include:

1. Critical thinking and problem solving
2. Collaboration across networks and leading by influence
3. Agility and adaptability
4. Initiative and entrepreneurialism
5. Effective oral and written communication
6. Accessing and analyzing information
7. Curiosity and imagination

While Wagner targeted much of his discussion on K-12 schools, it can be argued that colleges and universities are similarly responsible (if not more so) for developing suitable learning environments. This is a task, many feel, for which higher education is currently unprepared.

Our understanding of learning is expanding in ways that are at least partially incompatible with the structures of higher education institutions. In addition, these

developments are occurring at the same time that higher education is being asked to become more accountable for what students are learning. Ironically, these pressures for accountability are making us simultaneously more thoughtful and more limited in what we count as learning. The question that campus leaders need to address is how to reinvent a curriculum that lives in this new space (Bass, 2012, p. 24).

This reinvention means working across areas of curricular expertise as well as crossing boundaries of institutional organization. “Effective collaboration requires several skills and attitudes including the ability to take the perspective of others, speak a common language, manage conflict, conceptualize. . . problems in a broad fashion, and share resources, knowledge, and skills” (Welch et al., 1992, p. 2). As summarized in Table 2 and detailed below, the children’s book project serves as a platform for each of these survival skills.

Table 2 APPLICABILITY OF THE SURVIVAL SKILLS TO THE CHILDREN’S BOOK PROJECT	
Survival Skill	Children’s Book Project
Critical thinking and problem solving	The project involves lots of ambiguity, especially dealing with the publisher and the “real-world” orientation. There is a need to figure out how to be “edutaining.”
Collaboration across networks and leading by influence	The project involves upper-level students majoring in discrete disciplines (i.e., networks) and needing to serve as experts in their respective areas. Deeper collaboration skills are developed due to the diversity of the team.
Agility and adaptability	There are many roadblocks (e.g., Kickstarter did not approve an initial submission), and students need to figure out how to adapt. Students also need to adapt to each other's work schedules involving internships, classes, rotations, etc.
Initiative and entrepreneurialism	Faculty members serve as advisors, but do not run, lead, or develop timelines. Students themselves must take the initiative. Capitalization (e.g., crowdfunding campaigns) and sales processes entail entrepreneurial risk.
Effective oral and written communication	Students must meet the challenge of learning how to communicate at a child’s level within the book. Additionally, the project requires clear written communication in the final outcome, as well as practice in oral communication within a team setting and when marketing the book.
Accessing and analyzing information	Research must be conducted on the children’s book industry, followed by analysis and decision-making based on this step.
Curiosity and imagination	Curiosity and imagination skills are used in coming up with the story. In order to prevent groupthink, students typically storyboard two different ideas and then come together. These skills are also used in finding ways to market the book.

Critical Thinking and Problem Solving

Critical thinking is “the disciplined art of ensuring that you use the best thinking you are capable of in any set of circumstances” (Paul & Elder, 2014, p. 41) and requires asking lots of questions and checking assumptions. A survey of more than 400 employers found that critical thinking and creativity/innovation, which are both elements of the problem-solving process, were expected to increase substantially in importance for successive cohorts of workers entering the

economy (Casner-Lotto & Barrington, 2006). The need for students to think critically and to problem solve is at the heart of the children's book project. Representation on each team by students from multiple professional disciplines challenges the assumptions that individual team members bring from their own academic arena. For example, some of the business students have been questioned by their peers as to why a website is needed and whether crowdfunding really makes sense, given the requisite fees. Moreover, education students have had to explain how reading levels are established, and how the criteria for quality in children's literature are substantiated. In many cases, research needs to be conducted in order to check assumptions and help guide the team with decision making—especially in ensuring that the book is both educational and entertaining (“edutaining”). This process indeed helps the students “think about their thinking” and become more aware of biases.

Collaboration across Networks and Leading by Influence

The “silo effect” of departments working separately, rather than as a team, has not yet disappeared within the corporate area and is noted to be a significant growing pain (Gleeson & Rozo, 2014). There has been a conscious effort in the health-care field, especially, to shift toward a more collaborative, interprofessional approach (Epstein, 2014). This is perhaps the survival skill that, within the college environment, can be most difficult for existing classes to undertake. Like businesses, universities similarly tend toward silo structures, as different schools, colleges, and departments are developed and focused on their specialties—with good reasons, as professional education within each college is critical to develop expertise in professions. While general education courses may involve students from different backgrounds, upper-level courses within a major are typically narrowed to people with similar interests pursuing a similar degree. Certainly, collaborative learning and team-centered projects are common in contemporary educational settings, but rarely is there an opportunity for students to collaborate with peers who have developed different expertise. The children's book project is unique in this way, in that it allows upperclassmen to collaborate across networks (i.e., across colleges) and also provides the opportunity to “lead by influence” as the expert in their area. One of the richest experiences as educators working in these book projects has been watching students teach each other about their chosen disciplines. At the same time, students develop a level of respect for each other's professions.

Agility and Adaptability

Being able to adapt is critical in the children's book project. This is perhaps most evident in the evolution of the book from its first draft when it is initially storyboarded to the final product that is printed. There is a need to adjust based on the needs of funders and publishers as well as on feedback provided by mentors and the team. Other evidence of being agile and adaptable is simply working with each other's schedules, as most students working on these book projects have part- or full-time class schedules, internships, and travel schedules. Also, the key skillset of interdisciplinary flexibility helps students understand that in the working world, they will also encounter people who do not share their backgrounds and educational experiences.

Initiative and Entrepreneurialism

According to a recent survey, more than 50% of college-aged students would like to someday start their own business (Kauffman Foundation, 2011). Thus, pursuing an entrepreneurial task such as writing/publishing their own book will likely serve as an innovative and inviting way to engage students. In contrast to programs that aim to teach entrepreneurship, we propose the utilization of entrepreneurship as a means to engage students. Being entrepreneurial requires a combination of taking initiative, being innovative, and taking risks (Covin & Slevin, 1989). All three elements are clearly present in taking on the creation of a new project such as the children's book. Moreover, the crowdfunding concept, in which all the money is on the line, itself demonstrates the acceptance of risk; for example, the Kickstarter platform specifies that if the goal is not attained, none of the money is earned.

Effective Oral and Written Communication

It should come as no surprise in a world where texting is the norm that effective oral and written communication is a skillset that requires more emphasis and development at the collegiate level (Casner-Lotto & Barrington, 2006; Hart Research Associates, 2013). Raise this issue with any college educator of incoming freshmen and the educator will surely agree. Yet communication is critical, because without it a great idea loses credibility. As part of the project, the student team has to put forth significant effort toward writing, editing, and developmental appropriateness for the end-user. Students from the College of Education share their expertise and ensure that language is at a level children can understand. Also, students have to orally communicate the premise of the book—they have to sell the book itself before it is written. Creating a video for a Kickstarter campaign is another example of a communicative skillset that students need to employ in order to successfully complete the project.

Accessing and Analyzing Information

Throughout the project, there is a wealth of information that needs to be gathered and analyzed. Early on, market research needs to be conducted on the children's literature publishing industry. As this is an industry that is changing with the influx of technology, with more than 5,000 new titles added each year, new data and opportunities constantly need to be examined. In the latter part of the project, students need to contact different publishers for quotes, analyze detailed information and contracts, and make decisions accordingly. A recent example was the contract around the Kickstarter campaign that students needed to understand before project implementation. They were surprised to discover dual costs for this capitalization: a percentage taken out by Kickstarter, and transaction fees assigned by credit card companies. Based on this information, they examined other crowdsourcing options and ultimately had to make a business decision on which direction to take.

Curiosity and Imagination

Pink (2005) emphasized the importance of “right-brain” thinkers in today's economy. As students are developing a *new* children's book, there is an enormous reliance on creativity and using their imaginations (i.e., employing right-brain thinking). They need to come up with

characters, a plot, a storyline, illustrations, and more. At the outset, students typically break into two subgroups in order to reduce the possibility of groupthink (Janis, 1972). By having fewer members in each subgroup, the imagination and creativity of each student is further leveraged and drawn out.

In his more recent book, *Creating Innovators* (2012), Wagner expanded on *The Global Achievement Gap* by declaring that the seven survival skills are necessary, but not sufficient. Students also need to be taught to be innovators. Such an approach requires an emphasis on perseverance, willingness to experiment, taking calculated risks, tolerating failure, and design thinking. These innovation skills can be taught through the principles of play, passion, and purpose. Again, the children's book project offers an opportunity for students to experience each of these principles.

Play

It makes intuitive sense that being innovative involves a sense of play (Pink, 2005). Simply put, if students are enjoying themselves, they are likely to be more engaged (Hromek & Roffey, 2009). The book projects indeed represent an opportunity for students to have fun, perhaps most evidenced by the high level of excitement during the initial kick-off meeting. As noted by one student, the idea of writing and having their name on a published book is something they only dreamed of happening before graduating from college.

Passion

Passion refers to a "strong inclination toward an activity that people like, that they find important, and in which they invest time and energy" (Vallerand et al., 2003, p. 756). Indeed, passion is frequently mentioned as important for entrepreneurs (Breugst, Domurath, Patzelt, & Klaukien, 2012). Within the children's book projects, students are able to select a topic that they feel particularly passionate about. In some cases, the general theme is provided (e.g., asthma), and then students with an interest in that area sign up. In the most recent year, students were able to select a health-care topic in which they had particular interest. This passion equates to a more engaged student, and thus a better outcome in terms of the actual book and the commitment to learning that is taking place.

Purpose

Perhaps most important, the children's book project allows students an opportunity not only to utilize their emerging expertise collaboratively, but also in a purposeful way. Purpose serves as an essential intrinsic motivator (Pink, 2011). Most of the books to date have been geared toward helping to educate children about an important topic. For example, one student team produced a book on asthma, *He Huffed and He Puffed But...A Tale of a Wolf with Asthma*. This team felt especially proud when the Indiana State Department of Health purchased more than 700 copies to distribute to children across the state of Indiana. Thus, the students felt that they were contributing and their project had a purpose.

Table 3
APPLICABILITY OF INNOVATION PRINCIPLES TO THE CHILDREN'S BOOK PROJECT

Innovation Principles	Children's Book Project
Play	The book project is clearly fun. Students are nearly giddy at the early meetings and are amazed to have the opportunity to actually publish a book (with their name on it!).
Passion	Students decide what the topic will be, based upon their interests.
Purpose	Students feel there is a purpose behind their books because they will be helping to educate on an important topic. Their final outcome has clear value.

Babson College professors Neck, Greene, and Brush (2014) recently outlined the practices of entrepreneurship education, which are based on play, empathy, creation, experimentation, and reflection. While Wagner discussed the idea of play, his work only hinted at the other four aspects, which deserve further discussion in regard to the children's book project. Foremost, there is the importance of *empathy*—defined as a “social and emotional skill that helps us feel and understand the emotions, circumstances, intentions, thoughts, and needs of others, such that we can offer sensitive, perceptive, and appropriate communications and supports” (McLaren, 2013, p. 4). As each book is designed to target a specific audience, students have to make additional efforts to empathize with the end-user. For instance, with the book on asthma, students needed to get to know and empathize with both asthmatic and non-asthmatic readers and consider how they might react. With the book *Pharmacy and Me*, students wanted young readers to understand the role of the pharmacist. The practice of *creation* is self-evident, given the creative process needed to develop an entire story as well as create the final product. Throughout this process, there is a lot of *experimentation* that occurs as the students try certain routes and need to constantly adapt to the circumstances. Last, the importance of *reflection* cannot be emphasized enough. While each college takes a different approach to the way in which the overall project is reflected—whether it is a written document or a conversation—this is indeed the end of the cycle where students reflect not only on what they learned, but also on how this experience will affect them going forward. With *Pharmacy and Me*, for example, reflection was captured by College of Pharmacy and Health Sciences students in a collective summary of their experience, passion, and challenges, published in The American Pharmacists Association student publication, *Student Pharmacist*.

OUTCOMES

Feedback from student participants has been extremely positive, and the current demand for being selected to participate in the project is high. As students have shared their experiences with peers, a resultant pipeline of interested participants has minimized the need for extensive recruiting. From an instructor perspective, there is high value for this type of learning experience as well, as it strikes at the highest summit of Bloom's Taxonomy—creating. We thus view the children's book project in line with other interdisciplinary entrepreneurship programs that have demonstrated success (Johnson & Envick, 2014). However, the exact nature of the benefits can be perhaps best illustrated by considering the discipline from which the students originate. From the perspective of the College of Business, this experience is highly valued due to the fact that students will need to constantly interact with others in different areas in their future careers.

Thus, an accounting major will soon need to work with business colleagues in research and development, marketing, etc. This experience highlights the diversity of student engagement, and how working as a team truly has the potential to do amazing things. It also provides the opportunity for business students to experience the challenges associated with project management, much of which must be completed virtually or online due to team members' busy schedules. Last, it challenges students to leverage their skills in a real-world setting when it comes to conducting research, raising funds, keeping records, marketing, and selling.

For pharmacy students, the experience helps them to become better pharmacists, because they are teaching through writing, and all pharmacists are teachers. Furthermore, students learn how to communicate with children at a level they can understand, through collaboration with their College of Education peers. Leaders in any profession, including pharmacy, also write and publish, and through this opportunity, students are published authors prior to graduation from pharmacy school. The pharmacy curriculum is heavy in clinical and pharmacological education, and the opportunity to write and reflect often is not emphasized; however, through this project, students have the opportunity to polish their written communication skills as adjuncts to their developing clinical and pharmacological acumen.

Within the Jordan College of the Arts, students benefit by utilizing their craft to develop an integral part of the story. They are practicing artists who achieve a real-world outcome. These students are working as they would if they had a client, or are working in a creative team as the creative leads of the project. They must first learn team collaboration, then convey an idea from the team to paper, and finally create characters and visual images that complement the storyline. Students learn how to creatively collaborate and work with other students who are not trained illustrators.

In order to continue to nurture classroom innovation, we must provide the instructional leaders of these classrooms with their own experiences in developing and evolving innovative ideas. For preservice teachers, much of their work around innovation will come from creating environments that best foster the solution-focused, collaborative, problem-solving thinkers that are needed in our 21st-century schools and businesses. In combination with effective teacher education programs, preservice teachers must also have the opportunity to participate as learners in innovative projects that allow for diverse groups to come together to create a unique and dynamic outcome. As we think about the importance that projects such as these can play in the development of preservice teachers, we need only look toward what education researchers and practitioners have identified. In a 2013 report, *Teaching 2030: Leveraging Teacher Preparation 2.0*, the authors noted that “preparation programs can do a great deal to model the instruction, collaboration, and leadership that they want their candidates to practice as teachers” (Allen et al., 2013, p. 16). They went on to specifically comment on the importance of interdisciplinary work in modeling these practices. “An interdisciplinary education is critical to ensuring that teachers know how to think critically, analyze situations, and apply what they know in a wide range of school environments, tailoring instruction to meet individual students’ needs along the way” (Allen et al., 2013, p. 29).

As we move toward the next steps in our research on these projects, it is our intent to quantify the impact on students utilizing the seven survival skills outlined by Wagner (2010) as the basis for our study. By looking at each of the areas, we will further investigate the impact on the subgroups of students within specific majors as well as the broader impact on the cross-disciplinary teams.

CHALLENGES AND POSSIBLE EXTENSIONS

Although an interdisciplinary project such as this has effected great value and learning by both students and faculty, it is not without its challenges. Perhaps one of the most pressing issues for replicating such a process is working with the existing course infrastructure to make this happen. At Butler University, we have found the structure of the course to vary across colleges, with some offering it as part of a required senior thesis project and others as independent study. Still other students voluntarily participate without receiving any credit. A secondary issue is how to finance the book project. We were fortunate to receive some initial grant funds to offset publication costs and supplement the income from purchased books. As the project has evolved, we have since moved to either offering the teams a loan from this fund and/or asking them to pre-sell a certain number of books ahead of time. In this case, the risk is minimized and an order is placed only after cash is received. Most important, we have learned as advisors not to set overly rigid policies but rather to leave the process rather ambiguous so that students can take initiative and figure it out independently.

While the process described above has worked well at Butler University, it is a constant work in process—with learning, customizing, and evolution taking place each year. Nonetheless, there are likely many components that could be replicated elsewhere. While we encourage imitation, we do so with hesitation. There is a need to customize the process to each university. At Butler, for example, pharmacy is one of the largest colleges, and thus it makes sense for us to focus on health-related topics; also, the project idea originated with the pharmacy program. At other schools, different subject matter may be more appropriate—whether at a school of design, engineering, math, medicine, or any other professional area.

Innovative pedagogy was at the heart of the learning objectives developed by faculty as they came together from across campus to develop this project—as we attempted to exemplify the idea of creating within Bloom's Taxonomy. Students learn best through integrative, creative projects. While the pedagogical structure is utilized in a higher education environment, it also provides an opportunity for incubating the growth of innovative educators as they participate in processes that they will use with students in their own classrooms and larger school communities.

With technology constantly evolving, and with the increasing use of tablets and other electronic reading devices, it is acknowledged that such forces have affected the children's book industry. Yet we think this simply offers further room for evolution of the book project. Already, the last book has been made available on Amazon.com as an e-book. What if students focused solely on e-books (which are much less costly to publish) or secondarily on developing a smartphone application as an extension of the project? The possibilities are endless.

As universities look to replicate this model on their campuses, the key is to begin by finding like-minded colleagues to jump into the project, but with the caution that these colleagues should cross multiple disciplines in order to model the interdisciplinary approach that will be used by the students. Utilize existing structures on campus as much as possible so that the project does not become another higher education silo that is a "best kept secret" at your institution. For example, our students participate in an existing undergraduate research conference hosted by our university, so that students can share the outcomes of the work. Finally, don't overlook constituent groups that might have an interest in the topic about which your students are writing. Our students have found both funding and publicity partners in our state department of health, drugstores, and even our state bicentennial commission.

CONCLUSION

Through a diverse collaboration of multiple colleges within a university, students and faculty can reap the benefits of interprofessional collaboration via writing and producing books. Now that we, along with several groups of students at Butler University, have published several books around health care and STEM subject matter over the course of several years, we hope to spread the concept of interprofessional collaboration and entrepreneurial behaviors in students moving forward. Through the framework of Wagner's work (2010, 2012), we believe that we have increased student learning in all seven domains—critical thinking; problem solving; collaboration across networks and leading by influence and agility; acting entrepreneurially and taking initiative; accessing and analyzing information; employing effective oral and written communication; and curiosity and imagination. We hope projects like these flourish not only now, but well into the future.

REFERENCES

- Allen, M., D. Braunfeld, S. C'de Baca, C. Chandler, K. Cortelyou, S. Highley, . . . J. Holland (2013). *Teaching 2030: Leveraging Teacher Preparation 2.0*. Retrieved June 1, 2015, from http://www.teachingquality.org/sites/default/files/TEACHING_2030_Leveraging_Teacher_Preparation.pdf
- Bass, R. (2012). Disrupting ourselves: The problem of learning in higher education. *EDUCAUSE Review*. Retrieved May 28, 2015, from <http://www.educause.edu/ero/article/disrupting-ourselves-problem-learning-higher-education>
- Breugst, N., A. Domurath, H. Patzelt & A. Klaukien (2012). Perceptions of entrepreneurial passion and employees' commitment to entrepreneurial ventures. *Entrepreneurship: Theory & Practice*, 36(1), 171-192.
- Casner-Lotto, J. & L. Barrington (2006). *Are they really ready to work? Employers' perspectives on the basic knowledge and applied skills of new entrants to the 21st century U.S. workforce*. Retrieved June 1, 2015, from http://www.conference-board.org/pdf_free/BED-06-Workforce.pdf
- Covin, J. G. & D. P. Slevin (1989). Strategic management of small firms in hostile and benign environments. *Strategic Management Journal*, 10(1), 75-87.
- Epstein, N. N. (2014). Multidisciplinary in-hospital teams improve patient outcomes: A review. *Surgical Neurology International*, Supplement, 7(5), 295-303.
- Gleeson, B. & M. Roza (2014). The silo mentality: How to break down the barriers. *Forbes.com*. Retrieved June 1, 2015, from <http://www.forbes.com/sites/brentgleeson/2013/10/02/the-silo-mentality-how-to-break-down-the-barriers>
- Hart Research Associates (2013). *It takes more than a major: Employee priorities for college learning and student success*. Retrieved June 1, 2015 from https://www.aacu.org/sites/default/files/files/LEAP/2013_EmployerSurvey.pdf
- Hromek, R. & S. Roffey (2009). Games as a pedagogy to promote social and emotional learning: "It's fun and we learn things." *Simulation and Gaming*, 40(5), 626-644.
- Janis, I. L. (1972). *Victims of Groupthink*. New York: Houghton Mifflin.
- Johnson, J. E. & B. R. Envick (2014). Assessing the learning goal outcomes of an interdisciplinary entrepreneurship cohort program: A comprehensive survey approach. *Journal of Entrepreneurship Education*, 17(1), 135-149.
- Kauffman Foundation (2011). Young Invincibles Policy Brief. Retrieved June 1, 2015 from http://www.kauffman.org/~media/kauffman_org/research%20reports%20and%20covers/2011/11/millennials_study.pdf
- McLaren, K. (2013). *The Art of Empathy: A Complete Guide to Life's Most Essential Skills*. Boulder, CO: Sounds True.
- Mollick, E. (2014). The dynamics of crowdfunding: An exploratory study. *Journal of Business Venturing*, 29(1), 1-16.
- Neck, H. K., P. G. Greene & C. G. Brush (2014). *Teaching Entrepreneurship: A Practice-Based Approach*. Northampton, MA: Edward Elgar.

-
- Paul, R. & L. Elder (2014). Learning the art of critical thinking. *Rotman Management*, January, 40-45.
- Pink, D. H. (2005). *A Whole New Mind*. New York: Penguin Group.
- Pink, D. H. (2011). *Dive*. New York: Riverhead Books.
- Surowiecki, J. (2004). *The Wisdom of Crowds: Why the Many Are Smarter than the Few and How Collective Wisdom Shapes Business, Economies, Societies and Nations*. New York: Doubleday.
- Vallerand, R. J., C. Blanchard, G. Mageau, R. Koestner, C. Ratelle, M. Léonard, . . . J. Marsolais (2003). Les passions de l'Âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, 85, 756-767.
- Wagner, T. (2010). *The Global Achievement Gap: Why Even Our Best Schools Don't Teach the New Survival Skills Our Children Need—and What We Can Do about It*. New York: Basic Books.
- Wagner, T. (2012). *Creating Innovators: The Making of Young People Who Will Change the World*. New York: Scribner.
- Welch, M., S. Sheridan, A. Fuhrman, A. Hart, M. Connell & T. Stoddart (1992). Preparing Professionals for Educational Partnerships: An Interdisciplinary Approach. *Educational Psychology Papers and Publications*. Paper 24.

Exhibit A: Examples of Children's Book Projects at Butler University

Title	Year Published	Colleges Involved	Book Format & Availability
<i>Prescription to My Younger Self: What I Learned after Pharmacy School</i>	2008	College of Pharmacy and Health Sciences; Jordan College of the Arts	Book (Amazon)
<i>Who's Who in Healthcare: Global Healthcare Systems</i>	2010	College of Pharmacy and Health Sciences; Jordan College of the Arts	Not published
<i>Pharmacy and Me</i>	2012	College of Education; College of Pharmacy and Health Sciences; Jordan College of the Arts	e-book (Amazon); Book (Butler Campus Store*)
<i>He Huffed and He Puffed But...A Tale of a Wolf with Asthma</i>	2013	College of Business; College of Education; College of Pharmacy and Health Sciences; Jordan College of the Arts	e-book (Amazon); Book (Butler Campus Store*)
<i>Max Greene & The Vaccine Team</i>	2015	College of Business; College of Education; College of Pharmacy and Health Sciences; Jordan College of the Arts	Book (Butler Campus Store*)
<i>The Gifts of Indiana: A Tale of Three Birthdays and One Grand Adventure</i>	2015	College of Business; College of Education; College of Pharmacy and Health Sciences; Jordan College of the Arts	e-book (Amazon); Book (Butler Campus Store*)

* Butler Campus Store website: <http://www.bkstr.com/butlerstore/home>

BUILDING A SYSTEMATIC FRAMEWORK FOR ENTREPRENEURSHIP EDUCATION

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ABSTRACT

The importance of entrepreneurship education that positively impacts on the creation of new ventures has been widely recognized. Despite numerous studies conducted to evaluate the effectiveness of entrepreneurship education within a university setting, the results are mostly fragmented. Most studies are focused on the unsystematic approach to entrepreneurship education that partially incorporates curricula, certain pedagogy, institutional support, and assessment. This research thus proposes a systematic framework for entrepreneurship education as guidelines for attaining effective learning and understanding priorities of key stakeholders within a university to develop entrepreneurial graduates.

Key words: *entrepreneurship; entrepreneurship education; effectiveness of entrepreneurship education; effective learning; systematic framework; entrepreneurial graduates.*

INTRODUCTION

The role of entrepreneurs has been respected as a great contributor to the economic development of most nations (Ogbo, 2012). Nations develop faster if they have high quality, creative, and innovative entrepreneurs that implement new ideas into practical action in every business. Entrepreneur is an important issue in developing countries. For example, Thailand has an established business ownership rate of 33.1%, Indonesia has 11.9%, Malaysia has 8.5%, and Philippine has 6.2% (Global Entrepreneurship Monitor, 2014).

Entrepreneurship Education (EE) has a vital role in guiding all learners to become more entrepreneurial-minded (Hegarty, 2006). The implementation of EE within universities aims to infuse the entrepreneurial culture and spirit into students, as well as creating new educated entrepreneurs and new businesses (U.S. Department of Commerce, 2013). In other words, the expected outcome is to produce well-educated entrepreneurs that will create jobs. Nevertheless, according to 46 case interviews at European Universities, there are several barriers facing EE: EE depends on the efforts of a limited number of people; academic staff members lack the time to engage in EE; educators' inadequate competence; lack of funding to support EE; the opposition of academic staff members to the introduction of EE; lack of support for EE from the government; lack of good-quality material; lack of academic credibility; lack of recognition for excellent EE; and lack of support from top management (Directorate-General for Enterprise and Industry, 2008). Whereas, according to a survey result from 549 company founders in the United State, 70% said that university education was important to support students in becoming

successful entrepreneurs (Wadhwa et al. 2009).

Several studies of EE were conducted in order to support students in becoming successful entrepreneurs. Most of the current researches tend to focus on the unsystematic approach to EE that partially incorporates content (Co & Mitchell, 2006), mapping of EE within a higher education institution (Solomon, 2007; Varblane & Mets, 2010), delivery method (Co & Mitchell, 2006; Heinonen & Poikkijoki, 2006; Tan & Ng, 2006), psychological aspects of students (Ibrahim & Soufani, 2002; Gelderen, 2010) and the importance of students' selection process (Dhliwayo, 2008).

The objective of this research is to propose a systematic framework for EE by: (a) creating a guideline for effective learning to develop entrepreneurial graduates; (b) understanding the priorities for effective learning to develop entrepreneurial graduates; (c) identifying areas of opportunity for learning improvement. The framework covers all stakeholders such as students, staff members and the institution, to manage EE effectively (Piper, 1993). It needs to involve all important aspects that support the students to become entrepreneurs, it support from staff members or from the institution (Herrmann et al., 2008).

The structure of this paper consists of introduction, literature review, building the proposed conceptual model, discussion and conclusion. Introduction contains problem statements that lead to the questions of this research. Literature review discusses the findings and filling the gaps of this research area, which leads to propose a systematic framework of EE. This is followed by an explanation of how to build this systematic framework. In the discussion section, the main findings and scientific contributions of this research are explained. Finally, the summary of this research is shown in the conclusion section.

LITERATURE REVIEW

Literature Review Method

The method adopted are for the purpose to provide a comprehensive and critical literature review of empirical research in EE. A schematic representation of literature review method adopted in this research is given in Figure 1. The issues of database selection, articles selection, articles classification, and analysis of classified articles will be discussed under the literature review schematic.

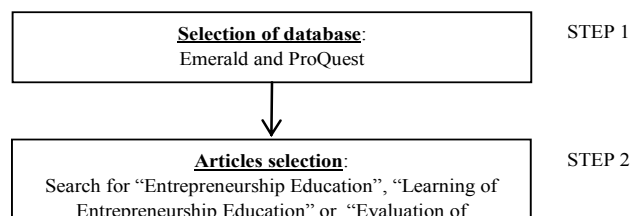


Figure 1: Literature Review Method

Step 1: Selection of database

The articles were collected from Emerald and ProQuest.

Step 2: Article selection

Emerald Database

The exact phrases “Entrepreneurship Education” (5714 total results), “Learning of Entrepreneurship Education” (3687 total results) and “Evaluation of Entrepreneurship Education” (2572 total results) were searched for in journal-article title. From the first 100 results displayed through each keyword, articles were selected by their titles’ relevance to the entrepreneurship education topic. The search was limited to the first 100 articles of each keyword because it was already saturated.

The keyword “Entrepreneurship Education” resulted in 42 articles, the keyword “Learning of Entrepreneurship Education” had 2 articles, and the keyword “Evaluation of Entrepreneurship Education” brought up 7 articles. Next, the articles were selected by reading the abstracts relating to the “business process” or “main activities” of EE, such as curriculum, pedagogy, institutional support, assessment of EE, and theory of EE. The keyword “Entrepreneurship Education” resulted in 28 articles, the keyword “Learning of Entrepreneurship Education” had 1 article, and the keyword “Evaluation of Entrepreneurship Education” came up with 5 articles. In total, all keywords resulted in 34 articles. The illustration of article selection can be seen in Table 1.

ProQuest Database

The exact phrases “Entrepreneurship Education”, “Learning of Entrepreneurship Education” and “Evaluation of Entrepreneurship Education” were searched for in full text form only through “Basic Search”, with a total of 4235 results. From the first 150 displayed results, articles were selected by relevance of their titles to the EE topic. The result was 15 articles, followed by selecting articles through reading abstracts related to the “business process” or “main activities” of EE such as curriculum, pedagogy, institutional support, assessment of EE, and theory of EE. The final result is 6 articles. The search was limited to the first 150 articles of each keyword because of saturation. Illustration of article selection can be seen in Table 1.

Table 1			
ARTICLE SELECTION FROM EMERALD AND PROQUEST			
KEYWORDS	TOTAL RESULTS	SELECTION-I (By Title)	SELECTION-II (By Abstract)
EMERALD			
“Entrepreneurship Education”	5714 (Search limited to the first 100 articles in display)	42	28
“Learning of Entrepreneurship Education”	3687 (Search limited to the first 100 articles in display)	2	1
“Evaluation of Entrepreneurship Education”	2572 (Search limited to the first 100 articles in display)	7	5
Total		51	34
PROQUEST			
“Entrepreneurship Education”, “Learning of Entrepreneurship Education” and “Evaluation of Entrepreneurship Education”	4235 (Search limited to the first 150 articles in display)	15	6

Step 3: Classification of articles

In this step, the 40 selected articles were critically analyzed for classification. Initial attempts to analyze this collection of articles stemmed from the goal of this research, which is an attempt to develop a theory that explains entrepreneurial learning. There seems to be a number of enduring educational issues to which these long-lasting concepts relate – those concerning Learning input; Learning process; Learning assessment and evaluation, and Theory of Entrepreneurship Education.

This framework of categorization is based on an analytical review of program evaluation to judge its performance. Harvey (2002) noted that assessment may focus on input (such as teaching staff, learning resources), process (such as teaching, learning, support services) or outcomes (such as students’ academic standards of achievement or professional competence, employment rates, student perception of their learning). Assessment evidence includes statistical indicators, direct observation and direct evaluation of research output, student and graduate views, employer views, student performance, self-assessment and other documentation, discussion and interviews with teachers, students and managers, and perceptions of other

agencies, such as professional bodies (Harvey, 2004). The characteristics of those classes can be seen in Table 2.

Table 2 CHARACTERISTICS OF ARTICLE CLASSIFICATION		
NO	CLASSES	CHARACTERISTICS
1	Learning Input	The purpose of the program, target audience, the type of knowledge, skill and attitude that students are expected to acquire.
2	Learning Process	The process of learning in order to fulfill students' cognitive needs, affective needs, psychomotor needs and social needs through different teaching methods such as discussion, guest speakers, case studies, lectures, video presentations, computer simulations, role play, research projects, real venture set-ups, internships, company visits, workshops, games and competitions, feasibility studies, small business consulting, community development, web-based assignments, entrepreneurship courses on the web, offering information on the web, offering management and technical assistance; other institutional facilities that support the learning process such as lecturers, tutors, administrators, entrepreneurship budgets, roles in the community and outreach activities.
3	Learning Assessment and Evaluation	Indicators for impact assessment such as examination scores, start-ups by graduates, business performance, attitude and intention to act, student or alumni satisfaction; assessment methods such as tests/examinations, making business plans, making research papers; the quality of the program's performance.
4	Framework of Entrepreneurship Education	Framework or concepts concerning entrepreneurship education; a set of principles on which the practice of an entrepreneurial activity is based; a set of principles regarding proper entrepreneurs behavior.

Step 4: Analysis of classified articles

This step identifies the similarities and differences of classified articles to find research gaps of EE in empirical research, in addition to presenting significant findings from existing literature. As stated in numerous studies, EE is becoming more and more important worldwide. While research work in entrepreneurship is growing and gaining increased legitimacy within the scientific community, on the other hand it lacks comprehensive elements of entrepreneurship learning within university. Thus, it can be said that the research in entrepreneurship is still at an exploratory stage. This is probably due to the fact that most studies focus on specific programs or courses. Few studies present developed hypotheses and even fewer build on theories to elaborate the hypotheses. There are four classifications of articles with six main attributes of related issues in EE: coverage of background factors, curriculum, pedagogy, institutional supports, assessment, and theories of entrepreneurial learning within universities. Most authors perform empirical or non-empirical studies with main scopes of curriculum, pedagogy, institutional support, and assessment.

The Literature Review Analysis

Entrepreneurship Education (EE) assumes extraordinary relevance within academic programs all over the world (Alberti et al. 2004), and there seems to be widespread recognition that entrepreneurship can contribute to economic development (Szirmai et al., 2011). The objective of EE as presented by the European Union (2002) includes raising peoples' awareness of self-employment as a career opportunity, promoting the development of personal qualities that

are relevant to entrepreneurship such as creativity, risk taking, and responsibility, and providing the technical and business skills that are needed in order to start a venture. EE is defined as purposeful intervention by an instructor in the life of a learner, to impart entrepreneurial qualities and skills that enable the learner to survive in the business world (Isaacs et al., 2007). Alberti et al. (2004) defined EE as the structured and formal transmission of entrepreneurial competencies; it refers to the skills, concepts and mental awareness used by individuals during the process of starting and developing their growth-oriented ventures.

A study conducted by Varblane & Mets (2010) focused on mapping EE in 774 higher education institutions in 22 European transition countries. Analysis of information obtained from web-based sources and a questionnaire identified 332 institutions in the region offering entrepreneurship-oriented courses, modules or curricula. They explored entrepreneurship courses, curricula of entrepreneurship, entrepreneurship centers and teaching methods, with results provided by descriptive statistics.

Similarly, a study conducted by Solomon (2007) explored mapping of course offering, teaching methods, periodicals used in class, and technological support from institutions. This study, the sixth survey conducted by the author since 1979, provided an analytical overview of EE in the USA from 2004 to 2005 in 270 institutions. It also provided results by descriptive statistics.

According to Co & Mitchell (2006), the most popular courses focused on Entrepreneurship and Small Business Management as an overview of the knowledge and skills needed for the identification, evaluation, and exploitation of opportunities. The findings showed that teaching of entrepreneurship focused on traditional classroom delivery, such as lectures, while entrepreneurship research in South Africa was considered less rigorous than other management disciplines.

Another study from Indonesia measured the effectiveness of entrepreneurship courses within Bengkulu University; but they were concerned with learning and teaching resources, common teaching methods used, and student satisfaction toward learning outcomes by using questionnaires (Abduh et al. 2012). It provided results by descriptive statistics.

The study conducted by Fayolle et al. (2006) was experimental research, but their focus was only on evaluation of certain programs using entrepreneurial intention (Theory of Planned Behavior) as a tool to measure the effectiveness of EE. It provided results with statistical tools to examine the relationship between variables in the study.

The viewpoint conducted by Gelderen (2010) presented the importance of autonomy as the guiding aim of EE. The primary aim was to allow students to work from their own inner motivational resource base. The review conducted by Dhliwayo (2008) presented the importance of student selection. They state that only students with the right entrepreneurial attitude would be successfully processed or graduate into an entrepreneur. Another review conducted by Ibrahim & Soufani (2002) presented the model of entrepreneurship training, in which they discussed the importance of entrepreneurial traits, competences, and managerial skills to produce entrepreneurial graduates. Henry et al. (2005) reviewed learning processes in different situations, namely in the classroom and real world, and concluded the criteria of success within both situations. An important review conducted by Mwasalwiba (2010) assessed the alignment existing between generic objectives, target audience, teaching methods used, and impact indicators used to measure effective learning in EE.

Salamzadeh et al. (2011) proposed a systematic framework for entrepreneurial university. The framework includes special input (resources, culture, rules and regulations, structure,

mission, entrepreneurial capabilities, and expectations of society, industry, government and market.), processes (teaching, research, managerial processes, logistical processes, commercialization, selection, funding and financial processes, networking, multilateral interaction, and innovation, research and development activities), output (entrepreneur human resources, effective research in line with market needs, innovations and inventions, entrepreneurial networks, and entrepreneurial centers) and aimed to mobilize all of its resources, abilities and capabilities in order to fulfill its Third Mission. They conducted a set of semi-structured interviews with 25 experts in this domain.

It is very important to know the definition of systematic framework before beginning to propose it in this research. According to the basic definition of systematic and framework from several dictionaries, there are various explanations. The mapping definition of systematic and framework can be seen in Table 3.

Table 3 THE MAPPING DEFINITION OF SYSTEMATIC AND FRAMEWORK		
WORD	DEFINITION	REFERENCES
Systematic	Characterized by, based on, or constituting a system: systematic thought.	(American Heritage® Dictionary of the English Language, 2011)
	Working or done in a step-by-step manner; methodical: a systematic worker; a systematic approach.	
	Characterized by the use of order and planning; methodical: a systematic administrator.	(Collins English Dictionary - Complete & Unabridged, 2003)
	Having, showing, or involving method, plan or an ordered and comprehensive assemblage of facts, principles, doctrines, or the like in a particular field of knowledge or thought	(<i>Systematic-1</i> , n.d.)
	Relating to, or concerned with classification; neat, orderly, organized, regular, methodical, systematized	(<i>Systematic-2</i> , n.d.)
Framework	The basic structure of something; a set of ideas or facts that provide support for something	(<i>Framework</i> , n.d.)
	A set of assumptions, concepts, values, and practices that constitutes a way of viewing reality.	(American Heritage® Dictionary of the English Language, 2011)
	A structure or frame supporting or containing something	(Collins English Dictionary - Complete & Unabridged, 2012)

Based on the basic definition of systematic and framework from dictionaries, the definition of Systematic Framework can then be formulated. A systematic framework is a well-organized basic structure of assumptions, concepts, values, and practices that constitutes a way of viewing reality, showing a comprehensive (complete and includes all aspects that are important) assemblage of facts or principles in a particular field of knowledge.

The project partners organized by Herrmann et al. (2008) addressed effective learning and institutional support for EE to develop entrepreneurial graduates within a university context. They proposed a framework for entrepreneurship education strategy based on a set of guiding principles informed by international expert panel members. Their framework can be categorized as systematic framework because it is well-organized and includes all aspects of concepts, values, and best practices that are important for developing entrepreneurial graduates within a

university. This framework can be used as a starting guideline for effective learning to develop entrepreneurial graduates. Nevertheless, it is unclear whether the structured responsibility regarding the key stakeholders within a university (students, staff, and institution) relate to all important aspects of concepts, values, and best practices based on international expert panel members. It also does not show the pattern of interaction among its key stakeholders and assurances of learning in the implemented framework. The framework contains the need for an enabling institutional environment, the engagement of key stakeholders within and outside the institution, the development of entrepreneurial pedagogic approaches in teaching, and learning and support practices.

The need for enabling institutional environments means that universities can provide the right environment that will inspire and motivate individuals to find opportunities, acquire resources, and take action in a variety of contexts that have relevance to their lives and aspirations. In such environments, there should be clarity about entrepreneurial outcomes, the alignment between entrepreneurial outcomes and appropriate ways of learning, and the kind of learning that needs to take place. The engagement of key stakeholders means that entrepreneurship does not take place in isolation from its broader environment, which means that continuous learning is sustained through relationships with stakeholders and others. Indeed, successful entrepreneurship is more likely to happen in a situation where the stakeholders provide learning opportunities and facilitate the creation and exchange of tacit knowledge. Development of entrepreneurial pedagogic approaches in teaching, learning and support practices means that the delivery of the desired entrepreneurial outcomes challenges institutions and educators to review and reflect on what needs to be taught and learnt and how the appropriate learning environments and approaches can be created. Such practices should be clearly aligned with the existing goals, outcomes, and assessment processes (Herrmann et al., 2008).

According to the articles for this literature review, studies on entrepreneurship education can be analyzed by an implementation framework from Herrmann et al. (2008) with which to discover the research gap from entrepreneurship education literature. The results of analysis that uses the set of guiding principles from Herrmann et al. (2008) can be seen in Table 4.

Table 4 MAPPING OF ARTICLES FOR ENTREPRENEURSHIP EDUCATION FRAMEWORK			
Author/Year	Guiding Principles for Entrepreneurship Education Strategy		
	Institutional environment	The engagement of key stakeholders within and outside the institution	Development of entrepreneurial pedagogic approaches in teaching, learning and support practices
Ibrahim and Soufani (2002)	-	-	√
Co and Mitchell (2006)	√	-	√
Tan and Ng (2006)	-	-	√
Solomon (2007)	√	-	√
Dhliwayo (2008)	√	-	-
Gelderren (2010)	-	-	√
Mwasalwiba (2010)	√	-	√
Varblane and Mets (2010)	√	-	√
Salamzadeh (2011)	√	√	√

According to the above mapping, little attention has been dedicated to all elements of learning that are important to develop entrepreneurial graduates within a university context. Most studies focused on the institutional environment (curriculum, institutional supports, entrepreneurial traits, partial assessment) and the development of entrepreneurial pedagogic approaches in teaching, learning and support practices. There are limited studies that focused on a systematic framework of entrepreneurship education.

The study conducted by Salamzadeh et al. (2011) proposed a systematic framework for an entrepreneurial university using the Input-Process-Output-Outcome (IPOO) Model. The framework covers all elements of learning that are important for an entrepreneurial university. According to the IPOO model, there are the main valuable aspects of input, process, output, and outcome, but there is unclear structured responsibility regarding the key stakeholders within the university (students, staff, institution) related to those main valuable aspects. The IPOO model does not show the pattern of interaction among its key stakeholders and the assurance of learning. Meanwhile, Ropke (1998 as cited in Salamzadeh, 2011) considers the entrepreneurial university as an Entrepreneur Organization that views three items: first, a university as an organization adopts an entrepreneurial management style (institution); second, its members act entrepreneurially (student and staff); and third, it follows an entrepreneurial pattern to interact with its environment (student, staff, and institution).

A study conducted by Piper (1993) applied a general framework of management in education within a university context. The framework involves all key stakeholders that support management in education, such as students, staff members, and institution. Each of those key stakeholders has important responsibilities, namely ability, opportunity, and incentive. The framework by Piper (1993) meets all sets of guiding principles informed by Herrmann et al. (2008): it is well-organized, with clearly-structured responsibility regarding the key stakeholders within the university (students, staff, and institution) relating to all aspects of concepts, values, and best practices that are important for developing entrepreneurial graduates. It also has clear patterns of interaction among its key stakeholders within the university.

According to the systematic framework proposed from literature, the systematic framework for EE can be characterized by several components in the context of entrepreneurship education:

- (a) learning goals of EE: what the program is trying to do and for whom
- (b) comprehensive
- (c) well-organized
- (d) allocation of resources: clearly-structured responsibility of key stakeholders, clear patterns of interaction among its key stakeholders
- (e) assurance of learning, which are concerns expressed since the last evaluation, including but not limited to the target population, objectives, resources and personnel responsibilities

The analysis of framework proposed by literature based on the systematic framework's characteristics can be seen in Table 5.

Table 5 AN ANALYSIS OF PREVIOUSLY- PROPOSED SYSTEMATIC FRAMEWORK RESEARCH		
No	Characteristics	Systematic Framework Proposed by Previous Researches

		Piper (1993)	Herrmann et al. (2008)	Salamzadeh et al. (2011)
(a)	Context of entrepreneurship education	x	√	x
(b)	Comprehensive	√	√	√
(c)	Well-organized	√	√	√
(d)	Allocated resources	√	x	x
(e)	Assurance of Learning	x	x	x

Based on the above analysis, the framework proposed by Piper (1993) can be used as a systematic guideline for effective learning within the university. The main attributes for components in the EE context are equipped from the framework proposed by Herrmann et al. (2008). Since all above-mentioned systematic frameworks do not have the Assurance of Learning component, a systematic framework is thus proposed in this research for a better understanding that fills out the research gap from literature.

According to the research gap from literature, the following research questions are formulated:

RQ-1: What is the systematic framework of entrepreneurship education for effective learning within a university context?

RQ-2: How is the systematic framework of entrepreneurship education for effective learning within a university context?

The objective of this research is to build a systematic framework for entrepreneurship education within a university context.

BUILDING THE PROPOSED CONCEPTUAL MODEL

Conceptual framework possesses ontological, epistemological, and methodological assumptions, and each concept within a conceptual framework plays an ontological or epistemological role. The ontological assumptions relate to knowledge of the way things are, the nature of reality, real existence, and real action. The epistemological assumptions relate to how things really are and how things really work in an assumed reality. The methodological assumptions relate to the process of building the conceptual framework and assessing what it can tell us about the real world (Jabareen, 2009). Based on the title of Building a systematic framework for entrepreneurship education, the meaning of entrepreneurial graduate will be discussed in Phase 1 as the ontological assumptions; the question of how do we know who entrepreneurial graduates really are? will be discussed in the Phase 2 as the epistemological assumptions; and the question of how do we build the entrepreneurial graduates within a university context? will be discussed in Phase 3 as the methodological assumptions. The procedures to build a conceptual framework are as follows:

Phase 1: Mapping definition of entrepreneurial graduate (ontological assumptions).

Ontology is defined as the study of being (Crotty, 2003). It is concerned with what kind of world we are investigating, with the nature of existence, with the structure of reality as such. Guba & Lincoln (1989 as cited in Adam, 2014) state that the ontological assumptions are those that respond to the question of what is there that can be known? or what is the nature of reality?

Blaikie (2000 as cited in Adam, 2014) states that ontology refers to claims and assumptions that are made about the nature of social reality, claims about what exists, what it

looks like, what units make it up and how these units interact with each other. The reality of what exists is ontology. It is about asking about what constitutes reality and how we understand its existence. Ontology is the science or the analysis of what is and how it is (Foerster, 1996 as cited in Adam, 2014). Ontology is all about the nature of the world around us. Particularly, it is about the small part of reality which the researcher chooses to address.

The topic of this research concerns a phenomenon which is about the building of a systematic framework for EE to develop entrepreneurial graduates. This phenomenon of entrepreneurial graduates is important to investigate because some countries have a low number of established businesses that can contribute significantly to economic development. According to literature, the way to improve well-established business is through entrepreneurship education. Entrepreneurship education has a vital role in guiding all students to become more entrepreneurial-minded (entrepreneurial graduates). The entrepreneurial-minded leads the students to become successful entrepreneurs.

Based on the topic of this research, the ontological questions are what is the form and nature of reality in the entrepreneurial graduates? and how can we understand its existence of entrepreneurial graduates? The answer to these questions, the nature of reality for the entrepreneurial graduate is external to the researcher and represented by objects in space. The reality of the entrepreneurial graduate can be captured by our senses and predicted.

The nature of reality is that the role of entrepreneurs has been respected as a great contributor to economic development in most nations. Nations will develop faster if they have high quality, creative, and innovative entrepreneurs that implement new ideas into practical action in every business. This means the reality of successful entrepreneurs is assumed to be the most important aspect in economic development. But in reality, some countries have a low number of established business ownerships, due to a lack of education. In other words, there is a lack of educated entrepreneurs that could be sustained in its highly competitive environment. The reality of low-educated entrepreneurs leads universities to participate through creating entrepreneurship education programs that are expected to create more entrepreneurial-minded students (entrepreneurial graduates). In turn, the entrepreneurial graduates lead to the creation of more successful entrepreneurs. An entrepreneurial graduate is objectively interpreted and constantly emerges through a series of entrepreneurial processes (creative processes) within education boundaries. This ontological position directly influences the view of what knowledge about entrepreneurial graduate means.

The next task is to map the spectrum of disciplinary literature regarding the phenomenon of entrepreneurial graduate. This process includes identifying text types and other sources of data. The word entrepreneurial graduate can be found in the discipline of education within the entrepreneurship context. Thus, the headword of Entrepreneurial and Graduate are defined based on dictionaries. The mapping of the definition can be seen in Table 6.

Table 6 MAPPING OF THE DEFINITION OF ENTREPRENEURIAL GRADUATE (ONTOLOGICAL ASSUMPTIONS)		
WORD	DEFINITION	REFERENCES
Entrepreneu	An adjective word relating to a person who	(American Heritage Dictionary of the

Table 6 MAPPING OF THE DEFINITION OF ENTREPRENEURIAL GRADUATE (ONTOLOGICAL ASSUMPTIONS)		
WORD	DEFINITION	REFERENCES
Entrepreneurial	organizes, operates, and assumes the risk for a business venture.	English Language, 2011)
	An adjective word relating to an entrepreneur; entrepreneurial risks	(WordNet 3.0, Farlex Clipart Collection, 2012)
	An adjective word; willing to take risks in order to make a profit	(WordNet 3.0, Farlex Clipart Collection, 2012)
	An adjective word; characterized by the taking of financial risks in the hope of profit; enterprising; an entrepreneurial culture, entrepreneurial spirit thrives on meeting the next challenge	(<i>Entrepreneurial</i> , n.d.)
Graduate	A person who has received a degree from a university or college.	(Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, 2003)
	A person who has been awarded a first degree from a university or college; a student who has completed a course of studies at a high school and received a diploma	(Collins English Dictionary, 2003)
	A person who has received a degree or diploma on completing a course of study at a university, college, or school; a student who holds a bachelor's or first professional degree and is studying for an advanced degree.	(Random House Kernerman Webster's College Dictionary, 2010)
	A holder of an academic degree or diploma; a person who has successfully completed a course of study or training, especially a person who has been awarded an undergraduate or first academic degree.	(<i>Graduate-1</i> , n.d).
	Receive an academic degree upon completion of one's studies	(<i>Graduate-2</i> , n.d).
	A person who has successfully completed a course of study or training, especially a person who has been awarded an undergraduate or first academic degree.	(<i>Graduate-3</i> , n.d).

According to the definitions from dictionaries, Entrepreneurial Graduate is a person who has successfully completed a study that has the spirit or mindset, behavior, attitude, and skills of an entrepreneur, such as opportunity-seeking, initiative-taking, ownership of development, commitment to see things through, personal locus of control (autonomy), intuitive decision-making with limited information, networking capacity, strategic thinking, negotiation capacity, selling/persuasive capacity, achievement orientation, and the willingness to take risk in order to make a profit, and addresses economic and social needs.

Phase 2: Identifying and naming concepts (epistemological assumptions)

The aim in this phase is to read and reread the selected data and discover concepts. This phase answers the question of how do we know what entrepreneurial graduates really are? Generally, this phase allows concepts to emerge from the literature.

Epistemology is a way of understanding and explaining how we know what we know. Epistemology is also concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate (Crotty, 2003).

According to Blaikie (2000 as cited Adam, 2014) epistemology is the possible ways of gaining knowledge of social reality, whatever it is understood to be. Epistemology refers to the theory of knowledge, particularly how we acquire knowledge. It is best understood as the science to analyze the way of human beings comprehend knowledge about what is perceived to exist (Niehaves, 2005 as cited in Adam, 2014). Epistemological assumptions about a research issue under investigation concern the criteria by which valid knowledge about that phenomenon may be constructed (Chua, 1986 as cited in Adam, 2014). It is the theory about reality and is concerned with how we come to know what we know. There is a connection between a theory of reality (epistemology) and reality itself (ontology) (Adam, 2014).

For the epistemological question of how do we know what entrepreneurial graduates really are? The answer is constrained by the answer to the ontological question above. This means that any relationship cannot be assumed. The knowledge of the entrepreneurial graduate is objective and generated deductively from theory of entrepreneurship education.

The knowledge and concept of the entrepreneurial graduate are created in interaction between people and their environment (learning process) within education boundaries. With this view, knowledge of the entrepreneurial graduate is seen as objective constructs. This epistemological assumptions directly influence how the knowledge of Entrepreneurial Graduate is produced.

An important factor that cannot be ignored from the entrepreneurial graduate is entrepreneurial competency; Obschonka et al. (2011) found that early entrepreneurial competence in adolescence had a positive effect on making progress in the venture creation process. Thus, the entrepreneurial graduate is characterized by having entrepreneurial competence.

Competence encompasses knowledge, skills and abilities (Argyris, 1993 as cited in Markowska, 2011). Knowledge is defined as understanding acquired through education and experience; skills are defined as experientially-acquired procedural knowledge, and ability is the aptitude to use knowledge and skills. In an entrepreneurship context, the knowledge, skills and abilities relate to building the capacity to successfully create new means-ends frameworks (Sarasvathy, 2001). Entrepreneurial competencies that are commonly inherent in entrepreneurs are identifying and evaluating business opportunities, decision-making, networking, identifying and solving problems, oral communication abilities, and innovative thinking (Izquierdo et al. 2005).

Phase 3: Constructing the methodological assumptions of the entrepreneurial graduate.

Methodology is the strategy, plan of action, process or design lying behind the choice and use of particular methods and linking the choice and use of the methods to the desired outcomes (Crotty, 2003). The methodological aspect of the theory of knowledge (epistemology) explains how a researcher forms perceptions about a phenomenon being investigated. The methodology refers to the modes of acquiring knowledge about the phenomena. One way of achieving this is through induction. Induction is understood as the extension from individual cases to universal cases. An inductive conclusion means the transfer from (observed, empirical) individual cases to a universal law. On the other hand, knowledge can be acquired through a deductive method.

Deduction is the derivation of a statement from other statements with the help of logical conclusions. It is the derivation of the individual from the universal (Becker & Niehaves, 2007 as cited in Adam, 2014).

The question under the methodological assumptions is of how a researcher forms perceptions about the phenomenon of the entrepreneurial graduate? The transactional nature of this research topic is acquired through the deductive method. It is important to study the previous literature regarding how to develop entrepreneurial graduates, so that it can be synthesized in building a systematic framework. To answer the methodological question of how the researcher will go about finding whatever (s)he believes can be known is through other statements with the help of logical conclusions. The methodological assumptions of how to develop entrepreneurial graduate is a longitudinal process of social interaction within education boundaries and it should have consequences for the theoretical framework of entrepreneurship education and use of theory in the entrepreneurship education field.

Developing entrepreneurial graduates is therefore essential to our future success (Herrmann et al. 2008). It means that the entrepreneurial graduate leads to becoming a successful entrepreneur as a job creator. Entrepreneurial competencies as the important factors embedded within the entrepreneurial graduate will be discussed in this phase. To answer the question of how do we build that entrepreneurial graduate within a university context, is through discussion of how to build the entrepreneurial competencies. This assumption is based on characterizing the entrepreneurial graduate as having entrepreneurial competencies. This phase describes the phenomena from the previous literatures.

The importance of entrepreneurial competence development to entrepreneurial action is well-established. Research suggests that competence reflects the ability to effectively interact with the environment (Skinner, 1995). Johannisson (1991) recognizes that entrepreneurial competence, except for knowledge (know-what) and skills (know-how), also requires the development of appropriate attitudes and motives (know-why), social skills (know-who) and insights (know-when). The know-when competence in particular gains value in dynamic environments.

Entrepreneurial competence development can be studied from the input side (triggers to competence), process (task or behavior leading to competence), or consequences (outcomes of achieving standards of competence). There is also emerging research on triggers of competence development, specifically the process and the consequences of it. Previous research of entrepreneurial competence development can be seen in Table 7 (Markowska, 2011).

Table 7 PREVIOUS RESEARCHES ON ENTREPRENEURIAL COMPETENCE DEVELOPMENT			
AUTHORS	TRIGGERS	PROCESS	CONSEQUENCES
Chandler and Jansen (1992)	Roles	(not available)	Venture success (growth and profitability)
Chandler and Hanks (1994)	Roles Self-efficacy	(not available)	Venture performance
Bird (1995)	Motive/trait Self-concept Social role Skills	Entrepreneurial Learning	Venture success
Schmitt-Rodermund (2004)	Contextual input (including role models) Beliefs (self-concept, self-efficacy) Achievement orientation	(not available)	Entrepreneurial success
Man (2005)	Self-image/social role Motive Trait	Entrepreneurial Learning	(not available)
Man (2006)	(not available)	Entrepreneurial Learning	Entrepreneurial success
Markowski (2011)	Beliefs, Goals, Contextual Embeddedness	Entrepreneurial Learning	Potential domain expertise, entrepreneurial identity

As the consequence, increasing levels of competence do not automatically result in expertise. Bird (1995) makes an important distinction between competence as contributing to excellence in performance and competence as a minimum standard or a baseline. The competencies necessary to launch a venture or implement a business idea may be conceived as baseline competence and highly-effective entrepreneurs (excellent competence) are those that go beyond launch into organizational survival and growth.

Therefore, according to recent research for the framework focus on EE, this phase discusses factors related to entrepreneurial competence within the educational institution setting, encompassing triggers, process, and consequence. The important aspect in EE is setting goals, which assumes the role of the trigger in creating the appropriate process to develop entrepreneurial competence. Goals are an inherent aspect of intentional goal-directed behavior. The extant literature on goals affirms that they can be used by individuals as a self-management technique to arrive at aspired outcomes (Bandura, 1977). The goals of EE should be connected to learning (Fayolle & Gailly, 2008). Two general orientations have been distinguished: learning and performance orientation (Elliott & Dweck, 1988 in Markowska, 2011).

Learning orientation allows individuals to treat failures as challenges and learn from them, while performance orientation is beneficial in situations when results are expected. Individuals with learning orientation search for challenges and learning opportunities and are not afraid of experimenting and trying new things, because their focus is on attaining more competence and skills (Wood & Bandura, 1989). On the other hand, individuals who set performance goals are more inclined to refrain from trying new, often-challenging tasks because they want to remain within their perception of intelligence. They see new challenges as threatening their identity and their perception of their capability (Wood & Bandura, 1989). Thus,

to see entrepreneurs grow and develop their entrepreneurial competencies requires that they have a learning approach that sees failures and obstacles as challenges and opportunities for learning. Learning goals are better when the task at hand is more complex, as is usually the case in entrepreneurship or when the outcomes are unknowable (Noel & Latham, 2006).

The process of competence development is defined as a change in what an entrepreneur is capable of doing, and it refers to a change in the pattern of action coming from the use of available means (Markowska, 2011). Some researchers argue that the different modes of knowledge acquisition can produce different outcomes as they build upon different experiences. Thus, competence development reflects an ability to acquire and use new means (i.e. knowledge). The ability to acquire new knowledge is referred to as learning (Corbett, 2007). Subsequently, learning is seen as a skill that underlies capability development. Thus, understanding how entrepreneurial competence develops requires an understanding of entrepreneurial learning (Markowska, 2011).

The consensus among scholars is that to become entrepreneurial is through direct experience, i.e. learning-by-doing or direct observation (Lackeus, 2013). Hence, entrepreneurial learning is the only way to promote entrepreneurial graduates that have entrepreneurial competencies. The extant literature considers entrepreneurial learning as the main vehicle for competence development (Markowska, 2011). Entrepreneurial learning covers a wide variety of audiences, objectives, contents and pedagogical methods. In this context, the methodological assumptions relate to the educational level that designs an educational program around five specific interrelated questions, which should be addressed in the following order (Fayolle et al. 2006):

- (a) Why (objectives, goals)?
- (b) For whom (targets, audiences)?
- (c) For which results (evaluations, assessments)?
- (d) What (contents, theories)?
- (e) How (methods, pedagogies)?

Phase 4: Integrating concept

The aim in this phase is to integrate the process in phases 1, 2 and 3; and to group together the concept that emerges from literatures. This phase describes the ontological, epistemological and methodological assumptions related to entrepreneurial graduate. The framework is illustrated in Figure 2:

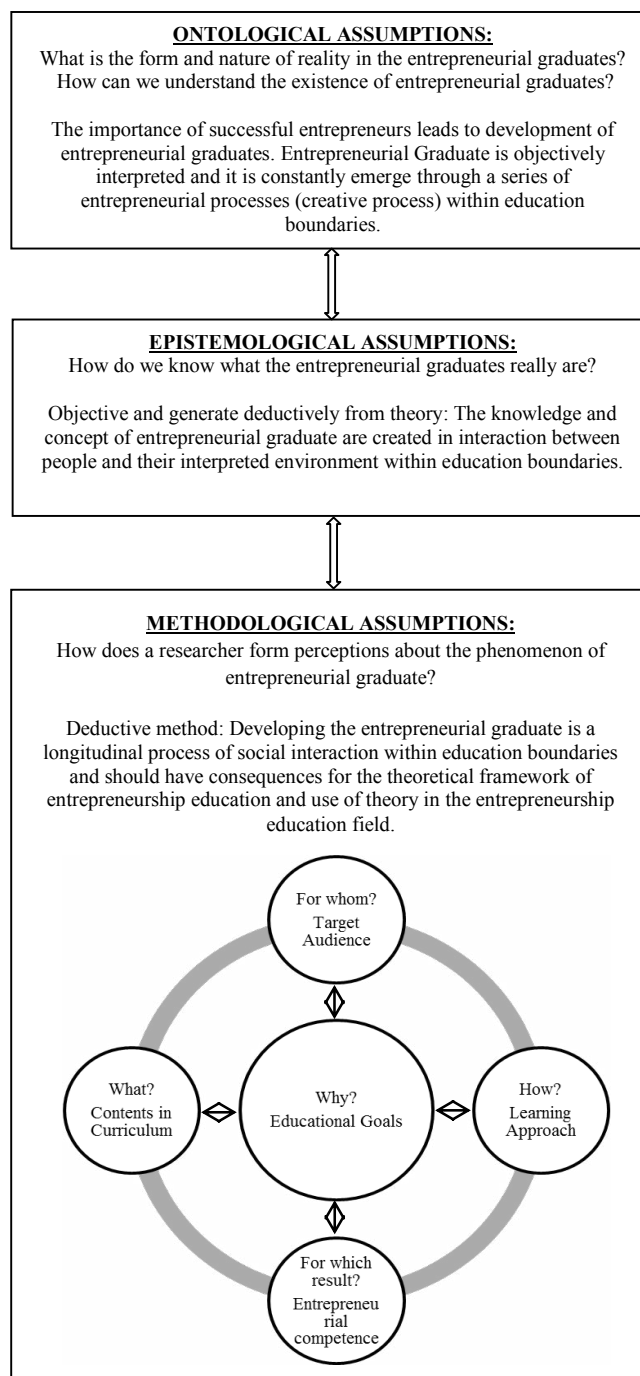


Figure 2: The Framework of Entrepreneurial Graduate

Phase 5: Synthesis and making sense of it all.

The aim in this phase is to synthesize concepts into a theoretical framework. This process is iterative and includes repetitive synthesis until the general theoretical framework makes sense. This phase is explained through an in-depth discussion of how to build entrepreneurial graduates in educational level.

The EE has goals to develop entrepreneurial graduates who achieve standards of competencies, whether as professionals or entrepreneurs. The institutional goals can be placed on the input side as a trigger to develop the graduates' competencies. In order to support their goals, the university creates course content and establishes it into curricula related to its goals and target audiences, and it needs an appropriate learning approach to deliver it effectively. To achieve goals effectively, there are three key actors involved within a university setting, namely students, staff, and institution. They have their own attributes in the education process, such as the ability, opportunity and incentive aspects (Piper, 1993). This framework is used as a guideline for effective learning within a university. The framework for EE can be seen in Figure 3.

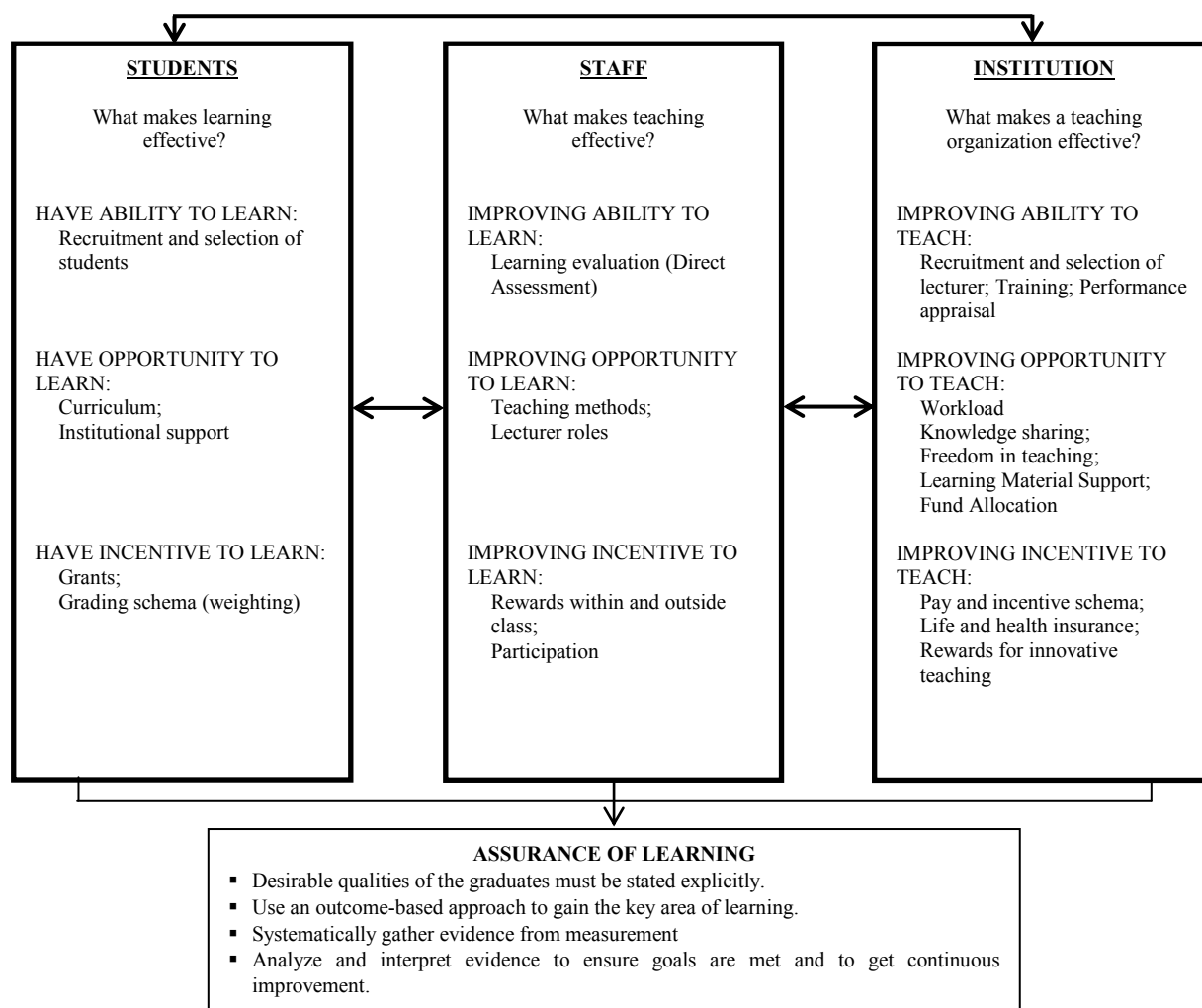


Figure 3: The Framework of Effective Learning for Entrepreneurship Education

Assurance of learning refers to the process of maintaining standards of learning reliably and consistently by applying criteria of success in a program (Mishra, 2007). The approach to achieve students' learning outcome is by using a continuous improvement cycle, akin to a Plan-Do-Check-Action cycle. The first loop depicts students' competences after completing the program and is guided by the vision, mission and values of the institution, which in turn informs the learning goals and learning objectives of the program. The second loop depicts the opportunities provided by institution and is considered through curriculum design, mapping to course-learning objectives, and subsequent delivery of courses that provide students opportunities to learn the knowledge, skills and values laid out in program-learning goals, program-learning objectives, and course-learning objectives. The third loop depicts assessment to see whether the students have learnt the desired learning objectives, collects evidence and checks whether there are gaps. The final loop involves analyzing and interpreting evidence and also involves adjustments to program elements or teaching methods in order to improve student learning outcomes where most needed (Mabin & Marshall, 2011).

Phase 6: Resynthesize the concept and build the entrepreneurial learning framework

The challenge after proposing the framework of effective learning for EE is to adapt it in a systematic framework with logical sense. This phase is a resynthesize from several concepts and is reintegrated to build the systematic framework of EE in order developing entrepreneurial graduates. A systematic framework for entrepreneurship education can be seen in Figure 4.

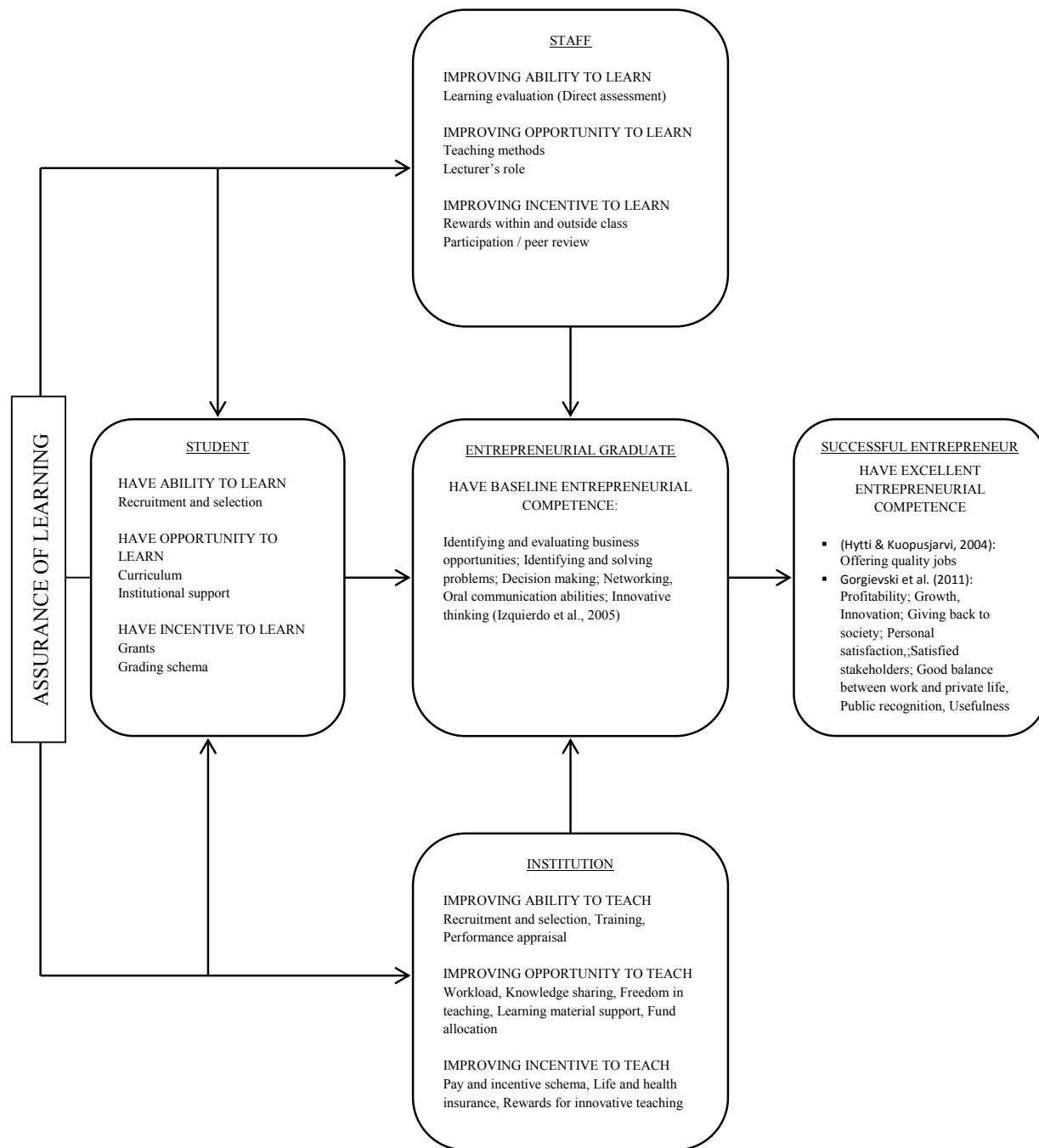


Figure 4: A Systematic Framework for Entrepreneurship Education to Develop Entrepreneurial Graduates

The entrepreneurial graduates who have baseline entrepreneurial competence are capable of launching new ventures. The graduates who have excellent entrepreneurial competence after

completing the entrepreneurial learning within the university will sustain and grow beyond launch to becoming successful entrepreneurs. The criteria of successful entrepreneur include capability to offer quality jobs (Hytti & Kuopusjarvi, 2004); high profitability; significant business growth; unique business innovation; business contribution to society; personal satisfaction for the entrepreneur; stakeholders' satisfaction with the entrepreneur; the entrepreneur has a good balance between work and private life; the business has good public recognition; and the product or service has valuable usefulness for consumers (Gorgievski et al. 2011).

DISCUSSION

The main finding from this conceptual research is the conceptual model analysis of a systematic framework for EE to develop entrepreneurial graduates. This framework covers all key actors within the university; each actor has its own role to create an effective learning process. The scientific contribution from this research is the use of this proposed systematic framework for several goals: (a) as a guideline for effective learning to develop entrepreneurial graduates; (b) to understand the priorities for effective learning to develop entrepreneurial graduates; (c) to help university management to understand the key stakeholders' needs to develop entrepreneurial graduates; (d) to identify areas of opportunity for learning improvement.

There are three conditions that are necessary for students to perform satisfactorily: they must have the ability to learn in order to undertake their studies involved (recruitment and selection); they must have the opportunity to learn to conduct the studies satisfactorily (curriculum, institutional support); and they must have incentives to learn in order to encourage their willingness to study (grants, grading schema). The important aspects for staff members to teach effectively are that they can improve their students' ability to learn (learning evaluation); their students' opportunity to learn in order to conduct their studies satisfactorily (teaching method, lecturer role); and their students' incentive to learn in order to encourage their willingness to study (rewards, participation). The environment is necessary for an educational institution to make a teaching organization effective. It needs to improve the ability to teach its staff members (recruitment and selection, training and development, performance appraisal, pay schema); improve opportunities to teach its staff members to perform their work satisfactorily (workload, knowledge sharing, freedom in teaching, learning material support, fund allocation); and improve incentives so that its staff members are encouraged to do their work satisfactorily (incentive schema, life and health insurance, rewards for innovative teaching).

Those three conditions are necessary as requirements for effective learning. The university management can gain a better understanding of the three key stakeholders' needs, so they can make priorities to develop entrepreneurial graduates. Based on all aspects of learning proposed, this systematic framework can be used to identify the areas of opportunity for learning improvement within the university context.

The previous studies were limited to conducting evaluation of EE within an institution as the whole system. The findings in the previous studies were partial and tended to focus on students and institutions only. There are several studies which focused on input such as the importance of student selection (Dhliwayo, 2008); the importance of entrepreneurial traits, competence, and managerial skills to promote successful entrepreneurs (Ibrahim & Soufani, 2002); and the importance of internal motivation of the students (Gelderen, 2010). Most studies were concerned with mapping entrepreneurship education. The mapping included popular courses, existing teaching focus, curriculum of entrepreneurship, entrepreneurship centers,

teaching methods, periodicals used in the classroom, and technological support from an institution (Co & Mitchell, 2006; Solomon, 2007; Varblane & Mets, 2010). Two other similar studies were also conducted, with one focusing on teaching methods (Tan & Ng, 2006) and the other focusing on learning processes in both the classroom and real world (Henry et al. 2005).

An experimental study on entrepreneurial education within the university level based on the entrepreneurial-directed approach was conducted by Heinonen & Poikkijoki (2006). They used a qualitative method combined with an observation to evaluate the approach feasibility and applicability to entrepreneurial education. They also focused their study on discovering, evaluating, and exploiting the core role of learning opportunities. There were other similar studies, but they only focused on the impact of entrepreneurial education on students, such as participant satisfaction (Abduh et al. 2012; Millman et al. 2008) and entrepreneurial intention (Fayolle, 2006). Few previous studies researched or explored the support from institutions in enhancing staff members' competence. Therefore, this research tries to offer a fully-systematic approach in exploring existing learning, with regards to opportunities, abilities and incentives in learning or teaching. This systematic framework is expected to review the role of students, staff members and the institution in creating satisfactory learning.

CONCLUSIONS

There are several important findings from this conceptual research. The first aspect is a systematic framework as a guideline for effective learning to develop entrepreneurial graduates. The second aspect is that the institution has to manage three key stakeholders to achieve learning goals, namely students, staff, and the institution itself. The third aspect is the assurance of learning to guarantee the students' learning effectiveness that also has to be well-managed by the institution. Previous studies mostly discussed learning and institutional supports partially. They mostly focused their research on the opportunity to learn, such as programs, teaching methods, and facility support. Few explored staff members' competence and ways to improve the EE. This research offers a fully-systematic approach in exploring existing learning, with regards to opportunities, abilities and incentives for students and staff. This systematic framework is expected to review the roles of the students, staff members and the institution in creating satisfactory learning.

The scientific contribution of this research is a building process of proposed systematic framework and the usage of a concept structure that is arranged according to a system that functions as a guideline to view reality. It can be used to describe successful learning practices in managing EE within a university. This approach is expected to enable the exploration of all aspects, instead of only some aspects, which are necessary for effective learning to occur within an institution.

It is expected that this conceptual research provides a guideline for practitioners such as policy-makers, lecturers, researchers, and curriculum developers for the development of a systematic framework for EE that is useful to develop entrepreneurial graduates, thus creating more jobs and reducing open unemployment. In addition, this research will support clarity for the qualification level of EE in order to promote more entrepreneurial graduates. The future research suggested is conduct-mapping and evaluation to gain a better understanding of the effectiveness of learning and institutional support. This mapping should be applied in several business schools in order to gain insight regarding the best learning practices. Cross-case analysis can be conducted to discover patterns that can be used to build a learning theory of entrepreneurship education in developing successful entrepreneurs.

REFERENCES

- Abduh, M., Maritz, A., & Rushworth, S. (2012). An evaluation of entrepreneurship education in Indonesia: a case study of Bengkulu University. *The International Journal of Organizational Innovation*, 4 (4), 42-43.
- Adam, I. O. (2014). *The ontological, epistemological and methodological debates in information systems research: a partial review*. Unpublished essays from Dissertation. University for Development Studies, School of Business and Law, University of Ghana. Retrieved March 8, 2015, from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2411620.
- Alberti, F., Sciascia, S., & Poli, A. (2004). Entrepreneurship education: notes on an ongoing debate. *14th Annual IntEnt Conference*. Italy: University of Napoli Federico II.
- American Heritage® Dictionary of the English Language* (Fifth Edition). (2011). Houghton Mifflin Harcourt Publishing Company. Retrieved March 8, 2015, from <http://www.thefreedictionary.com>.
- Bandura, A. (1977). *Social learning theory*. Eaglewoods Cliffs, N.J.: Prentice-Hall.
- Bird, B. (1995). Towards a theory of entrepreneurial competency. *Advances in entrepreneurship, firm emergence and growth*, 2, 51-72. JAI Press Inc.
- Co, M. J., & Mitchell, B. (2006). Entrepreneurship education in South Africa: a nationwide survey. *Journal of Education + Training*, 48 (5), 357-358.
- Collins English Dictionary – Complete and Unabridged*, (2003). Harper Collins Publishers. Retrieved March 6, 2015, from <http://www.thefreedictionary.com/graduate>.
- Collins English Dictionary – Complete and Unabridged*, (2012). Harper Collins Publishers. Retrieved March 6, 2015, from <http://www.thefreedictionary.com/graduate>.
- Corbett, A. (2007). Learning asymmetries and the discovery of entrepreneurial opportunities. *Journal of Business Venturing*, 22(1), 97-118.
- Crotty, M. (2003). *The foundations of social research: meaning and perspectives in the research process* (3rd Edition). London: Sage Publications.
- Dhliwayo, Shepherd. (2008). Experiential learning in entrepreneurship education: A Prospective Model for South African Tertiary Institutions. *Journal of Education + Training*, 50 (4), 329-332.
- Directorate-General for Enterprise and Industry. (2008). *Survey of entrepreneurship in higher education in Europe (Main Report)*, 199-202. Retrieved January 29, 2015, from http://ec.europa.eu/enterprise/policies/sme/files/support_measures/training_education/highedsurvey_en.pdf
- Fayolle, A., Gailly, B., & Clerc, N. L. (2006). Assessing the impact of entrepreneurship education programmes: a new methodology. *Journal of European Industrial Training*, 30 (9), 701-720.
- Fayolle, A., Gailly, B. (2008). From craft to science: teaching models and learning processes in entrepreneurship education. *Journal of European Industrial Training*, 32 (7), 569-593.
- Entrepreneurial*. (n.d.). Oxford Dictionaries. Retrieved March 26, 2015, from <http://www.oxforddictionaries.com/definition/english/entrepreneurial>.
- Framework*. (n.d.). An Encyclopædia Britannica Company. Retrieved March 26, 2015, from <http://www.merriam-webster.com/dictionary/framework>.
- Gelderen, M. V. (2010). Autonomy as the guiding aim of entrepreneurship education. *Journal of Education + Training*, 52 (8/9), 710-721.
- Global Entrepreneurship Monitor (2013). *Key indicators*. Retrieved January 16, 2015, from <http://www.gemconsortium.org/key-indicators>.
- Graduate-1*. (n.d.). An Encyclopædia Britannica Company. Retrieved March 26, 2015, from <http://www.merriam-webster.com/dictionary/graduate>.
- Graduate-2*. (n.d.). Oxford Dictionaries. Retrieved March 26, 2015, from <http://www.oxforddictionaries.com/definition/english/graduate>.
- Graduate-3*. (n.d.). Vocabulary.com. Retrieved March 26, 2015, from <http://www.vocabulary.com/dictionary/graduate>.
- Gorgievski, M.J., Ascalon, M.E. & Stephan, U. (2011). Small business owners' success criteria, a values approach to personal differences. *Journal of Small Business Management*, 49, 207-232.
- Harvey, L. (2004). *Analytic quality glossary*. Quality Research International. Retrieved March 19, 2013, from <http://www.qualityresearchinternational.co.uk/glossary/assessment.htm>.
- Hegarty, C. (2006). It's not an exact science: teaching entrepreneurship in Northern Ireland. *Journal of Education + Training*, 48(5), 321-322. <http://dx.doi.org/10.1108/00400910610677036>.
- Heinonen, J. and Poikkijoki, S. A. (2006). An entrepreneurial-directed approach to entrepreneurship education: mission impossible?. *Journal of Management Development*, 25 (1), 80-94.

- Henry, C., Hill F., & Leitch C. (2005). Entrepreneurship education and training: can entrepreneurship be taught? Part I. *Journal of Education + Training*, 47 (2), 98-107.
- Herrmann, K., Hannon, P., Cox, J., Ternouth, P., & Crowley, T. (2008). *Developing entrepreneurial graduates: putting entrepreneurship at the centre of higher education*. The Report made by CIHE, NCGE, and NESTA, 1-40.
- Hytti, U. and Kuopusjarvi, P. (2004). *Evaluating and measuring entrepreneurship and enterprise education: methods, tools, and practices*. Small Business Institute, Business Research and Development Centre, Turku School of economics and Business Administration.
- Ibrahim, A. B., & Soufani, K. (2002). Entrepreneurship education and training in Canada: a critical assessment. *Journal of Education + Training*, 44 (8), 421-430.
- Isaacs, E., Visser, K., Friedrich, C., & Brijal, P. (2007). Entrepreneurship education and training at the further education and training (FET) level in South Africa. *South African Journal of Education*, 27, 613-629.
- Izquierdo, E., Deschoolmeester, D., & Salazar, D. (2005, July). The importance of competencies for entrepreneurship: a view from entrepreneurs and scholars' perspective. *Present at IntEnt Conference in Reino Unido*.
- Jabareen, Y. (2009). Building a conceptual framework: philosophy, definitions, and procedure. *International Journal of Qualitative Methods*, 8(4), 49-62.
- Johannisson, B. (1991). University training for entrepreneurship: Swedish approaches. *Entrepreneurship and Regional Development*, 3(1), 67-82.
- Lackeus, M., Lundqvist, M., Williams Middleton, K. (2013, May). How can entrepreneurship bridge between traditional and progressive education?. *Presented at ECSB Entrepreneurship Education Conference in Århus, Denmark*.
- Mabin, V.J. & Marshall, S.J. (2011). Beyond assessment: assuring student learning in higher education. *Proceedings of the symposium on assessment and learner outcomes*. Retrieved February 3, 2013, from <http://www.victoria.ac.nz/vbs/teaching/publications/Beyond-Assessment.pdf>.
- Markowska, M. (2011). *Entrepreneurial competence development: triggers, processes, and consequences*. Jönköping International Business School Jönköping University. Unpublished Dissertation, 2011, pp. 28-40
- Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health (Seventh Edition). (2003). Saunders, an imprint of Elsevier, Inc. Retrieved March 6, 2015, from <http://www.thefreedictionary.com/graduate>.
- Millman, C., Matlay, H., & Liu, F. (2008). Entrepreneurship education in China: a case study approach. *Journal of Small Business and Enterprise Development*, 15 (4), 802-815.
- Mishra, S. (2007). *Quality assurance in higher education: an introduction*. The Director of National Assessment and Accreditation Council (NAAC), pp.1-101. Retrieved January 29, 2015, from http://www.col.org/sitecollectiondocuments/pub_qahe_intro.pdf.
- Mwasalwiba, E. S. (2010). Entrepreneurship Education: A Review of its objectives, teaching methods, and impact indicators. *Journal of Education + Training*, 52 (1), 20-47.
- Noel, T. W., & Latham, G. P. (2006). The importance of learning goals versus outcome goals for entrepreneurs. *Entrepreneurship and Innovation*, 7(4), 213-220.
- Obschonka, M. Silbereisen, R. K., Rodermund, E. S., & Stuetzer, M. (2010). Nascent entrepreneurship and the developing individual: early entrepreneurial competence in adolescence and venture creation success during the career. *Journal of Vocational Behavior*, 79(1), 121-133.
- Ogbo, A. (2012). The role of entrepreneurship in economic development: the Nigerian perspective. *European Journal of Business and Management*, 4(8), 95-96. Retrieved January 29, 2015, from <http://iiste.org/Journals/index.php/EJBM/article/view/1937/1917>.
- Piper, D.W. (1993). *Quality management in university* (Volume 1). Canberra: Australian Government Publishing Service.
- Random House Kernerman Webster's College Dictionary. (2010). Random House, Inc. Retrieved March 6, 2015, from <http://www.thefreedictionary.com/graduate>.
- Salamzadeh, A., Salamzadeh, Y. and Daraei, M.R. (2011). Toward a systematic framework for an entrepreneurial university: a study in Iranian context with an IPOO model. *Global Business and Management Research: An International Journal*, 3(1), 30-31. Retrieved January 29, 2015, from <http://files.eric.ed.gov/fulltext/ED530376.pdf>.
- Sarasvathy, S. (2001). Causation and effectuation: Toward a theoretical shift from economic inevitability to entrepreneurial contingency. *Academy of Management Review*, 26, 243-263.
- Skinner, E. A. (1995). *Perceived control, motivation, and coping* (Vol. 8). Thousand Oaks: Sage Publications.

- Solomon, G. (2007). An examination of entrepreneurship education in the United States. *Journal of Small Business and Enterprise Development*, 14 (2), 168.
- Systematic-1*. (n.d.). *Dictionary.com Unabridged*. Retrieved March 26, 2015, from Dictionary.com website: <http://dictionary.reference.com/browse/systematic>.
- Systematic-2*. (n.d.). *An Encyclopædia Britannica Company*. Retrieved March 26, 2015, from <http://www.merriam-webster.com/dictionary/systematic>.
- Szirmai, A., Naude, W., & Goedhuys, M. (2011). *Entrepreneurship, innovation, and economic development: an overview*. Oxford University Press.
- Tan, S. S. and Ng, C. K. F. (2006). A problem-based learning approach to entrepreneurship education. *Journal of Education + Training*, 48 (6), 416-428.
- U.S. Department of Commerce. (2013). *The innovative and entrepreneurial university: Higher education, innovation and entrepreneurship in focus*. Office of Innovation and Entrepreneurship, Economic Development Administration. 18-20. Retrieved January 29, 2015, from http://www.eda.gov/pdf/The_Innovative_and_Entrepreneurial_University_Report.pdf.
- Varblane, U. & Mets, T. (2010). Entrepreneurship education in the higher education institutions (HEIs) of post-communist european countries. *Journal of Enterprising Communities: People and Place in The Global Economy*, 4 (3), 204-219.
- Wadhwa, V., Aggarwal, L., Holly, K. Z., & Salkever, A. (2009). *The anatomy of an entrepreneur: making of a successful entrepreneur*. Kauffman: The Foundation of Entrepreneurship.
- Wood, R. E., & Bandura, A. (1989). Impact of conception of ability on self-regulatory mechanisms and complex decision making. *Journal of Personality and Social Psychology*, 56(3), 407-415.
- WordNet 3.0, Farlex Clipart Collection*. (2012). Princeton University: Farlex Inc. Retrieved March 6, 2015, from <http://www.thefreedictionary.com/graduate>.

USING THE BUSINESS MODEL CANVAS AS A METHODS APPROACH TO TEACHING ENTREPRENEURIAL FINANCE

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ABSTRACT

There has been considerable discussion and debate about the ability to teach entrepreneurship. And while this debate seems to have ended with a resounding yes (Henry, Hill and Leitch, 2005a, 2005b) there are still many unanswered questions. Even traditional management scholars (Drucker, 1985) recognize the uniqueness of the discipline and encourage an appropriate pedagogy to support that discipline. The same can be said for the true disciples of the field of entrepreneurship (Kuratko, 2005; Katz, 2003).

Most recently, however, this discussion has turned to, not whether we can teach entrepreneurship, but rather are we teaching it the right way. Neck and Greene (2011) called for a re-evaluation of pedagogy to focus on teaching entrepreneurship from a methods approach. Instead of dismissing the ability to teach entrepreneurship, the authors provided a warranted call for pedagogical improvements. The purpose of this paper is to provide further encouragement and support for not only this concept, but to offer a methods approach in teaching financial methods in entrepreneurship classes. Specifically, financial issues that surface using the business model canvas will be addressed and pedagogical recommendations will be provided.

INTRODUCTION

Many faculty members in the field of Entrepreneurship give very little thought to the relevance and efficacy of teaching the concepts of entrepreneurship in higher education. We, **a priori**, assume away the controversy that has existed for a number of years. We know it is an important concept, our students seem excited, and sometimes we even bring upon us resentment and the wrath from other academics from other disciplines—which we interpret as we must be doing something right. Recently, however, our framework of complacency was called to task by two of the discipline’s leaders in entrepreneurial pedagogy (Neck and Greene, 2011). The authors challenged the field’s academic community to begin approaching our teaching from a methods perspective. It was clearly and carefully pointed out that:

“The current approaches to entrepreneurship are based on a world of yesterday—a world where precedent was the foundation for future action, where history often did predict the future. Yet entrepreneurship is about creating new opportunities and executing in uncertain and even currently unknowable environments (p. 55)”

In addition, while the relationship of finance understanding and entrepreneurship principles is critical for a successful entrepreneurial launch and sustainability, the concepts being

covered in finance has been slow in progressing to keep up with this phenomenon. While understanding ratio analysis and financial statements is relevant, issues facing the startup are much more diverse and should be addressed from a methods approach as well.

The purpose of this paper is to operationalize the method approach of teaching entrepreneurship as supported by Neck and Greene through the use of the Business Model Canvas specifically as it relates to how we teach financial issues in entrepreneurship. The approach of using the Business Model Canvas meets the six characteristics as defined by Neck and Greene in that it: provides a set of transferable skills and techniques for new venture creation; students walk away with a toolkit applicable for all startups; is founded on and reinforces the creative problem solving process; relies on iterations for optimal results; encourages experimentation; and is practiced again and again—not just in one class but across the curriculum.

LITERATURE REVIEW

As mentioned in the introduction, the debate of the efficacy of teaching entrepreneurship continues to exist (Wasserman & Hwang, 2012). This is true even after many successful programs have evolved across the nation (and the world). Much of this proliferation of success can be directly attributed to the members of organizations such as USASBE (United States Association of Small Business and Entrepreneurship) and ICSB (International Council of Small Business) as these organizations continues to emphasize pedagogy as one of their pillars. Much of the controversy, however, is as Neck and Greene point out due to the focus of coverage in many of those programs.

It is not surprising that there continues to be conflicting camps in regard to the possibilities of success in teaching Entrepreneurship. Much of this debate it appears comes from the continued lack of consensus in defining entrepreneurship itself which publically was aired in the 80s (Carland, Boulton, & Carland, 1984; Gartner, 1985; Carland, Hoy, & Carland, 1988) and continues to this day. While many have accepted the basic premise as described by Coulter (2001) that entrepreneurship is simply the process where individuals create value through innovation and uniqueness. Others define any small business (Gartner, 1985) as an entrepreneur. There is even as Neck and Greene (2011) point out a return to attempting to associating traits with the definition.

Unfortunately this has led to most entrepreneurship programs focusing on operational skill sets that justify the acceptance of teaching these concepts to our students. For the most part, we are still enamored with focusing on the business plan (Solomon, 2007; Neck & Greene, 2011; Blank, 2012). This is especially true in many of the new international initiatives (Kobia, 2010; Kirby & Ibrahim, 2011; Mwasalwiba, 2010). Or as Neck and Greene emphasize, “the analytical approach of teaching opportunity evaluation, feasibility analysis, business planning and financial forecasting is the cornerstone for most entrepreneurship curricula today” (p. 57).

Morris, Kuratko and Cornwall (2013) propose that entrepreneurial education should tie closely to the need for assessment of individual program and that this can be accomplished by a focus and scrutiny of competencies. As these authors indicate, competencies refer to “knowledge, skills, attitudes, values and behavior” that results in the successful accomplishment of a desired action. Due to the diversity of entrepreneurial programs across the nation and world, no single desired outcome is unanimously agreed upon. Morris et al. go on to suggest that these approaches may include business basics, entrepreneurship basics, or entrepreneurial thinking and acting. If then the focus of the educational unit is true entrepreneurship and one of tied to the

methods approach (Neck and Greene, 2011) these competencies may include: opportunity recognition, creative problem solving, effecting change, innovating, or adaptation to name a few.

There are many others that have called for a different approach to teaching entrepreneurship and others that have avowed that it cannot be taught. In one very comprehensive study on entrepreneurial education, Solomon, Duffy and Tarabishy (2002) strongly contend that teaching entrepreneurship is different than teaching other business school subject matter. According to these authors, students must be competent in subject matter focused on starting a business rather than managing a business. These students must also be able to thrive in an environment of uncertainty and use the latest technologies to mitigate this ambiguity.

While Mwasalwiba (2010) contends that as a body of knowledge, entrepreneurship education should be built on a “foundation of a common theoretical framework” and there exists a lack of alignment. According to this author the answer is not to teach exactly the same subject matter, but to at least agree to some commonalities that are taught by all using the same framework.

In a follow-up to his well-recognized study in 2002 (Solomon et.al.), Solomon (2007) further suggested that the challenge to educators will be to craft courses, programs and major fields of study that meet the rigors of academia while keeping a reality-based focus and entrepreneurial climate in the learning experience environment.

All of this discussion and debate clearly points to a need for better teaching methods. Few programs have truly embraced the methods approach of teaching entrepreneurship which offers tremendous opportunities in advancing the discipline and the student outcomes across the nation. While there are many ways of moving to this more inclusive process, this paper focuses on the use of the Business Model Canvas as a means to this end in the area of finance.

THE BUSINESS MODEL CANVAS

The Business Model Canvas is a tool that was created by Alexander Osterwalder to help reach his aspiration “to change the way people design, test, and build strategies and businesses...[with the intent of] bringing the best conceptual tools out there online and making them so useful, practical and attractive that no business person can resist” (Business Model Alchemist Blog). Even with its considerable acceptance, however, Osterwalder (2012b) has found that there is a disparity in the sophistication levels of users. He has described these levels of sophistication as:

- Level 0 Strategy – The Oblivious: Focus on products/value propositions alone rather than the value proposition AND the business model.
- Level 1 Strategy – The Beginners: Use the Business Model Canvas as a checklist.
- Level 2 Strategy – The Masters: Outcompete others with a superior business model where every one of the business model building blocks reinforces each other (e.g. Nintendo Wii, Nespresso, Dell).
- Level 3 Strategy – The Invincible: Continuously disrupt themselves while their business models are still successful (e.g. Apple, Amazon.com). (Business Model Alchemist Blog)

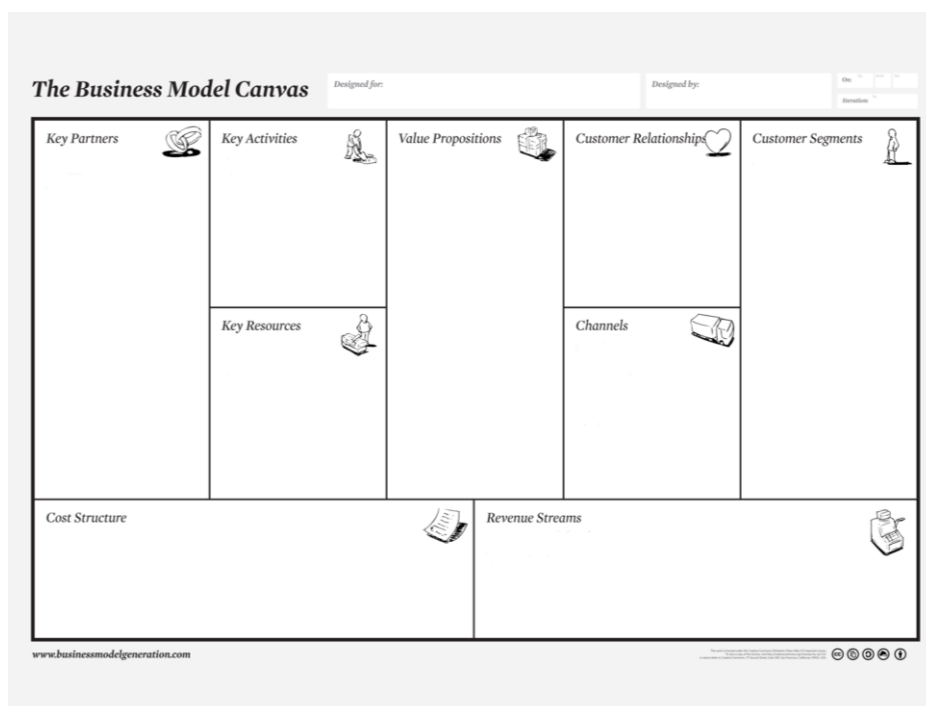
While the idea of a business model is a well-established principle in strategic management circles, it has mostly been used as a descriptor rather than a tool for “managing” operational concerns of a business. Business Modeling (not to be confused with the business model) is a rapidly growing area in entrepreneurship. While this new interest has been primarily

in the practitioner side, recent activity is being seen on the academic side as well (Solaimani & Bouwman, 2012; Lindgren, 2012).

As suggested by Solaimani and Bouwman (2012), there are many theoretical concepts and ontologies but few have utilized these frameworks for strategic purposes. This omission has perpetuated the “lack of alignment between strategic ‘what to do’ and the operational ‘how to do it’ (p. 655). The Kaufman Foundation recognized this omission in the space occupied by SME’s and funded a major project to use this process to support innovation (Lindgren, 2012). Even the United States Association of Small Business & Entrepreneurship (USASBE) got on board at its last annual conference to hold special workshops of the increased use of the tool.

The purpose of this paper is not to re-teach the business model but rather to demonstrate how the methods approach is appropriate to using the business model in teaching new techniques in financial modeling.

The business model canvas (<http://businessmodelgeneration.com/canvas>) is becoming increasingly prevalent as a pedagogical tool in the field of entrepreneurship. As defined by Alex Osterwalder and Yves Pigneur in their book *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, “a business model describes the rationale of how an organization creates, delivers, and captures value.”



THE BUSINESS MODEL ELEMENTS

The business model is composed of nine building blocks, positioned in such a way that each block is adjacent to the blocks it most influences, and vice versa. On a more macro level, the blocks are positioned to mimic the functionality of the human brain, with the blocks on the left – Key Activities, Key Resources, Key Partnerships and Cost Structure – driven by logic, the blocks on the right – Customer Segments, Customer Relationships, Channels and Revenue Streams – dictated by emotion, and the Value Proposition block being the equilibrium point.

In a similar vein, the blocks toward the top of the canvas are more abstract and qualitative, while the blocks toward the bottom are more specific and quantitative. Of course the “bottom line” is the most outwardly finance driven: Revenue Streams and Cost Structure.

THE FINANCIAL MODEL

Today, after students have completed their hypotheses regarding a given business model, the major thrust of coursework is focused on product-market fit, where the assumptions tested primarily revolve around whether the proposed value proposition is meeting the market need.

When considering the learning objectives of students in entrepreneurship courses, engaging in exploration of product-market fit is absolutely critical. However, does it provide the most complete, well rounded evaluation of the business model? Could this qualitative process be bolstered and enhanced by adding integrated quantitative analysis?

Traditionally, and particularly in small business management coursework, a financial forecast has been the option for allowing students to showcase their understanding of the fiscal underpinnings of a business model. Yet there are several drawbacks to this type of analysis:

1. Revenues are forecasted without clear ties to a selected go-to-market strategy.
2. Operational costs are forecasted without clear ties to revenue and growth.
3. Financial statements are forecasted without rigorous testing of hypotheses in lock step with product and market validation.

If the key learning objective for students is to develop a deep understanding of a dynamic, high-growth potential business model, and the capital structure required to power it, the traditional financial forecast should be replaced with a financial model.

Financial models differ from financial forecasts in that they place a premium on key performance indicators over line-item accounting, what-if analysis over predictions, and ties to business model hypotheses over display of detail.

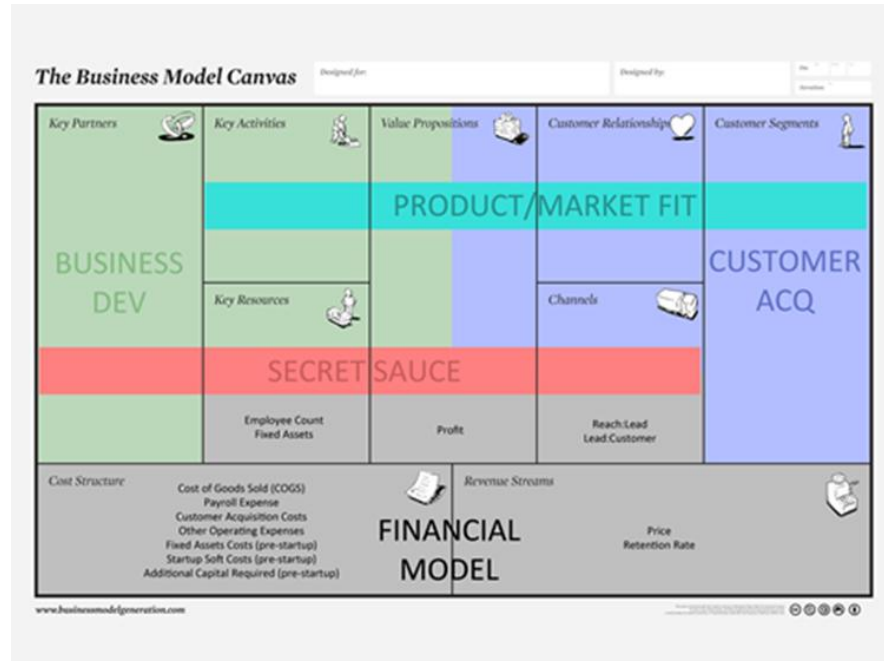
THE LEARNING OUTCOMES

Key performance indicators (or KPI) are measurements that are used to evaluate the success of a proposed business model. What-if analysis is the systematic process of changing one assumed KPI's value to see how that change affects the outcome of other assumptions in the model. The key learning outcomes of using a financial model in conjunction with a business model include the following:

1. Understanding the components of, and developing, a validated financial ask to support a proposed business model.
2. Understanding the working capital structure, cash position, and capital burn rate of a proposed business model.
3. Understanding the organizational resource needs to meet a proposed business model.
4. Understanding the cost structure of a proposed business model.
5. Understanding the true customer acquisition cost, life time value of a customer, and the relationship between the two in a proposed business model.

THE MINIMUM VIABLE FINANCIAL MODEL

Four of the nine business model canvas blocks can be associated with fifteen core KPIs that allow for the stated learning outcomes.



Channels

Five distinct channel phases are considered in the Channels Building Block, whether owned or partnered, direct or indirect:

1. Awareness
2. Evaluation
3. Purchase
4. Delivery
5. After Sales

Each of these five phases is crucial to consider when completing the canvas, and several have direct impact on the Cost Structure Building Block. For example, Awareness and Evaluation tactics directly contribute to Customer Acquisition Costs. Purchase, Delivery and After Sales tactics may directly contribute to Cost of Goods Sold.

However, the most viable and measurable KPIs regarding the Channel Building Block involve the Awareness and Evaluation channel phases, as they allow us to understand the strategy for customer acquisition. The two KPIs for the Channel Building Block are:

1. *Reach to Lead Conversion Rate*. This percentage shows the expected conversion of individuals targeted from Awareness to Evaluation. Those potential customers reached must be identifiable, even if in aggregate numbers. To convert that individual to a lead, that individual must be identifiable and have connected, even in a small way, such as providing an email address on a website, with the company.

2. *Lead to Customer Conversion Rate*. This percentage shows the expected conversion of leads to paying customer, Evaluation to Purchase.

The table below demonstrates the relationship between Dave McClure's Product Marketing for Pirates: AARRR! Framework (<http://500hats.typepad.com/500blogs/2007/06/internet-market.html>), also adopted into Steve Blank's Startup Owner's Manual, to the measurable Reach to Lead to Customer framework, to the KPIs explained above.

Acquisition	↔	Reach				
↓				Reach to Lead Conversion		
Activation	↔	Lead				
↓						Customer Acquisition Cost (CAC)
Retention						
↓				Lead to Customer Conversion		
Referral						
↓						
Revenue	↔	Customer				

Revenue Streams

The Revenue Streams Building Block allows students to develop strategy for collecting cash from each targeted Customer Segment. The three KPI for the Revenue Streams Building Block are:

3. *Price, Average or Monthly Collections*. The dollar amount of average revenue collected, per purchase, from a customer.
4. *New or Reacquired Customers*. This percentage indicates the actual number of new or required customers for a month. If billed monthly, the customer is not new nor reacquired, but retained. If a customer is not automatically billed every month, they are considered reacquired with each purchase.
5. *Monthly Retention Rate*. This percentage indicates the customers retained from month to month. If automatically billed monthly, we would expect this number to approach 100%. If a business relies on new or reacquired customers for each purchase, we would expect this number to approach 0%.

Key Resources

The Key Resources Building Block allows students to communicate the most important assets required to allow the business model to function as proposed. Typically, this would include Physical, Intellectual, Human and Financial. The Financial resources will be determined in the completion of a Financial Model. The Intellectual resources will be covered in the Cost Structure Building Block. The Physical and Human resources are covered by the two KPIs that follow:

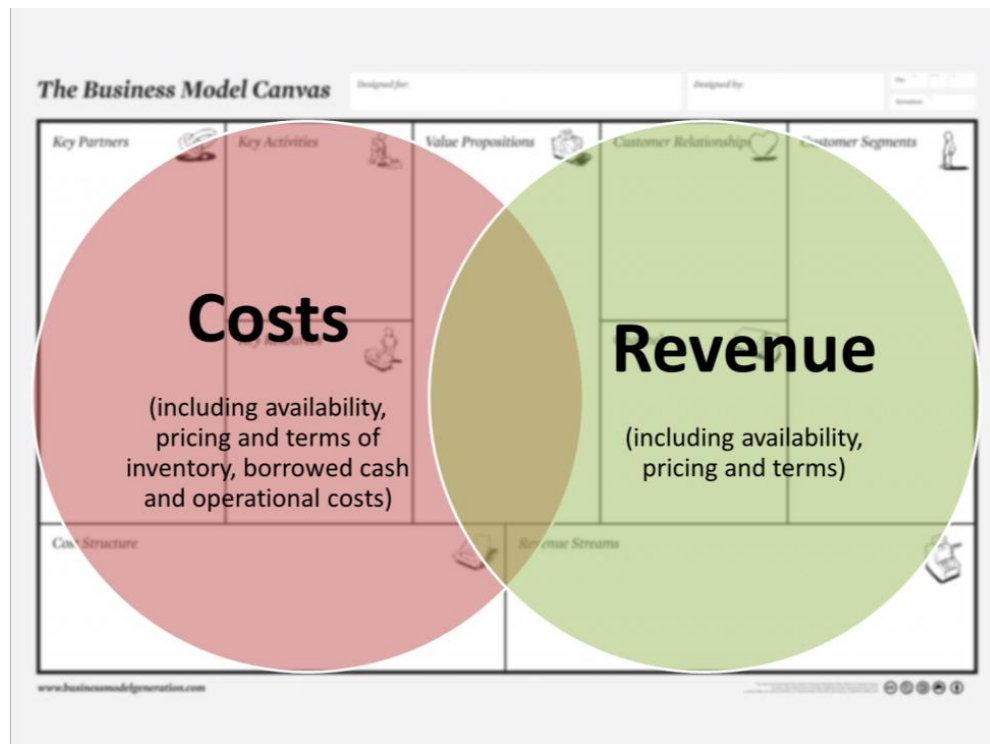
6. *Employee Count*. The actual number of full-time equivalents employed by the firm during the month.
7. *Fixed Assets*. The actual dollar amount of fixed assets on a firm's balance sheet during the month.

Cost Structure

The Cost Structure Building Block allows students to inventory the infrastructural costs incurred to operate the proposed business model. The remaining eight KPIs are all elements of the Cost Structure Building Block, and follow:

8. *Cost of Goods Sold*. The actual dollar amount of cost to produce and sell a product. Dividing this dollar amount by sales will produce a Cost of Goods Sold percentage.
9. *Customer Acquisition Costs*. The dollar amount spent on all marketing efforts for the month. This number can be analyzed by dividing it by Reach, to determine Cost per Reach, Leads, to determine Cost per Lead, or Customers, to determine the Cost per Customer.
10. *Payroll Expenses*. The actual dollar amount spent in compensating the Employee Count.
11. *Other Operating Expenses*. The actual dollar amount of Operating Expenses, other than Payroll Expenses.
12. *Days Receivables Turn*. The average number of days to collect upon Accounts Receivable.
13. *Days Inventory Turn*. The average number of days inventory is held before sale.
14. *Days Payables Turn*. The average number of days to pay on Accounts Payable.
15. *Additional Capital Required*. Also known as a "buffer," an additional amount of capital requested in a financing proposal to cover miscalculations or unforeseen costs.

These fifteen KPI can also be distributed into three elements of a minimum viable financial model, with additional benefit derived from being aligned more easily with a standard business plan.



Marketing

1. Reach to Lead Conversion Rate (%)
2. Lead to Customer Conversion Rate (%)
3. Price, Average or Monthly Collections (\$)
4. New or Reacquired Customers (#)
5. Monthly Retention Rate (%)
6. Customer Acquisition Costs (\$)

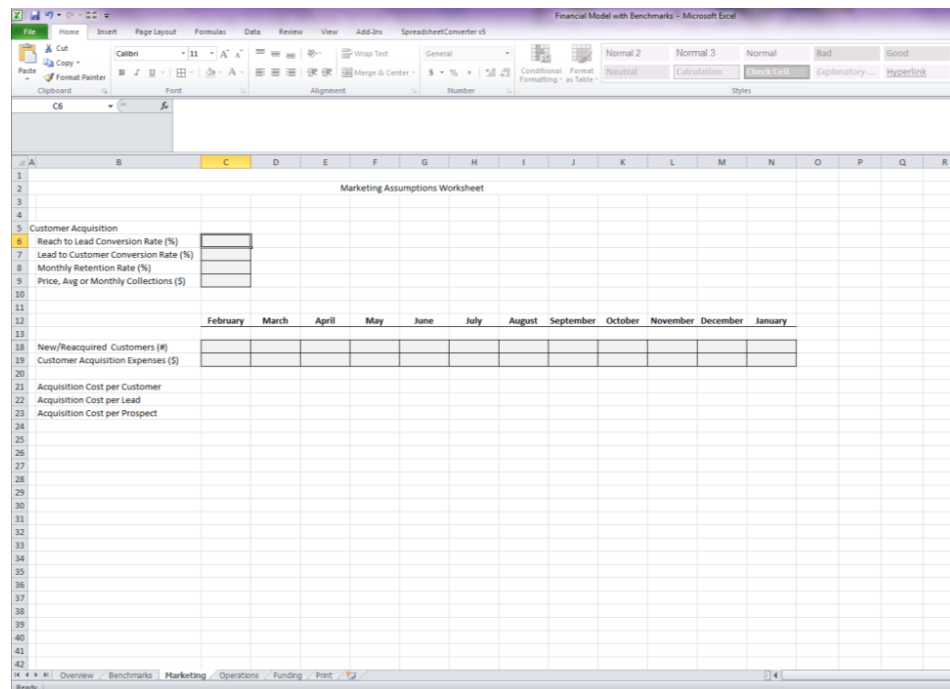
Operations

7. Cost of Goods Sold (\$)
8. Payroll Expenses (\$)
9. Other Operating Expenses (\$)
10. Total Employees (#)
11. Total Fixed Assets (\$)

Funding

12. Days Receivables Turn (#)
13. Days Inventory Turn (#)
14. Days Payables Turn (#)
15. Additional Capital Required, including Pre-Launch Fixed Assets and Soft Costs (\$)

THE MARKETING



The primary marketing tasks for translating a business model to a financial model include:

1. Delineate between user and buyer.
2. Understand that in order to reach a buyer; you must first identify who they are, what message you will convey, when and where that message will be delivered, and why they are the correct audience.
3. Select an optimized awareness channel or set of channels based on cost, assumed effectiveness, and ability to scale.
4. Understand that converting an identifiable buyer into a lead, some exchange of value must occur to validate the relationship is advancing.
5. Propose a plan to convert identifiable buyers into leads, then leads into customers.

After completing the primary tasks, students can then make hypotheses regarding their optimized strategies regarding the six marketing KPIs.

THE OPERATIONS

	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013
New Customers	0	0	0	0	0	0	0	0	0
Total Customers (Users)	0	0	0	0	0	0	0	0	0
Sales (\$)									
COGS (\$)									
Gross Profit	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Customer Acquisition Expenses (\$)	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Payroll Expenses (\$)									
Other Operating Expenses (\$)									
Operating Profit	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total Employees (#)									
Total Fixed Assets (\$)									
Monthly Operating Cash Position									
Total Operating Cash Position									

Operations, or the cost expression of operations, very often follow revenues during the first year of a startup. For example, employees will be hired as needed – or as can be afforded. Cost of goods sold also has its own set of considerations regarding availability, pricing and terms of inventory that may also fluctuate with revenues.

For most student projects, benchmarks exist for costs, including those from the United States Census Bureau and through the RMA Annual Statement Studies.

THE FUNDING

	Feb 2013	Mar 2013	Apr 2013	May 2013	Jun 2013	Jul 2013	Aug 2013	Sep 2013	Oct 2013
Total Operating Shortfall									
Working Capital									
Days Receivables Turn (#)									
Days Inventory Turn (#)									
Days Payables Turn (#)									
Working Capital (\$)									
Startup Capital									
Fixed Assets (\$ - Prior to Startup)									
Soft Costs (\$ - Deposits, Services, etc.)									
Additional Capital Required (\$)									
Funding Request									
Complete Operations tab to view later									

When the cost of operations is removed from the revenue captured through marketing, the students will have discovered the core of their financial ask – cash required to cover operational costs. In addition, however, they will also need to take into account the timing of cash in and outflow. Considering this final piece will provide students with their operating cash requirements.

Above and beyond the day-to-day cash required, most business also require pre-launch fixed asset and soft costs. Soft costs can include deposits, legal fees, etc. They may also wish to add cash reserves to their financial ask to buffer any unforeseen issues.

CONCLUSION AND VALUE PROPOSITION

“Teaching entrepreneurship as a method requires going beyond understanding, knowing, and talking; it requires using, applying, and acting. Entrepreneurship requires practice” (Neck and Greene, 2012, p. 62).

In this paper first identified the need for teaching entrepreneurship from a methods approach as opposed to relying simply on approaches that are slowly seeing their relevancy diminish. Next an overview of Osterwalder’s and Pigneur’s (2010) book *Business Model Generation* was provided. Lastly, an example of how finance could be incorporated into entrepreneurial education was provided. While there are many ways to operationalize the methods approach, the financial example provided in this paper would meet the six requirements specified by Neck and Green—it provides a set of transferable skills and techniques for new venture creation; students walk away with a toolkit applicable for all startups; is founded on and reinforces the creative problem solving process; relies on iterations for optimal results; encourages experimentation; and is practiced again and again.

REFERENCES

- Blank, S. G. (2007). *The Four Steps to the Epiphany* (4th Edition), Quad/Graphics.
- Blank, S. G. (2012). *Blog: Business Model Versus Business Plan*, <http://steveblank.com/category/business-model-versus-business-plan/>.
- Blank, S.G. and Dorf, B. (2012) *The Startup Owner’s Manual: The Step-by-Step Guide for Building a Great Company*, Pescadero, CA: K & S Ranch, Inc. Publishers.
- Carland, J. H., F. Boulton, & J. Carland (1984). Differentiating entrepreneurs from small business owners: A conceptualization. *Academy of Management Review*, 9 (2), 354-359.
- Carland, J. W., F. Hoy, & J. A. Carland (1988). Who is an entrepreneur? Is the question worth asking?. *American Journal of Small Business*, 12 (4), 33-39.
- Coulter, M. (2001). *Entrepreneurship in Action*, Prentice-Hall, Upper Saddle River, NJ.
- DeTienne, D.R. and Chandler, G.N. (2004), ‘The role of gender in opportunity identification’, *Entrepreneurship Theory and Practice*, 31 (3): 365-86.
- Fiet, J.O. (2001), ‘The pedagogical side of entrepreneurship theory’, *Journal of Business Venturing*, 16 (2): 101-17.
- Gartner, W. B. (1985). A conceptual framework for describing the phenomenon of new venture creation. *Academy of Management Review*, 10 (Oct), 696-706.
- Henry, C., Hill, F. and Leitch, C. (2005), ‘Entrepreneurship education and training: Can entrepreneurship be taught? Part I’, *Education and Training*, 2(3): 98-111.
- Henry, C., Hill, F. and Leitch, C. (2005), ‘Entrepreneurship education and training: Can entrepreneurship be taught? Part I’, *Education and Training*, 2(3): 158-69.
- Katz, J.A. (2003), ‘The chronological and intellectual trajectory of American entrepreneurship education’, *Journal of Business Venturing*, 18(2): 283-300.
- Kirby, D. A. & N. Ibrahim (2011). Entrepreneurship education and the creation of an enterprise culture: Provisional results from an experiment in Egypt. *International Entrepreneurship Management Journal*, 7, 181-193.

- Kobia, M. & S. Damany (2010). Toward a search for the meaning of entrepreneurship. *Journal of European Industrial Training*, 34 (2), 110-127.
- Kuratko, D.F. (2005), 'The emergence of entrepreneurship education: Development, trends, challenges', *Entrepreneurship Theory and Practice*, 29(3): 577-98.
- Kuratko & R. Hodgetts (2004). *Entrepreneurship: Theory, Process, Practice*, 6th Ed., Thomson South Western, Stamford, CT.
- Lindgren, P. (2012). Business model innovation leadership: How do SME's strategically lead business model innovation?. *International Journal of Business and Management*, 7 (14), 53-66.
- Morris, M.H., Kuratko, D.F. and Cornwall, J.R. (2013), *Entrepreneurship Programs and the Modern University*, Northampton, MA: Edward Elger.
- Mwasalwiba, E. S. (2010). Entrepreneurship education: A review of its objectives, teaching methods, and impact indicators. *Education and Training*, 52 (1), 20-47,
- Neck, H. M. & P. G. Greene, (2011). Entrepreneurship education: Known worlds and new frontiers. *Journal of Small Business Management*, 49 (1), 55-70.
- Osterwalder, A. & Y. Pigneur (2009 and 2010). *Business Model Generation: A Handbook for Visionaries, Game Changers, and Challengers*, Self-Published.
- Osterwalder, A. (2012a). Blog: *Help Change How Businesses are Built: Looking for Tech Co-Founders and Senior RoR Dev.* <http://www.businessmodelalchemist.com/>.
- Osterwalder, A. (2012b). Blog: *Drop Your Training Wheels: Competing on Business Models.* <http://www.businessmodelalchemist.com/>.
- Solaimani, S. & H. Bouwman (2012). A framework for the alignment of business modeled business processes: A generic model for trans-sector innovation. *Business Process Management Journal*, 18 (4), 655-679.
- Solomon, G. (2007). An examination of entrepreneurship education in the United States. *Journal of Small Business and Enterprise Development*, 14 (2), 168-182.
- Solomon, G. T., Duffy, S. and Tarabishy, A. (2002), The state of entrepreneurship education in the United States: A nationwide survey and analysis', *International Journal of Entrepreneurship Education*, 1(1): 65-86.
- Wasserman, N. & V. W. Hwang (2012). Can entrepreneurship be taught? *Wall Street Journal*, March 20, 2012.

DEVELOPING UNDERGRADUATE ENTREPRENEURIAL CAPACITY FOR SOCIAL VENTURE CREATION

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ABSTRACT

Traditional college and university entrepreneurship programs focus on profit-maximizing startups. We describe a new effort called Affordable Design and Entrepreneurship (ADE) to develop capacity for venture creation that seeks to maximize social benefit. ADE is an undergraduate program co-launched by Babson College, a top-ranked entrepreneurship educator, and Olin College of Engineering, a recognized innovator in engineering education. ADE changes the nature of entrepreneurship education by shifting the focus to social venture creation opportunities in poverty-afflicted areas internationally (within India, Ghana, and Morocco) and nationally in the USA (within Alabama, Massachusetts, and Mississippi). Here, we detail the process by which a team of entrepreneurship and engineering students co-creates a social venture with communities in Ghana. The analysis suggests options for institutions to offer meaningful, experiential instruction in social entrepreneurship and sustainable enterprise.

Keywords: entrepreneurship education, social venture, human-centered design, entrepreneurial experimentation, business planning.

INTRODUCTION

Upon surveying entrepreneurship programs, one will observe that the focus of entrepreneurship education is much narrower than the known contexts for entrepreneurial action (Vesper & Gartner, 1997; Katz, 2003; Kuratko, 2005; Corbett, 2011; Neck, Greene & Brush, 2014). Overwhelmingly, most undergraduate and graduate entrepreneurship programs focus on independent, for-profit startups (Greene, Katz & Johannisson, 2004; Honig, 2004; Neck & Greene, 2011). Yet, entrepreneurial thinking is known to be present and create value in social, corporate and even governmental settings (Stevenson & Jarillo, 1990; Shane & Venkataraman, 2000; Sarasvathy, 2009; Saifan, 2012).

Business plan creation, while important, accounts for upwards of 70% of all entrepreneurship courses offered in the United States and is generally focused on traditional, for-profit startups (Rich & Gumpert, 1985; Honig, 2004; Noyes & Brush, 2012). As such, it is comparatively rare for entrepreneurship programs to offer courses on the different forms and contexts for entrepreneurial activity. Family entrepreneurship, corporate entrepreneurship, different regional and international settings for entrepreneurship, and particularly social entrepreneurship, are often neglected in the pursuit of what might be called a high-tech/high-growth bias in entrepreneurship education (Peterman & Kennedy, 2003). Moreover, those passionate to initiate social change through market mechanisms are often peripheralized in such

programs and class settings because there is a need to teach core models, heuristics and methods to establish for-profit ventures, generally serving a narrow group of stakeholders: customers, venture founders and investors.

This is all against the backdrop of entrepreneurship research, which shows that the most frequently used textbooks and teaching materials in entrepreneurship instruction are often not reflective of the true behaviors of successful entrepreneurs--what entrepreneurs actually do in pursuing, developing or identifying entrepreneurial opportunities (Edelman, Manolova & Brush, 2008, Noyes & Brush, 2012; Neck, Greene & Brush, 2014). Similarly, other research shows that a high percentage of successful entrepreneurs never even create a business plan (Bygrave, Lange, and Mollov, 2007). Recent research concludes that the process of planning is important, mostly for the insights it yields, but a business plan is rarely an assurance of venture success. Fortunately, approaches are changing to reflect greater realism concerning how entrepreneurs act (Sarasvathy, 2009; Blank, 2013, Neck, Greene & Brush, 2014).

Accordingly, we highlight the importance of creative entrepreneurial action in the face of deep uncertainty, particularly when one has social goals in addition to economic objectives. Specifically, we consider the role of iterative market experimentation in social venture creation, which may include but is not limited to: identifying social needs with stakeholders, determining cultural and/or technical requirements for a technology, and prototyping and testing business models to deliver a social benefit. The focus on the co-creation of entrepreneurial opportunities with stakeholders, as well as on contexts where secondary industry studies are rarely available or useful, each differentiate our focus from core entrepreneurship curriculum, generally based on business planning.

Ideas about prototyping business models in close partnership with customers and connecting with lead users to develop innovations are not new, particularly in high-tech/high-growth venturing (Von Hippel, 1986; Blank, 2005; Osterwalder, 2010; Ries, 2011). However, these ideas are less well known and generally less practiced in social entrepreneurship. Moreover, those experienced in high-tech/high-growth entrepreneurship often have limited experience designing and testing social ventures particularly in base of pyramid and emerging markets where this thinking may be most valuable (Hart & Semanis, 2006). Arguably, it is with social problems and opportunities where these design-based ideas are most appropriate because resources are scarce, community stakeholders are the best judge of an innovation's worth, and venture-building is necessary to deliver the needed products or services sustainably. Exposing challenges and progress alike, we detail efforts to create a new experiential social entrepreneurship program called Affordable Design and Entrepreneurship, or ADE, which grapples with this unique intersection between design thinking and social entrepreneurship.

We begin by identifying challenges in social entrepreneurship education. These challenges are presented alongside the argument that experiential entrepreneurship education—particularly, concrete experience and creative entrepreneurial action in complex contexts—can transform students' self-efficacy and ultimately their leadership potential for social venture creation. Then, we give an overview of ADE, including the objectives and structure, and feature a short case on an agricultural venture in Ghana supporting peri-urban and rural, cassava-processing women. We end with a frank discussion of educational challenges and opportunities suggested by ADE, which highlight sharp limitations of the current high tech/high growth-focused model of entrepreneurship education.

CHALLENGES IN EDUCATING SOCIAL ENTREPRENEURS

Surveying the emerging field of social entrepreneurship, Saifan (2012) proposes the following definition of a social entrepreneur: A social entrepreneur is a mission-driven individual who uses a set of entrepreneurial behaviours to deliver a social value to the less privileged, all through an entrepreneurially oriented entity that is financially independent, self-sufficient, or sustainable. This definition is notionally useful for the purposes of describing social entrepreneurship and challenges in educating social entrepreneurs, although from a design perspective we would say the aim is to deliver social value with, or working alongside, primary stakeholders.

In the social arena, key entrepreneurial concepts, such as venture stakeholders, willingness-to-pay, product/service value and entrepreneurial leadership, take on highly stylized meanings. Particularly, when the chief goal is to maximize social impact rather than economic profits there are different motives when launching and then scaling ventures. The incentive to launch a venture may be because of social problems and social opportunities that are neglected by national or local government, NGOs, area social organizations, or even for-profit entrepreneurs. The need to scale a social venture may come from the size of the social need (e.g., clean drinking water, affordable education, income generation opportunities for a group) and the requirement to put in place a sustainable business model with the potential to yield a hoped-for benefit.

Social ventures often have a large complex web of stakeholders—individuals and organizations—who may support, benefit from, or have objections to a social innovation. To have impact, these stakeholders must be enlisted early on and iteratively to co-create entrepreneurial opportunities—opportunities that are socially desirable, technologically feasible and ideally economically self-sustaining. This web of stakeholders, which transcends thinking about “the customer”, competition or regulators, is generally more complex to understand for social ventures than for traditional ventures focused only on economic returns.

Social ventures may create rich combinations of social and economic value. Charging customers, including those who are severely resource constrained, may be a vital mechanism to achieve social impact and achieve scale and sustainability. Product and service offerings for resource-constrained target markets may require fundamentally different assumptions about what constitutes a technology, what defines an innovation, and about the goals of a business model. Deep and iterative engagement with stakeholders can clarify technology-venture fits as well as business model requirements. In the discipline of design there is a vast gulf between “designing for” a user and “designing with” a user—a subtlety that is generally lost in mainstream management and entrepreneurship education.

Finally, the role of the entrepreneur can be quite different in foreign contexts, particularly where the entrepreneur is non-native to the country or region where social ventures are explored, founded or scaled. As such, existing methods to evaluate and shape the feasibility of entrepreneurial opportunities—which generally assume shared culture—often do not port well across unfamiliar contexts. The entrepreneur’s challenge is one of relationship building within a set of stakeholders versus simple analysis, opportunity evaluation and resource marshaling. In sum, the entrepreneurial team must engage all relevant stakeholders in identifying, shaping and pursuing entrepreneurial opportunities.

Thus, those passionate about social entrepreneurship need to navigate complex cultural and economic factors, where secondary data is rarely available or useful if it even exists. In such

contexts, deep contextual engagement and creative entrepreneurial action with stakeholders often trump removed, data-driven business planning. Key questions include: What stakeholders are on the entrepreneurial team? How can the entrepreneurial team achieve the impact it hopes to? How can technology and business innovation be combined to create new social benefits (and through what sustainability-focused business models)? And for the entrepreneurship educator, how do you teach entrepreneurial action and experimentation in such new and unfamiliar contexts?

These questions comprise the scope and focus of Affordable Design and Entrepreneurship, an international, experiential social venturing collaboration described in greater detail below. As a short case on venture-building collaborations in Ghana later suggests, the movement of entrepreneurship education to decidedly social objectives and contexts creates new complexity and new opportunity for entrepreneurship educators.

AFFORDABLE DESIGN AND ENTREPRENEURSHIP

ADE is entrepreneurship and engineering collaboration between Babson College and Olin College of Engineering, both located near Boston, Massachusetts in the United States. The mission of Babson College is “to educate leaders who create great economic and social value—everywhere”. Comparably, Olin College’s mission is to “prepare students to become exemplary engineering innovators who recognize needs, design solutions, and engage in creative enterprises for the good of the world.” ADE represents an effort by both colleges to combine entrepreneurial thinking and human-centered design (HCD) to spawn social ventures with measurable impact. Entrepreneurial action, co-creation with stakeholders, and market tests—not planning—are the foundation of social venture creation in ADE.

Curriculum-wise, ADE is an international, experiential social entrepreneurship course jointly offered by both colleges with class meetings on both campuses and trips locally and abroad to advance a portfolio of social ventures. Approximately 30 students enroll each semester with most taking the course for one semester, although many take it for two. Students go on work trips to their partner sites for about two weeks per semester. Past sites and partners have been located in Alabama, Ghana, India, Massachusetts, Mississippi, Morocco and Uganda. The inclusion of U.S. sites is a way to recognize poverty exists regionally everywhere in the world and not just in least-developed countries.

Interdisciplinary teams of entrepreneurship and engineering students identify, develop and deploy opportunities with social benefit in collaboration with partners. Whether they are collaborating with agricultural villages in Ghana or rickshaw pullers in India, ADE students are tasked to understand the unique needs and challenge their stakeholder’s face, to construct and manage a co-design process and strive to generate a measurable social impact while fulfilling other academic coursework and responsibilities. Success from the standpoint of an ADE venture means a team can step away once a technical innovation has been deployed with a sustainable business model.

A visual depiction of the product-venture portfolio is given in Appendix A, which shows the stages of the ADE incubation pipeline and specific ventures. As a guide, exploring venture opportunities with a partner requires one to two semesters; developing and scaling ventures can take between three to six semesters (or 1.5-3 years). A particular challenge of the course is exploring, developing and scaling ventures while students are entering and exiting the program. As such, ADE has novel strategies, including multimedia repositories, knowledge management processes, and the documentation of market experiments, to support venture continuity across

semesters. A common metaphor used in ADE is that “students get on the bus and get off the bus—but the bus never stops”.

The program requires an annual operating budget on the order of \$100,000. These funds are used to execute market experiments (i.e., to fund creative action), make investments in prototypes and technology development, offset the costs of student travel to partner sites and support adjunct team advisors. Support has been provided by corporations, foundations and grant making organizations.

CASSAVA GRATING IN GHANA

The Ghana site team launched in the Spring of 2011 looking at several “Opportunity Briefs” depicting social challenges and opportunities identified with local partners, one of which detailed a need to mechanically grate cassava for gari production in villages in the Ashanti region (see Appendix B). The opportunity was initially explored by the International Development Design Summit in Ghana in 2009. Cassava, a vital crop in Ghana, is a root vegetable responsible for 80% of the country’s carbohydrate intake. Gari, made from grated, pressed and fried cassava, spoils less easily than the whole, unprocessed root. An opportunity was identified for a small-scale machine to assist gari-producing women with the burdensome and time-consuming task of grating peeled cassava. While cassava graters exist in market towns and some larger villages, the majority of rural or village-level grating is done by hand and almost exclusively by women. Mechanized grating translates to increased gari production and therefore more food security, less physical exertion and time spent during the grating process, and potentially new income generation opportunities and markets for women based on new agricultural processing capability.

The following sections detail complementary efforts in technology development and venture creation, which required the student team and partners to blend technical and business innovation. Much of this work was done through the equivalent of \$5, \$50 and \$500 experiments, a form of escalating assumption testing with technologies and markets that was introduced to the program by Andy Hargadon at UC Davis.

TECHNOLOGY DEVELOPMENT

The team began with stakeholder engagements with community members in a peri-urban village to explore the opportunity space and potential user needs for a cassava-grating machine. A strong preference was identified for an electric machine over a manual one. Early on the team developed and tested both grid- and photovoltaic-powered prototypes, and while both proved feasible, the team considered the grid-based design to be a more viable entry point for a venture. They found this configuration to have a significantly shorter payback period for gari-producing women that were located in a more accessible peri-urban market with demonstrated demand.

The students then refined their prototype into a product through a series of co-design engagements and pilot tests with gari-producing women in multiple villages. Affordability, ease of operation, cleanliness and safety were all critical design considerations presenting a host of technical challenges to solve, such as coming up with a grater head that users can remove and service that is highly balanced and producible in volume at low cost. The team also collaborated with local manufacturers to design the machine for local assembly and repair, which included performing a number of fabrication and production tests together to refine the design.

VENTURE CREATION

The team also concurrently explored business models that would make mechanized cassava grating sustainable. They initially explored individual versus collective ownership, and working with the chief and elders of a village, they piloted a business cooperative, comprised of a number of village residents, which was unsuccessful. They investigated individual willingness-and ability-to-pay through sales of prototypes as part of the pilot tests, establishing an appropriate price point to drive affordability. They soon identified sub segments of the gari-producing market, one of which was lower income women willing to band together to purchase a machine, effectively creating a mini coop. These sales tests also identified larger existing gari-producing coops that preferred a much larger machine.

Through additional testing the team settled on an individual ownership model over alternatives, such as renting or leasing, and got to work on the sustainability of the model. The pilot tests verified that the machine had a short payback period, less than one year, at modest volume pricing. However, the women with the most need were found to have too little capital to afford the machine without financing, so the students developed a micro loan service to accompany the product for those stakeholders. Distribution was a significant challenge due to the geographic spread of the primary beneficiaries, so they visited radio stations, ran tests with agricultural shops, known as input dealers, and enlisted more experienced gari women to serve as village-level entrepreneurs to trial selling and collecting payments.

CHALLENGES AND OPPORTUNITIES

Above we highlight only one of several ADE social ventures. In fact, there are four to eight active ventures and projects every semester across our four partner sites (see Appendix A). The challenges in operating such a joint, international, experiential program are significant. These include securing funding to explore, launch and scale ventures; establishing partners/partner sites in each of the geographies; formalizing processes to reliably drive deep and meaningful engagement with partners; and, at home, dealing with significant cultural differences between the two colleges, particularly the values and norms of an entrepreneurship college in relation to a design-oriented engineering college.

The short case above does not examine the specifics of advisor-team relations, which shape the co-creation process with partners and the final deliverables on a per semester basis. There is a multifaceted process of negotiating scope with the partners, the advisor, and the student team each semester to identify what deliverables are desirable, affordable and achievable within the given time frame. Because students' ability levels and motivations are mixed, advisors often need to assume a player-coach role, not entirely driving the process with students and partners but also offering strong counsel on priorities, thoughtful relationship management, and how to handle unexpected challenges.

One particularly interesting issue, not examined here, is the class' management of the product-venture portfolio and specifically the need to prioritize, de-prioritize and shut down projects within the ADE "firm". As with all entrepreneurial efforts, there is a high risk of failure for any given venture and success is far from assured. The students are given an ongoing role in managing the product-venture incubation pipeline. This includes prioritizing projects for investment based on their expected social impact relative to their resource intensity looking across the full portfolio. Moreover, each student team is expected to develop new opportunities with partners to feed into the ADE pipeline.

Overall, the administrative requirements to operate ADE are high, considering partner relationship management, travel logistics, risk management, budgets and the challenges of coordinating a two-college program. Nevertheless, the learning experiences suggest a number of interesting directions for social entrepreneurship education, which is too often neglected and not handled experientially in entrepreneurship programs.

SUMMARY

This paper started with the observation that 70% of all entrepreneurship courses offered in the U.S. focus on business plan creation, generally for for-profit, independent startups. Moreover, it discussed the far-reaching implications of an entrepreneurship education model largely focused on high-tech/high-growth venturing as the most desirable form of entrepreneurship. One unintended consequence of this focus is that entrepreneurship students struggle to find meaningful social entrepreneurship courses—let alone social entrepreneurship experiences—in the context of their education.

ADE suggests an approach where students can be pushed to see the limitations of traditional business planning, particularly when creative entrepreneurial action is required to pursue, clarify or identify entrepreneurial opportunities. The program is a learning lab where students grapple with cultural, technological and business uncertainty. The greatest uncertainty—and learning—comes from pursuing and managing a co-creation process with stakeholders to explore, evaluate and seize social opportunities. “Designing with” stakeholders is much harder than “designing for” them, but it is more likely to produce a social impact as well as experienced young entrepreneurs.

We believe the ADE model can deliver on the promise of “ambidextrous” social entrepreneurs who can bridge technical and business model innovation while managing the inherent complexity and ambiguity. Rarely, is a social opportunity defined by strictly technical or managerial or organizational concerns. Oppositely, entrepreneurial leaders who can blend these two capabilities can pursue social opportunities in a wide range of settings with a wide range of partners.

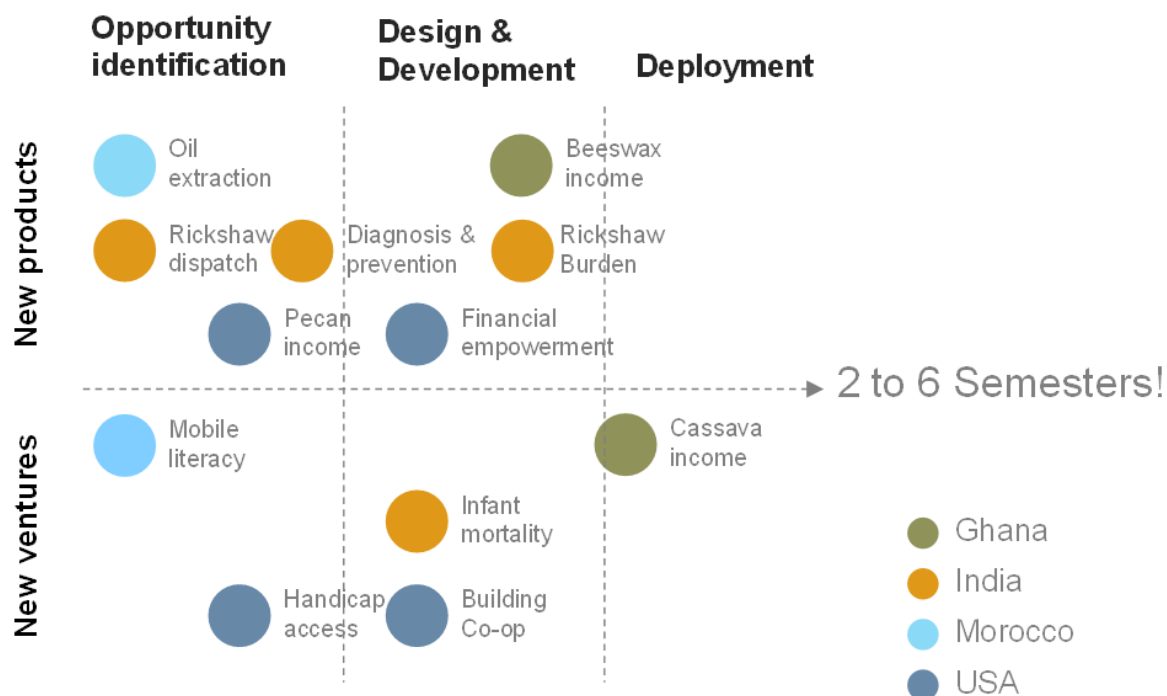
ADE is not a standard course in which students can participate passively. Thankfully, committed students from both Babson and Olin Colleges self-select into the program based on a desire to develop their entrepreneurial leadership and design capabilities in a social context. Most, but not all, students emotionally commit to ADE because the opportunities and pressures to perform are real. Broadly, a key opportunity for entrepreneurship education is to evaluate the usefulness of business plan creation in complex social contexts and to embrace the uncertainty and learning that comes from creative entrepreneurial action.

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APPENDIX A: SNAPSHOT OF THE ADE PRODUCT-VENTURE PIPELINE

PRODUCT-VENTURE INCUBATION PIPELINE



2 ICT, 4 Agricultural, 3 Health, 1 Energy, 1 Education, 1 Transportation, 1 Housing, 1 Financing

APPENDIX B: ONE OF MANY OPPORTUNITY BRIEFS PROVIDED TO THE GHANA TEAM

Cassava Grating: *Ashanti Region, Ghana*

Motivation

Cassava is a staple food throughout Western Africa and many other tropical regions. In Ghana, cassava is routinely grated to prepare value added products such as gari for sale or use as an ingredient in domestic cooking. Grating is largely done by hand in rural villages, which is laborious, time consuming and dangerous. In some cases tubers are transported in sacs to market to be machine grated, which increases cost, or a traveling grater visit, which provides a limited schedule. Small-scale grating machines reduce costs and increase production for local gari women while reducing burden.

Proposed activity

Continue to deploy a low-cost, grid-powered cassava grater in villages in Ghana. Refine the current production prototype to incorporate lessons learned from local fabricators and create jigs and fixtures to begin production. Identify supply chain partners for key components, especially an appropriate motor. Work with agricultural shops (input dealers) and others to start up distribution and sales. Work with our partners to begin initial operations to take the next step in scaling up.

Stakeholders

Small-scale mechanization provides assistance to local gari- producing women underserved by existing machines in the market. These women report that they would use additional income to grow their businesses, pay for school fees, and build new homes. Machine grating can displace women hired to grate cassava causing a loss of jobs. Since cassava is extensively processed throughout the tropical regions, a viable strategy could have widespread application.

Talents needed

Product interaction design, mechanical design, and fabrication with an emphasis on design for manufacture, component selection, and sourcing. Business modeling, value chain analysis, financial projections, market analysis, distribution and sales, operations management, and communication skills.

Status

A small-scale, off-the-shelf electric grater has been developed and 3 initial units have been sold to women in Adumkrom and PKK with requests for additional machines. A workshop was held in Suame magazine to co-design with and train fabricators. Conversations were held with a variety of potential distributors including ag shops, restaurant owners, and gari factory owners. One machine was placed at an ag shop to gauge demand.

Partners

Technology Consultancy Center (TCC) and Intermediate Technology Transfer Unit (ITTU), KNUST, Kumasi, Ghana. International Development Innovation Network.



A farmer demonstrating how cassava is harvested with a machete in Adumkrom, a small Ashanti village near Konongo, Ghana, where ADE has a pilot grater.



A woman hand grating cassava in PKK near Konongo, Ghana, who later purchased a machine along with 2 other women.



Women in PKK testing an ADE grater that they purchased for 300 Ghana Cedis with a micro loan as part of the pilot phase.

REFERENCES

- Abu-Saifan, S. (2012). Social entrepreneurship: Definition and boundaries, *Technology Innovation Management Review*, vol. 2.
- Bygrave, W.D, Lange, J., Mollov, A., Pearlmutter, M., and Singh, S. (2007). Pre-startup formal business plans and post-startup performance: A study of 116 new ventures, *Venture Capital Journal*, Vol. 9, No. 4, 1-20.
- Blank, S. G. (2005). *The Four steps to the epiphany: Successful strategies for products that win.* Cafepress.
- Blank, S. G. (2013). *Why the lean start-up changes everything.* Harvard Business Publishing.
- Brush, C., Greene, P. & Hart, M. (2001). From initial idea to unique advantage: The entrepreneurial challenge of constructing a resource base. *Academy of Management Executive*, special issue on Strategic Management and Entrepreneurship, 15:1, 64-80.
- Corbett, A. 2011. Finding your own way: entrepreneurship course development, strategic fit, and the problems of benchmarking, *International Journal of Entrepreneurship and Small Business*, 13:1, 18-31.
- Costello, C., Neck, H. & Williams, R. (2011). Elements of the entrepreneur experience. Babson Entrepreneur Experience Lab <http://elab.businessinnovationfactory.com/sites/default/files/pdf/ELab-Elements-EntExp.pdf>
- Dew, N., Read, S., Sarasvathy, S.D. & Wiltbank, R. (2009). Effectual versus predictive logics in entrepreneurial decision-making: Differences between experts and novices, *Journal of Business Venturing*, 24:4, 287-309.
- Edelman, L., Manolova, T. & Brush, C. 2008. Entrepreneurship education: Correspondence between practices of nascent entrepreneurs and textbook prescriptions for success. *Academy of Management Learning and Education*, 7:1, 56-70.
- Greene, P.J., Katz, J.A. and Johannisson, B. 2004. Entrepreneurship education, *Academy of Management Learning & Education*, 3:3, 238-241.
- Hart, S. & Simanis, E. (2006) Expanding the possibilities at the base of the pyramid, *Innovations*, Winter, pp. 43-51.
- Higgins, D. & Elliot, C. (2010). Learning to make sense: what works in entrepreneurial education, *Journal of European Industrial Training*, Vol. 35, Iss. 4, pp. 345-367.
- Honig, B. (2004). Entrepreneurship education: Toward a model of contingency - based planning. *Academy of Management Learning and Education*. 3:3, 258-273.
- Jennings, C. & Wagnier, J. (2010). Experiential learning: A way to develop agile minds in the knowledge economy?, *Development and Learning in Organizations: An International Journal*, Vol. 24, Iss. 3, pp. 14-16.

- Katz, J. (2003). The chronology and intellectual trajectory of American entrepreneurship education 1876-1999. *Journal of Business Venturing*. 18:2, 283-300.
- Kuratko, D. (2005) The Emergence of Entrepreneurship Education: Development, Trends and Challenges, *Entrepreneurship Theory and Practice*, Vol. 2, Iss. 5, pp. 577-597.
- Neck, H., Greene, P. & Brush, C. (2014) *Teaching Entrepreneurship: A Practice-based Approach*, Edward Elgar Publishing, Northampton, MA.
- Neck, H. & Greene, P.G. 2011. Entrepreneurship education: Known worlds and new frontiers; *Journal of Small Business Management*, 49:1, 55-70.
- Noyes, E. and C. Brush (2012). Teaching entrepreneurial action: Application of creative logic. *Entrepreneurial Action: Advances in Entrepreneurship, Firm Emergence and Growth*, vol. 14, editors: A. Corbett and J. Katz.
- Osterwalder, A. and Y. Pigneur (2010). *Business Model Generation: A handbook for visionaries, game changers and challengers*. Wiley: New York.
- Peterman, N. & Kennedy, J. 2003. Enterprise education: Influencing students' perceptions of entrepreneurship. *Entrepreneurship Theory and Practice*. 28:2, 129-144.
- Rich, S.R. & Gumpert, D.E. 1985. How to write a winning business plan. *Harvard Business Review*, 3: 3-8.
- Ries, Eric (2011). *The Lean Startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Business.
- Sarasvathy, S. (2001). Causation and effectuation: towards a theoretical shift from economic inevitability to entrepreneurial contingency, *Academy of Management Review*, Vol. 26, No. 2, pp. 243-263.
- Sarasvathy, Saras D. (2009). *Effectuation: Elements of Entrepreneurial Expertise*, Edward Elgar Publishing.
- Shane, S. & Venkataraman, S., (2000), The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25: 21-226
- Stevenson, H. & Jarillo, J. (1990). A paradigm of entrepreneurship: Entrepreneurial management, *Strategic Management Journal*, 11: 17-27.
- Vesper, K. H. & Gartner, W. (1997). Measuring progress in entrepreneurship education. *Journal of Business Venturing*. 12:4, 403-421.
- Von Hippel, E. (1986). Lead users: A source of novel product concepts, *Management Science*, 32, no. 7: 791-805.

EFFECTS OF TRAINING METHOD AND AGE ON EMPLOYABILITY SKILLS OF MEXICAN YOUTH ENTREPRENEURS

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ABSTRACT

This study examined the effects of two age groups of Mexican youths (18-25 years, $n = 44$, and 26-35 years, $n = 48$), within two types of entrepreneurial training programs (coached, $n = 26$ and laissez-faire, $n = 66$) on employability skills (communication, teamwork and organizing effectively). Participants completed a survey after participating in at least 1-year of entrepreneurial activity. A 2 X 2 ANOVA evaluated the effects of age group and entrepreneurial training on employability skills. The results showed that entrepreneurs from 26-35 years have higher communication and organizing skills than entrepreneurs from 18-25 years regardless of the training program. Additionally, young adult entrepreneurs (26-35), that participated in the coached training program increased their communication and teamwork skills. These findings support the recommendation of age appropriate training.

INTRODUCTION

Only 4% and never more than 11% of youths under 25 are self-employed (Organization for Economic Co-operation (OECD), 2013). Increasing self-employment rates in youths can be an important policy target to deal with a key economic issue of high youth unemployment (OECD, 2013). A survey of 4,769 students (172 high school students and 4,597 college students) and 326 employers from across the US found that 72% of high school students and 64% of college students want to start a business someday. Millennial Branding and Internships.com, the organizations that conducted the survey, found that 61% of high school students and 43% of college students would rather be an entrepreneur instead of an employee when they graduate college (Schawbel, 2014). With low self-employment rates, high unemployment rates and the fresh interest in entrepreneurship, developing entrepreneurial attitudes and skills is strategic for countries aiming to improve the economical and innovative trends in their regions while simultaneously addressing the issue of high youth unemployment.

In Mexico, youths get involved in entrepreneurial activities at a higher rate compared to youths from other countries (OECD, 2013). Furthermore, Mexico is recognized as one of the more entrepreneurial countries of the world (do Paço, Ferreira, Raposo, Rodrigues, & Dinis, 2011). However, the survival rate of their companies is low and there is not enough research on entrepreneurship education and training to develop their business skills (Morales-Diaz, 2012 & Gajón-Gómez, Reyna-García, Armenteros-Acosta & Mijares-Villarreal, 2014).

Both institutions and entrepreneurs are debating whether entrepreneurship skills are teachable or not. Wu and Jung (2008) found that entrepreneurs realize the benefits of training programs once they participate in.

PURPOSE OF THE STUDY

The purpose of this study is to evaluate the impact of training (coached, $n = 26$, laissez-faire, $n = 66$), in Employability Skills of Emerging Adult (18-25 years, $n = 44$) and Young Adult (26-35 years, $n = 48$) Mexican Entrepreneurs.

Definitions of Terms

Youth: for the purpose of this study, a youth is defined as a person between 18 and 35 years old. Participants were divided in two groups: 1) emerging adulthood, ages 18-25 and 2) young adults, ages 26-35.

Employability skills: are the proficiencies developed by an individual's long-term capacity to build a career and to prosper in a labor market (Curtis & McKenzie, 2001 as cited in Román-Maqueira, 2011). The employability skills this study focuses on are communication, teamwork and organizing effectively.

Communication skills are oral, written, and nonverbal exchanges. Communication contributes to productive and harmonious relations between employees and customers. Teamwork skills are the skills used to work with different people in different settings that contributed to productive working results. Organizing effectively is the ability to perform a wanted result in an effective and efficient manner.

Entrepreneurial Training Program

Coached Method: the coached group received training that consisted of accessing a mentor, financial assistance and technical support for the project through a youth entrepreneurship organization.

Laissez-faire Method: the laissez-faire group received only information that they requested through a youth entrepreneurship information network.

THEORETICAL FRAMEWORK

Youth is characterized differently depending on the discipline and context. The typical definition of a youth is often expressed chronologically; however even within the chronological framework, the actual age limit varies. The United Nations' World Program of Action for Youth (2010) defined youth as people aged 15-24, while the African Youth Charter defined youths as "every person between the ages of 15 and 35 years". An additional characterization is an individual's lifestyle and behaviors. Viacom Brand Solutions International (VBSI) conducted a study to explore the concept of the extension of youth and to understand the behavior of 25-34 year olds around the world. The study included Mexico, Argentina, Australia/NZ, Brazil, China, Denmark, Germany, India, Italy, Japan, Holland, Poland, Spain, Saudi Arabia, Sweden, UK and USA. VBSI found that youths that are ages 25-34 years old considers themselves as "youth". As a result of this perception, they prolong their engagement and participation in youth culture

(Brand Solutions Asia Pacific, 2008). It is becoming more acceptable for older people to participate in youthful pursuits. People worldwide delay the onset of adult responsibilities and stay emotionally and physically younger for longer.

This trend to prolong youth was also identified by The International Labor Office (ILO) (2006). They considered the fact that more and more young people postponed their entry into the labor markets well beyond the age of 25. There seems to be a shift in the characterization of youths in Mexico and around the world. With this new characterizations researchers must determine if it is appropriate to extend the parameters of youth to those older than 25 or create a new subgroup that captures any differences in attitudes, expectations or responsiveness to services provided to the youths.

Young people who start new enterprises are creating jobs for themselves and reaching their personal goals. However, lack of experience and resources mean that a high percentage of these efforts fail during the first few months of operation. To reduce the failure of youth enterprises and address critical issues during the startup process, the public and private sectors are increasing their efforts to support young people by providing training, technical assistance and small credits (Llisterri, Kantis, Angelelli, & Tejerina, 2006).

In Mexico, the Federal Government works through the Instituto Nacional del Emprendedor (INADEM, Entrepreneurship National Institute) to identify and support the specific needs for each Mexican state (Ortega-Martínez, Cano-López de Nava, Salcido-Martínez, Villarreal-Solís, & Villarreal-Solís, 2014). This support is critical for the identification and preparation of Mexican entrepreneurs and small businesses. In 2007, there were 913,475 registered companies in Mexico. For each 100 companies, 5.8 were created and 2.8 failed (Morales-Díaz, 2012). The sustainability of companies in Mexico is a critical issue for the Mexican Government. While data shows that more companies are created than are failing, it is important to understand that the failure rate for these new businesses is very high. Morales-Díaz (2012) cited a study conducted by Headd (2003) that found that 66% of the companies in Mexico survived only two years.

Cognizant of this crisis in the country, traditional and nontraditional institutions are debating whether entrepreneurship skills are teachable or not. Authors defend that entrepreneurship education should be part of all formal educational system because entrepreneurship education can develop skills associated to entrepreneurship success, and that entrepreneurs will need in the future (do Paço et al., 2011). Some entrepreneurs prefer to rely more on themselves, but once they discover training programs, new horizons emerge in their lives and they find teachable skills (Wu & Jung, 2008). Some entrepreneurs participating in training programs find positive results. Participants that complete a training program gain a better insight in marketing, finance, accounting, and business knowledge. Also training programs increase skills such as self-confidence and networking skills (Bauer, 2011).

Entrepreneurship training programs achieve positive results in participants, but the program itself will not assure success. The entrepreneur's personality and his social environment, along with participating in a training program, settle a higher chance to succeed (Uribe, De Pablo, & Bonilla, 2013). Without denying training programs' positive effect on entrepreneurs, the programs do not always have the wanted impact. In a study involving women entrepreneurs, one-third of the participants felt less or no effectiveness with the training program they took (Nagesh & Murthy, 2008).

The culture constrains or facilitates the entrepreneurial activity, however the entrepreneurs need to seek out and obtain training in order to sustain their business (Baughn &

Neupert, 2003). The human being grows and gains experience constantly. When an entrepreneur has the personal, familiar, social, technical and environmental opportunities for an entrepreneurial project, training becomes a trigger. Training provides continuous improvement and development for entrepreneurship attitude and aptitude for success, connecting with values, innovation and self-reflection (Elmuti, Khoury, & Omran, 2012).

The motivations of the entrepreneurs in their everyday social behavior influence their entrepreneurial performance. The sensed difficulty to become an entrepreneur and the subjective community rules and social pressure from the entrepreneur's family to become an entrepreneur are some examples (Montiel-Méndez, Márquez-Miramontes, Arámbula-Monreal, & Ordoñez-Molinar, 2012). Other examples of influences are: 1) Personal abilities (self-control, discipline, risk-taker, change oriented, and innovative attitude); 2) Personal and family environment; 3) Educational, business and social background; 4) Communication and personal interrelation abilities; 5) Business management and organizational skills (Moreno-Zacarias & Espiritu-Olmos, 2010).

In addition to individual attributes, the society also plays a role in the success or failure of an entrepreneurial venture. Take for instance the relationships between universities and industry. These institutions are critical components to successfully transfer knowledge (Sherwood, Robinson, & Butts, 2011). The university transfers the research to the companies and the companies transfer the experience and knowledge of the practical wisdom for increasing the market and financial value to the university research. One key challenge for universities and industries is to find the way to communicate effectively (Sherwood, Robinson, & Butts, 2011).

Entrepreneurship can be seen as a special form of employability. In Mexico, youths get involved in entrepreneurship activities at a higher rate compared with other countries of the OECD. Approximately 10% of youth, below 25 years old, are self-employed, similar to youths from Italy, Greece, South Africa, and Slovak Republic. Overall, the percentage of youths involved in entrepreneurial activities from other countries of the OECD is lower (OECD, 2013).

When academic institutions promote employability skills development, they are also promoting entrepreneurship (Moreland, 2006). Employability skills are essential for students finishing college to get recruitment in the competitive world. Students who just graduated from college are low in soft skills during time of induction in a company. However, the impact of conducting training on soft skills once the graduate starts in a company improves the effectiveness of soft skills in job performance (Sahni, 2011).

Employability skills development is a duty of the university. A good academic institution is concerned with the employability problem and should seek to integrate this issue into the curriculum design (Parvu, Ipate, & Mitran, 2014). Employers can increase their stake in employability skills development by working in partnership with universities on the core skills they expect (Maxwell, Scott, Macfarlane, & Williamson, 2009). According to Maxwell et al. (2009), the main competence among employers was communication skills, and problem solving. Parvu, Ipate, and Mitran (2014) added that assuming responsibilities, team-working skills, and disposition to steady effort are also important skills to learn. When students take part in formal work experience and employers are involved in curriculum design, there is a positive effect on the ability of graduates to secure employment (Mason, Williams, & Cranmer, 2009).

In Mexico, there is a lack of scholarly research on improving entrepreneurial skills. Research on entrepreneurship usually focuses on women entrepreneurs or innovation, but not on entrepreneurship development, education or training. A bibliometric analysis was made utilizing the main scientific journals to assess how to develop, train and educate potential entrepreneurs.

However, from a database of 10,000 publications, only 100 were publications related to the innovation education and entrepreneurship development in Mexico (Gajón-Gómez, Reyna-García, Armenteros-Acosta, & Mijares-Villarreal, 2014).

METHODS

This study is part of a larger study conducted by Román-Maqueira (2011), entitled: *“Latin American youth entrepreneurs: differences between coached and laissez-faire entrepreneurial experiences in their employability skills and their entrepreneurial innovative attitude”*. The Institutional Review Board for the Protection of Human Subjects in Research at Dowling College granted approval for the study. Additional approval was obtained, for the coached group, from the International Youth Organization office headquarters in Arlington, Virginia and the local offices in Latin America. Approval for the laissez-faire group was obtained from the International Youth Organization office headquarters in Washington, DC. Respondents' confidentiality was maintained and results of the study were provided with aggregated data. No respondent identifiers were gathered at any time. The personal information requested from respondents included age, gender, and country and city of residence. Román- Maqueira received 627 responses, of which she used 317 after eliminating the individuals who were not in the age range.

For the purpose of this study, the data for youth entrepreneurs from Mexico was used to analyze three main research questions. The research questions were:

Do the means of communication, teamwork and organizing effectively differ for emerging adults and young adult?

Do the means of communication, teamwork and organizing effectively differ for coached and laissez-faire training programs?

Do the differences in the means of communication, teamwork and organizing effectively between the two training programs vary as a function of age group?

Data for this study were pulled from Román-Maqueira's sample of 317 Latin American youths. One hundred and twenty responses were from Mexican entrepreneurs. This study used 92 of the 120 responses, after removing 24 responses with missing data, two respondents younger than 18, and two respondents older than 35.

All participants completed an online survey after participating in at least one year of entrepreneurial activity. Content validity was done on the survey responses by a panel of five jurors of bilingual speakers. Bilingual speakers were chosen because the survey was administered in Spanish and later translated to English. A factor analysis was also conducted on the items and resulted in the elimination of some survey items. The remaining items had a factor loading of .494 or higher. Alpha coefficients for the survey items showed high reliability (range 84.3% - 92.5%).

Employability skills, the focus of this research, were measured by 3 dimensions (22 items) on the survey: communication (5 items), teamwork (6 items) and organizing effectively (11 items). The items were rated on a 10-point scale where 1 tells strongly disagree (SD) with the statement and a 10 means strongly agree with the statement (Román-Maqueira, 2011). To see the entire survey, Román-Maqueira (2011), page 193.

A 2 X 2 ANOVA compared the mean ratings of the dimensions of communication, teamwork and organizing effectively, within two age groups of youth entrepreneurs (emerging adults and young adults) and two training methods (coached and laissez-faire). This is a factorial

design with two independent variables (age group and training method). The dependent variables would be communication, teamwork and organizing effectively.

RESULTS

A 2 X 2 ANOVA evaluated the effects of age group and type of training program on communication skills. The means and standard deviations for communication skills as a function of the two factors are presented in Table 1. The ANOVA (Table 2) showed significant interaction between emerging adults and young adults and type of training program, $F(1, 79) = 6.20$, $p = .01$, partial $\eta^2 = .07$. There was no significant difference for the type of training program, $F(1, 79) = 0.63$, $p = .43$, partial $\eta^2 = .01$, but significant main effects for emerging adults and young adults, $F(1, 79) = 6.46$, $p = .01$, partial $\eta^2 = .08$. The main effect for the age group showed that young adults tended to have higher communication skills than emerging adults.

Table 1
MEANS AND STANDARD DEVIATIONS FOR COMMUNICATION SKILLS

Age group	Training Program	<i>M</i>	<i>SD</i>
18-25	Coached	32.33	3.65
	Laissez-Faire	35.38	4.64
26-35	Coached	37.00	3.88
	Laissez-Faire	35.43	3.12
Total	Coached	34.85	4.40
	Laissez-Faire	35.40	3.93

Table 2
ANALYSIS OF VARIANCE FOR COMMUNICATION SKILLS

Source	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	²
Corrected Model	146.30 ^a	3	48.77	3.19	.03	.11
Intercept	87302.86	1	87302.86	5707.72	.00	.99
Age	98.86	1	98.86	6.46	.01	.08
Program	9.66	1	9.66	.63	.43	.01
Age*Program	94.77	1	94.77	6.20	.01	.07
Error	1208.35	79	15.30			
Total	104364.00	83				
Corrected Total	1354.65	82				

a. R Squared = .108 (Adjusted R Squared = .074)

A 2 X 2 ANOVA evaluated the effects of age group and type of training program on teamwork skills. The means and standard deviations for teamwork skills as a function of the two factors are presented in Table 3. The ANOVA (Table 4) showed significant interaction between emerging adults and young adults and type of training program, $F(1, 78) = 4.88$, $p = .03$, partial $\eta^2 = .06$. There was no significant difference for the type of training program, $F(1, 78) = 0.10$, $p = .75$, partial $\eta^2 = .00$, and no significant main effects for emerging adults and young adults, $F(1, 78) = 1.13$, $p = .29$, partial $\eta^2 = .01$. The main effect for the age group showed that young adults tended to have similar teamwork skills as emerging adults.

Table 3
MEANS AND STANDARD DEVIATIONS FOR TEAMWORK SKILLS

Age group	Training Program	<i>M</i>	<i>SD</i>
18-25	Coached	51.82	4.89
	Laissez-Faire	55.11	5.08
26-35	Coached	56.07	4.36
	Laissez-Faire	53.62	6.21
Total	Coached	54.20	4.99
	Laissez-Faire	<u>54.35</u>	<u>5.68</u>

Table 4
ANALYSIS OF VARIANCE FOR TEAMWORK SKILLS

Source	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	η^2
Corrected Model	143.31 ^a	3	47.77	1.65	.18	.06
Intercept	201789.73	1	201789.73	6958.05	.00	.99
Age	32.92	1	32.92	1.13	.29	.01
Program	3.02	1	3.02	.10	.75	.00
Age*Program	141.67	1	141.67	4.88	.03	.06
Error	2262.07	78	29.00			
Total	244225.00	82				
Corrected Total	2405.38	81				

a. R Squared = .060 (Adjusted R Squared = .023)

A 2 X 2 ANOVA evaluated the effects of age group and type of training program on organizing effectively. The means and standard deviations for organizing effectively as a function of the two factors are presented in Table 5. The ANOVA (Table 6) showed no significant interaction between emerging adults and young adults and type of training program, $F(1, 72) = 1.88, p = .17$, partial $\eta^2 = .02$. There was no significant difference for type of training program, $F(1, 72) = 0.00, p = .96$, partial $\eta^2 = .00$, but significant main effects for emerging adults and young adults, $F(1, 72) = 5.28, p = .02$, partial $\eta^2 = .07$. The main effect for the age group showed that young adults tended to have higher organizing effectively skills than emerging adults. Please note that large standard deviation on Table 5 of the Laissez-Faire 18-25 group, may lead to Error type II. However, $p=.96$ showed no significance among the program.

Table 5
MEANS AND STANDARD DEVIATIONS FOR ORGANIZING EFFECTIVELY

Age group	Training Program	<i>M</i>	<i>SD</i>
18-25	Coached	94.20	7.10
	Laissez-Faire	97.31	11.49
26-35	Coached	102.86	8.76
	Laissez-Faire	99.50	8.26
Total	Coached	99.25	9.06
	Laissez-Faire	<u>98.40</u>	<u>9.97</u>

Table 6
ANALYSIS OF VARIANCE FOR ORGANIZING EFFECTIVELY SKILLS

Source	<i>SS</i>	<i>Df</i>	<i>MS</i>	<i>F</i>	<i>p</i>	²
Corrected Model	511.42 ^a	3	170.47	1.90	.14	.07
Intercept	624636.52	1	624636.52	6964.75	.00	.99
Age	473.97	1	473.97	5.28	.02	.07
Program	.25	1	.25	.00	.96	.00
Age*Program	168.29	1	168.29	1.88	.17	.02
Error	6457.35	72	89.68			
Total	746903.00	76				
Corrected Total	6968.78	75				

a. R Squared = .073 (Adjusted R Squared = .035)

SCHOLARLY SIGNIFICANCE OF THE STUDY

Organizations and educational institutions should be mindful of the program design and targeted age group when investing in entrepreneurial training. Specifically, it is imperative that they consider alternate methods of preparing entrepreneurs younger than 25 years old. The current trend according to Schawbel (2014), is that high school students (61%) and college students (43%) would rather be an entrepreneur instead of an employee when they graduate college. Organizations should appropriately train youths for their desired careers and professions goals.

After evaluating the results of the study, the recommendation for future research should be to repeat the study with a larger sample size for each group under observation. Another recommendation is to have an external rater evaluate the entrepreneurs' employability skills in addition to their self-evaluation. This would result in a more rounded appraisal of the impact of training and would capture any personal biases and blind spots of the trainee.

For Mexico, there is a need to research different models focused in specific areas as stated by the bibliometric analysis conducted by Gajón-Gómez et al. (2014). It is important to understand how to improve the government-universities-companies formula to promote the development of new entrepreneurs that create new job positions, and become a strategic impulse for the Mexican micro and macro economy. There may not have been a need in the past, however now that the interest in entrepreneurship is rising, it is imperative for us to have researched based policies and practices to support this change.

CONCLUSIONS

After reviewing the results of the present study, the findings support that some employability skills are teachable to entrepreneurs as stated in studies presented in the theoretical framework (Bauer, 2011; Wu & Jung, 2008). Communication skill is one of the most influential employability skills for employers (Maxwell et al., 2009 and Parvu et al., 2014). The success of an employability skills program can be determined by the effectiveness of the program in improving communication skills. The finding for the present study illustrate that, of the three dimensions of employability skills evaluated, communication skills had the greatest probability for improving. Communication skills increased with age alone and with the interaction of age and type of training.

Teamwork is also an important employability skill expected by employers (Parvu et al. 2014). In the study, this skill did not improve with the age or participation in the type of training

program, instead teamwork skills increased only with the interaction of age and type of the training.

The results gained with this study also provide new information about the role of age in training employability skills. Young adults (ages 26-35) reported higher levels of communication and organizing effectively skills regardless of participation in the coached or laissez-faire training program. An additional finding related to age is that young adults (age 26-35) in the coached entrepreneurial program reported a more positive increase in employability skills compared with the young adults in the laissez faire program and compared to emerging adults (age 18-25) from both training programs.

Improving employability skills is beneficial to entrepreneurship activities in Mexico. Sixty six percent of companies survive only the first two years (Headd, 2003 as cited in Morales-Díaz, 2012). A high rate of youths in Mexico participate in entrepreneurship activities (OECD, 2013). Therefore, it is important to develop employability skills to help the sustainability of Mexican youth companies.

A surprising finding was that there was no significant difference between the two types of training programs. The entrepreneurs in the coached program reported similar increase on employability skills as those in the laissez-faire program. Training programs are essential to an entrepreneur's success; however, not all programs are successful. Other factors such as personality and social environment, in addition to the training program yield a higher chance of success (Uribe et al., 2013). One-third of the women that participated in a study about entrepreneurs, felt less or no effectiveness with the training program they took (Nagesh & Murthy, 2008).

REFERENCES

- Arnett, J. J. (2000). Emerging Adulthood: A Theory of Development From the Late Teens Through the Twenties. *American Psychologist*, 469-480.
- Bauer, K. (2011). Training Women for Success: an Evaluation of Entrepreneurship Training Programs in Vermont, USA. *Journal of Entrepreneurship Education*, 1-24.
- Baughn, C. C., & Neupert, K. E. (2003). Culture and National Conditions Facilitating Entrepreneurial Start-ups. *Journal of International Entrepreneurship*, 313-330.
- Brand Solutions Asia Pacific. (2008). *The Golden Age of Youth*. Retrieved from Viacom: <http://www.viacomasia.com/golderageofyouth08.html>
- do Paço, A. F., Ferreira, J. M., Raposo, M., Rodrigues, R. G., & Dinis, A. (2011). Behaviours and Entrepreneurial Intention: Empirical Findings About Secondary Students. *Journal of International Entrepreneurship*, 20-38.
- Elmuti, D., Khoury, G., & Omran, O. (2012). Does Entrepreneurship Education Have A Role In Developing Entrepreneurial Skills And Ventures' Effectiveness? *Journal of Entrepreneurship Education*, 83-98.
- Gajón-Gómez, E., Reyna-García, G. M., Armenteros-Acosta, M. d., & Mijares-Villarreal, M. (2014). Innovando La Educación En México: Factores Internos Que Impactan Al Emprendimiento Universitario. *Global Conference on Business and Finance* (pp. 687-693). San José, Costa Rica: The Institute for Business and Finance Research.
- Kumar, R., & Kelly, L. (2005). Self-Efficacy, Social and Cultural Issues in Designing Online Technology Skills Transfer Programs: A Mexican Context. *Journal of Information Science and Technology*, 72-92.
- Llisterri, J. J., Kantis, H., Angelelli, P., & Tejerina, L. (2006). Is Youth Entrepreneurship a Necessity or an Opportunity? *Inter-American Development Bank*, 1-18.

- Mason, G., Williams, G., & Cranmer, S. (2009). Employability Skills Initiatives in Higher Education: What Effects Do They Have on Graduate Labour Market Outcomes? *Education Economics*, 1-30.
- Maxwell, G., Scott, B., Macfarlane, D., & Williamson, E. (2009). Employers as Stakeholders in Postgraduate Employability Skills Development. *Journal of Management Education*, 1-11.
- Montiel-Méndez, O. J., Márquez-Miramontes, B. L., Arámbula-Monreal, Z., & Ordoñez-Molinar, L. (2012). Intención De Emprendimiento En Estudiantes: El Caso De Una Universidad Pública En Ciudad Juárez, México. *Global Conference on Business and Finance* (pp. 1231-1243). Honolulu: The Institute for Business and Finance Research.
- Morales-Díaz, R. R. (2012). Demografía de Negocios en México. *Estudios Demográficos y Urbanos*, p. 201'225.
- Moreland, N. (2006). Entrepreneurship and Higher Education: An Employability Perspective. *Higher Education Academy*.
- Moreno-Zacarias, H. M., & Espiritu-Olmos, R. (2010, July-December). Análisis De Las Características del Emprendimiento y Liderazgo En Los Países De Asia y Latinoamérica. *Portes: Revista Mexicana de Estudios Sobre la Cuenca del Pacífico*, pp. 101-122.
- Nagesh, P., & Murthy, M. N. (2008). The Effectiveness of Women Entrepreneurship Training Program: A Case Study. *Journal of Entrepreneurship Development*, 23-40.
- OECD. (2013, July). *Self-Employment Among the Youth and Seniors*. Retrieved from OECD iLibrary: http://dx.doi.org/10.1787/entrepreneur_aag-2013-21-en
- Ortega-Martínez, R. M., Cano-López de Nava, C. B., Salcido-Martínez, C. N., Villarreal-Solís, M. D., & Villarreal-Solís, F. (2014). El Emprendimiento Desde Una Institución De Educación Superior en México. *Global Conference on Business and Finance* (pp. 1523-1537). San José, Costa Rica: The Institute for Business and Finance Research.
- Parvu, I., Ipate, D. M., & Mitran, P. C. (2014). Identification of Employability Skills - Starting Point for the Curriculum Design Process. *Addleton Academic Publishers*, 237-246.
- Raposo, M., & do Paço, A. (2011). Entrepreneurship Education: Relationship Between Education and Entrepreneurial Activity. *Psicothema*, 453-457.
- Román-Maqueira, J. (2011). *Latin American Youth Entrepreneurs: Differences Between Coached And Laissez-Faire Entrepreneurial Experiences In Their Employability Skills And Their Entrepreneurial Innovative Attitude*. Oakdale, NY: UMI Dissertation Publishing.
- Sahni, L. (2011). The Impact of Soft Skill Training Induction Programme on New Entrants. *BVIMR Management Edge*, 40-47.
- Schawbel, D. (2014, April 22). *Millennial Branding*. Retrieved from Millennial Branding: <http://millennialbranding/2014/02/high-school-careers-study/>
- Sherwood, A. L., Robinson, D. F., & Butts, S. B. (2011). Four Stages to More Successful Knowledge Transfer Between Universities and Industry Entrepreneurs. *Entrepreneurial Executive*, 9-23.
- Uribe, J., De Pablo, J., & Bonilla, J. J. (2013). Business and Local Development: Training as a Basic Factor to Guide the Entrepreneur. *Intangible Capital*, 644-677.
- Wu, S., & Jung, Y. J. (2008). Is Non-Traditional Entrepreneurship Training Helpful to Nascent Entrepreneurs? Yes and No. *Journal of Entrepreneurship Education*, 43-51.

ENTREPRENEURIAL TRAINERS – THE COMPETENCE MIX IN ACTION-ORIENTED ENTREPRENEURSHIP DEVELOPMENT PROGRAMS

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ABSTRACT

This paper investigates contextual factors in entrepreneurship training and education as well as the connection to discussions in recent research. It concentrates on the relation between entrepreneurship education and the role of the trainers. These topics are investigated in the framework of an Action Research program in order to evaluate the effects of action- or activity-oriented programs in entrepreneurship training and education. The empirical background of the paper is a 2.5 year research and development program (Women & Growth) that involved 24 growth-oriented women entrepreneurs and involved 10 trainers/researchers from four research institutions in central regions of Sweden and Norway. The findings indicate 1) that action-oriented programs seem to be suitable as a program design to develop necessary competencies among entrepreneurs and help them expand their business. Another finding is the 2) necessity of involving a variety of competencies among the trainers/researchers. Additionally, 3) it was found to be necessary to include the learning network among the entrepreneurs as an important part of the knowledge reservoir needed for the entrepreneurs to draw on when assisting their businesses to grow. Finally, 4) the paper shows how regional collaboration among different research institutions enables the group of trainers/researchers to benefit from the strengths and competencies found only in some of the locations.

INTRODUCTION

Despite the prioritization of entrepreneurship training and education in the last two decades and the explosion of entrepreneurship programs in business schools (Page West III, Gatewood & Shaver 2009), there is still little knowledge about the learning process that equips entrepreneurs with best possible mind-sets and skills (Gstraunthaler & Hendry 2011). Entrepreneurship is about heterogeneity which needs to be taken into account in entrepreneurial education and training. As Fayolle (2010) argues, we can learn more from the differences than the similarities and there is no single magic factor or simple recipe in entrepreneurship education, only factors that are more or less suitable in relation to contextual matters such as personal, interpersonal, networking, company, institutional and cultural factors. In addition, we should add contextual factors about the training and educational settings as well. Searching for simple solutions when designing entrepreneurship education is recognized to have a limited effect and will seldom develop the necessary competencies such as creativity, opportunity recognition and problem-solving ability (Lautenschläger & Haase 2011).

A development trend in entrepreneurship education seems to be the move away from academic pedagogical methods towards activity and action learning oriented programs. Several contributors have argued that entrepreneurship is best learned by the actions of the entrepreneur himself/herself in an atmosphere of trust that allows experimentation and reflection both in and on action (Mc Mullan & Lung 1987, Hills 1988, Åsvoll & Jacobsen 2012). The paper is based on research in line with these recommendations since the knowledge generated comes from an entrepreneurship development project, already in the project description *Women and Growth* had selected Action Research (AR) as an overall methodological orientation.

This paper will concentrate on the relationship between entrepreneurship education and the role of the trainers and it will examine which competencies are preferable when working with entrepreneurship education and development in an action- activity-oriented entrepreneurship development program, such as Action Research programs or Action Learning programs. The paper accepts a wide-ranging definition of the educator role, arguing that the whole learning community is included in the definition. Thus, the research question that will be pursued are: *Which competencies are preferable in development programs when supporting women entrepreneurs who want their businesses to grow.*

The empirical background of the paper is a 2.5 year research and development program (*Kvinner & Vekst, Women & Growth*) that involved 24 growth-oriented women entrepreneurs in central regions of Sweden and Norway. It was funded by INTERREG which is an EU program. The development program ended in spring 2013 and was evaluated as a success by participants, research institutions and by the funder (Von Friedrichs & Rennemo 2013). Even though the data collected for this study come from a program for women entrepreneurs, the findings are not discussed with reference to a gender aspect. On the contrary, the assumption is that state-of-the-art entrepreneurship education is considered gender independent. Female entrepreneurs are very much like male entrepreneurs and it is more meaningful to speak about within-sex differences than between-sex differences. (Ahl 2002, Nelson & Duffy 2010).

THEORETICAL FRAMEWORK

Women & Growth was a research and development program that committed the 24 women entrepreneurs who participated to develop their businesses within the framework of an Action Research design. The goals of the whole project were partly to develop and allow ongoing businesses to grow and partly do research and develop new knowledge about women entrepreneurship (von Friedrichs & Rennemo 2013). The term Action Research contains a variety of traditions and design principles (Reason & Bradbury 2008, Brydon-Miller, Greenwood & Maguire 2003, Dick 2006). The term is also close to action-oriented concepts, such as Action Learning (Revans 1977), Action Science (Argyris, Putnam & Smith 1985), Co-operative Inquiry (Heron 1996), Action Inquiry (Torbert 2004) and Action Based Development (Rennemo 2006). Together these traditions are regarded to have considerable impact on practice oriented research and development work (Minzberg 2004). What they have in common and thus uniting these different traditions is placing emphasis on and trying to balance the following three elements: action (in order to change a situation to something better), participation (in a way that involves people that are affected by the situation), and research (in order to generate new knowledge that is useful for others outside the participating group (Greenwood & Levin 2007). Even though Action Research was chosen as a methodological orientation in *Women & Growth*, the orientation of the program was quite flexible and took advantage of different action-oriented traditions (von Friedrichs & Rennemo 2013).

The reason for choosing an AR-oriented approach in the *Women & Growth* entrepreneurship development program was assumptions in the project management ahead of start-up that such an approach would be the best way to promote growth among the businesses of the entrepreneurs. These assumptions are anchored in entrepreneurship education programs arguing that entrepreneurship can be learned and facilitated but not taught as well as in general action research oriented literature (Argyris et al. 1985, Lave & Wenger 1990, Daly 2001, Birch 2004, Pittaway & Cope 2007).

It is argued that entrepreneurship has a holistic nature (Page West III, Gatewood & Shaver 2009), meaning that there are a wide variety of competencies needed for the entrepreneur to handle all upcoming challenges. In action-oriented literature we find this need

met by a holistic recommendation (Gummesson 2000) and operationally we find the needs met since the content (the task for improvement), the process (the way of improvement) and the premises (fundamental assumptions behind thinking and action) are challenged (Coghlan & Brannick 2010). Besides this there is a need for numerous reflections about the individual, the team and the organizational levels (Ibid.). In such an approach, flexibility and adaption to the situation are needed depending on the variable and quite unpredictable needs from the entrepreneurs involved. This is also helpful in order to meet another demand in entrepreneurship education: It is argued that there are two recent trends, one to narrow the scope and deliver specialized educational demands, the other is to widen the scope and present the entrepreneur with a learning environment that challenges mainstream thinking, presenting new and unusual perspectives that are holistically oriented (Kuckertz 2013). One advantage of an action-oriented design is the possibility, or more correctly the necessity, to combine both narrowing and widening, due to the holistic orientation.

According to central principles from the action-oriented tradition, the questions and tasks that are aimed toward improvement are participant driven (Greenwood & Levin 2007), in this case by the entrepreneurs themselves. This has relevance to an important matter in entrepreneurship training and education, namely who makes decision about teaching priorities. In classroom and business school education, the topics are predetermined before the learning processes starts and are usually described in curriculums (Nelson & Duffy 2010). In the action-oriented tradition, the topics are participant driven.

In the paper, the concept “knowledge reservoirs” is used to describe the total knowledge network that was available for the women entrepreneurs in the development program. The concept, rooted in Resource Based Theory (RBT) is based on how managers build and acquire knowledge (McGrath and Argote 2000, Widding 2005) by drawing on the available reservoir of knowledge in order to exploit opportunities (Shane and Venkataraman 2000, Sarasvathy 2008). The “knowing” is a dynamic process by which the acquired knowledge is constantly being built, tested, and reconstructed (Sveiby 1997, Choo 1998). Quite early in the *Women & Growth* program, it became clear that sharing of knowledge and experience among the entrepreneurs was an important part of the knowledge reservoir. Moreover, according to Nonaka (1994), knowledge consists of both tacit and explicit elements. Given that entrepreneurial firms are primarily based on entrepreneurs’ knowledge, firms’ knowledge reservoirs largely consist of personal tacit knowledge.

METHOD

The paper is based on an AR design, where 10 researchers/trainers/coaches from four research institutions in the central Scandinavian region were interacting with 24 Swedish and Norwegian women entrepreneurs in a 2.5 year development program. The 24 women entrepreneurs had all committed themselves to growth, although the term growth itself was not predefined. They owned their own companies (more than 50%), had their company as their main income source and the company had existed for more than 3 years. Their businesses were related to three business sectors: health/nursing/welfare work, tourism/creative work and business service/immaterial work (Von Friedrichs & Rennemo 2013). Apart from this the group was rather heterogeneous with regard to characteristics like geography, age, business experience and education. The heterogeneity was intended when recruiting the women to the program and was presented as advantageous for the sharing of experience and for the learning community. When the women met at the first workshop in January 2011, they were organized in four network groups and the principles of heterogeneity followed the organization of these groups as well. The effects and implications of this will be discussed later in the paper.

The design of the program is also an answer to the claim that a lack of longitudinal studies in the field of entrepreneurship research is a major methodological drawback regarding accumulation of theory (Sexton 1997, Chandler and Lyon 2001, Davidsson et al. 2001). Most research in entrepreneurship education is based upon university student programs and differs from the context in this paper. Knowledge developed from action-oriented research holds a more marginalized position which underlines the importance of this type of study. As Page West III, Gatewood & Shaver (2009) and Fayolle (2010) emphasize it is important to study less focused research areas and topics. Since entrepreneurial thinking and skills to a large extent are unfolding outside academia, it is important to broaden entrepreneurship training and education beyond the university and business school environments.

We have underlined the holistic nature of action-oriented training programs. In *Women and Growth*, this theoretical driven position created expectations about the learning situation. We expected that this would help the 24 entrepreneurs to be able to work with different challenges depending on their actual situation in the growth process. It was expected sometimes that there was a need to focus on specific business tasks while in other situations their challenges were expected to be on a more personal level. Sometimes the expectations were needs to be challenged creatively to be able to learn something “new”, while at other times their anticipated focus was on making and following up plans and activities. Silberzahn & Silberzahn (2010) make some proposals about entrepreneur education among them the suggestion that entrepreneurs will benefit from education in a wide range of subjects. The learning network that was available for the entrepreneurs in the development program consisted of people with a variety of competencies. The trainers, the project staff, from the four research institutions represented different academic disciplines and had special competencies in different fields of entrepreneurial activity. Table 1 indicates various competencies that were represented by the ten people from the research institutions. The advantage of the competence mix indicated in the table was expected ahead of the program and therefore a factor that influenced the composition of the researchers/trainers being involved in the program. According to the holistic nature of this type of programs, it was expected that it would be necessary to have people with expert competence on different entrepreneurship topics, people that also had research experience and competence on these topics. Besides, it was expected that it would be valuable to have various forms of process consultancy competencies. These are the two main competence categories in the table. In the right-hand column different fields of expertise within each main category are mentioned. We had at least, two people with significant competence in each field of expertise.

Table 1 COMPETENCIES IN THE PROJECT STAFF	
Main competence categories	Fields of expertise
Research competencies	<ul style="list-style-type: none"> - Entrepreneurship and growth. Regional development - Women entrepreneurship. - Financing and social capital - Commercialization and marketing - Perspectives of network – networking. - Innovation and creativity - Leadership and management theory - Knowledge management. Organizational learning.
Process consultancy competencies	<ul style="list-style-type: none"> - Action Research/Action Learning-methodology. - Individual and team coaching (certificated or well documented experiences). - Leadership/personal tests (certificated). - Business development consultancy (also women businesses). - Leadership development consultancy - Train the trainer's consultancy.

Four of the researchers/trainers (two from each country) formed the project leadership team, also representing the link to the financier (INTERREG), one of these was the daily manager of the development program. Additionally one member was recruited to have special responsibility for learning processes in the development program as well as ongoing learning and training among the whole team of researchers/trainers. Except this person, all of them were allocated as resources to the network groups, two from each country. The effect of the competence mix among the researchers/trainers will be discussed later on.

The action-oriented tradition emphasizes principles like working with real-life issues, knowledge sharing and the necessity to develop a spirit of openness, trust and democracy (Gummeson 2000). These principles were highlighted in *Women & Growth* as well. In the first workshop extra time and focus was placed on discussing who the researchers in the program were. A theoretical driven position from AR literature gives this label to all participants both project staff and entrepreneurs, since all have responsibility for production of data, knowledge sharing and knowledge building (Greenwood & Levin 2007, Coghlan & Brannick 2010). When the expression “we are all researchers” was introduced by the project staff as a collective oriented concepts, some confusion arose, but quite fast the concept was embraced by the entrepreneurs and gave energy to the process. This will be discussed below. An interesting episode happened though during the evening dinner on the same day. Some of the entrepreneurs suggested the necessity to change the titles of the project staff. Up to this time the name researcher and coach had been used as well. Now, they suggested the use of the name PROST (PROject STaff, the same abbreviation in Norwegian/Swedish). This was accepted by the whole group and consequently used later on until the program ended.

Another topic that was discussed at the same (first) workshop was the clarifications of different goals pursued in the program. In this discussion it became obvious that the foregoing role clarification was helpful. After some plenary reflections one member from the PROST group summarized the discussion by depicting a drawing that is presented below (Figure 1).

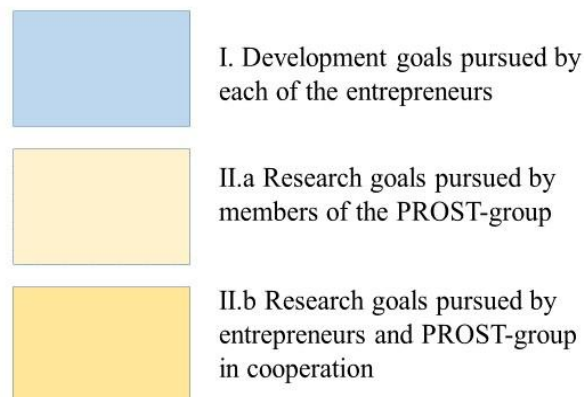


Figure 1: Different goals in the Women & Growth program

The figure was helpful as it shows how different types of goals could be established and pursued through the program as long as they were in accordance with fundamental and accepted AR thinking, as presented above. There was full openness in the whole group about the different goals, besides the obligations to help each other reach them. The figure presents the three different types of goals: First of all, individual growth oriented goals set by the 24 entrepreneurs. Second, we had research goals pursued by the PROST group (the group of “professional” researchers) and finally, we established common goals including both entrepreneurs and PROST. The most important of these was the decision to write an anthology

based upon the knowledge about entrepreneurial growth developed in the program. The anthology was published in 2013 (Von Friedrichs & Rennemo 2013), the chapters were written by the PROST group with invaluable contributions and specific data production from all the entrepreneurs. This paper is an example of the second type of goals, members from the PROST group pursuing their specific research interests.

Not only the setting of the goals but also the design and agenda of different workshops and meeting were issues for participant involvement. The topics to be highlighted or trained in were driven by the entrepreneurs' interests. These topics were discussed as an ongoing activity in collaboration between the entrepreneurs and the PROST group. But this was not an obvious position for all members of the learning community. In fact, a decisive matter occurred in the first of six workshops. After AR design and learning principles had been discussed, the entrepreneurs were presented with a more or less fixed plan for the coming days. Some of the entrepreneurs opposed this, and it was thus necessary to redesign the plan based on the actual needs and information from the entrepreneurs. This caused some confusion, but became an important learning experience for rest of the program.

Except for the first workshop, the others were planned in cooperation between PROST and entrepreneurs. The table below illustrates central activities in the development program from beginning to end.

Table 2 PROJECT ACTIVITIES (TRANSLATED AND COMPILED FROM VON FRIEDRICHS & RENNEMO 2013)	
Workshop (WS)	Activities Main subject in each workshop in bold font
WS 1. (3 days) January 2011	Growth and Growth ambitions. Who we are? Program design, resources and challenges. Network groups and network (IT) communication. Tools for reflection. Reflections and knowledge sharing. Planning next WS. Working with business plans.
WS 2. (2.5 days) May 2011	Networking, business network, relations. What has happened between WS 1 and 2? Presentations and knowledge sharing. Network mapping. Reflections. Tools for business and personal development. Business plans. Common research goal (anthology)
WS 3. (2.5 days) November 2011	Marketing and internationalization/globalization. Status presentations (small and large groups), coaching activities/helping each other, reflections and knowledge sharing, tools for personal and business development, planning, reflection activities.
WS 4. (1 day) February 2012	Extra WS. Not initially planned. Videoconference. 1 group in each country. Experience and knowledge sharing. More on marketing (p/m-matrix). Coaching each other. Working with business plans. Planning next workshop.
WS 5 (2.5 days) May 2012	Financing, business models, boots-trapping. Status growth (presentations, coaching). Status anthology. Tools for personal and business development (Myer Briggs). Reflections. Working with business plans. Planning next workshop.
WS 6 (2.5 days) January 2013	Business Conference in Åre (Sweden). Part of WS included a business conference based upon the development project including presentations from entrepreneurs and PROST + external speakers. 120 participants. After the conference: Anthology presentations and discussions with entrepreneurs. Reflections and evaluations.
Post WS March 2013	Anthology sent to all entrepreneurs (co-authors) for checking data and receiving permissions on the way data and entrepreneurs are presented. Project report INTERREG
Post WS June 2013	Anthology publishing activities. Publishing date 2013-06-01. Release party mid-June, some entrepreneurs participated

The table only includes some of the most important activities. We must pay attention to all the follow-up activities in the period between the different meetings and workshops and even meetings and arrangement in network groups and information work and chatting on information platform (Web-CT and Fronter) and on Facebook.

At this point we also have to clarify that the total length of the whole project was about 3.5 years and included almost a year in the preparation phase and almost a half year with closing activities, among them reporting back to the funders. In the preparation phase the project staff was recruited from the four research institutions and they met and prepared and planned for the development program. One important part of the planning was the construction of and sending a questionnaire to 5500 women entrepreneurs in mid-Sweden and mid-Norway. The response rate was 20% in Norway and 24 % in Sweden. The following data processing gave valuable data about the target group (women entrepreneurs) and was used as to provide a knowledge background in the development program. Besides, the data have been valuable in research activities for the PROST group after the program ended.

A second questionnaire, based on information from the first one, was later on sent to a group of 206 women entrepreneurs having expressed willingness to take part in a development program. Out of this group, the final group of 24 participants was selected. This questionnaire provided information and knowledge that partly was fed back to the participants and partly was used as data later on.

Other and more qualitative oriented data giving empirical documentation to this paper are all produced in, or as a result of, activities in the *Women and Growth* program. The reflections continuously given by both entrepreneurs and researchers (PROST group) during the whole program are important. Some of these are open reflections, and therefore based upon authors' logs, but most of the reflections come from answers given to prepared questions at the end of every workshop. Several of these questions were asked repeatedly through the whole program, and some of them were about contributions from PROST members. From the entrepreneurs, feedback to the program, opinions about help given from both PROST and entrepreneurship colleagues and responses to the network of learning that was established are of course important data, the same can be said for the produced documents, such as project description, workshop agendas, presentations and reports. Additionally some secondary data have been used; the most important being the anthology (Von Friedrichs & Rennemo 2013) that was produced by the PROST group in collaboration with the entrepreneurs. Here we find valuable information about the program, program responses from the entrepreneurs and documentation of the entrepreneurship knowledge developed through the program.

EMPIRICAL DISCUSSION

The ambition of this paper, as the title indicates, is to investigate the competencies and the mix of the competencies that was useful in an action-oriented research and development program for women entrepreneurs, a program evaluated as successful from all researchers and entrepreneurs involved and even by the funder, INTERREG. In this section the findings are related to empirical evidence and we will concentrate upon four main issues. The first discussion is related to the design of the program, the effects of an action- or activity-oriented arrangement for entrepreneurship training and education. The second discussion is related to the group of professional researchers/trainers that was involved in the program. The third discussion expands the concept of 'trainer' and discusses the effect of the whole learning community that was involved. When describing this total learning community, we draw upon the concept 'knowledge reservoir'. Since the *Women & Growth* program not only was a development program, but also a research program, we will finally investigate the effect the

competence mix among trainers/researchers had upon the ability to deliver research results within the field of entrepreneurship.

Action-oriented design

The development program was part of an AR project, but as mentioned, when in the project the action label was not the most important issue and as presented in the theoretical and methodological part we find traces of various action-oriented traditions. Hynes, O'Dwyer & Birdthistle (2009) reflect upon differences between didactic and enterprising learning models and recommend a transfer to the last in entrepreneurship education. Didactic models are characterized by teaching, passive listening, learning from texts and experts, feedback from only one key person, the environment is structured and timetabled and copying from others is discouraged. The enterprising learning model is characterized by learning from each other, learning by doing, learning by exchange of experience and discovery (under guidance), feedback from many, environmental flexibility, some pressure to achieve goals, best practice and "stealing" from others, mistakes are to be learned from and problem-based learning (Ibid.). Together with characteristics mentioned earlier about the action-oriented approach, the description of enterprising learning models suit the approach in *Women & Growth* very well. This approach was really appreciated by the entrepreneurs, it created a lot of energy, exemplified by some of the quoted reflections below.

-I found it interesting to hear that we all are co-researchers. – We are going to influence the process ourselves. – This network gives so much energy. – I want to investigate in order to improve my business. – It feels good to be part of a university environment once more. – I was surprised that communication with this group, with people in "the same boat" was so energizing. This is something extraordinary

This orientation towards an enterprising learning model and transfer from the didactic pedagogical situation that most of the PROST were influenced from at the beginning, was not uncomplicated. Sometimes, we as staff were "arrested" by the entrepreneurs of having a theory in use that was different from what we exposed.

-Sometimes, I think the cultural differences between researchers and entrepreneurs have clashed. Then the relation between us felt more like a teacher- student relation.

Overall though, these experiences make it clear that the action and enterprising oriented design was energizing and motivated the participating entrepreneurs. It also seems evident that the women entrepreneurs in this program, appreciated the opportunity to take part in general knowledge production and entrepreneurship research, i.e. the research goals they had a common responsibility to pursue together with the PROST group (the "professional" researchers, as shown in Figure 1. The possibility to be part of an anthology production, as co-researchers, is frequently mentioned in their reflections as a motivating factor.

An action-oriented program is driven by participant needs and ought to be situationally adaptive. That means the education has to be able to handle both substantial questions about business and activity planning as well as personal, relational or emotional challenges. Several of the entrepreneurs emphasized this quality in the *Women & Growth* development program.

-If I put words to my feelings, the program feels like an internal education, a rather exclusive and different one, a possibility to develop personally as well as my business. – I work better and more structured. I feel that I manage and I have become more open-minded and open as a person. – First time we met we created a name for our 6 person group, "Pearls on a thread", the pearls were the six of us. The meaning of the pearls has changed. It is now about delight, sincerity, tools cooperation and meetings. I have an overall understanding of what I do and what I want to do. – Before I held my presentation (last workshop) yesterday I needed to think about the output of this program: friends, knowledge and new business. I've

learned a lot about myself, about strengths and weaknesses. I've got knowledge about other business sectors, knowledge about research and the research sector and how different logics influence our different ways of thinking.

There has been little research in entrepreneurship education about the emotional aspects of teaching and learning (Arpiainen, Lackeus, Täks & Tynjälä 2013). According to Kyrö (2008) this is an area where research is needed. In *Women & Growth*, considerable effort was placed on creating trust so that it became possible to express emotions as a natural part of entrepreneurial experience. One way to encourage this was the establishment of confidentiality contracts among the participants. In addition, a lot of effort was put into the understanding of Argyris (1990) concepts of Model I vs. Model II behavior, where Model II-behavior is seen as a necessity to develop in action-oriented programs (Rennemo 2006). Several times during the program, entrepreneurs expressed strong emotions, both joy and despair, often expressed in connection with storytelling about progress or setbacks in their business development, but also in relation to events in their private life.

The competencies and the mix of competencies among the trainers

Silberzahn & Silberzahn (2010) make some proposals about entrepreneur education among them the suggestion that entrepreneurs will benefit from education in a wide range of subjects. Even though their reference is a didactic learning situation (Hynes, O'Dwyer & Birdthistle, 2009) their recommendations are relevant for this discussion. In *Women & Growth* we find a lot of teaching activities where members of the PROST group, as experts, gave lessons upon topics demanded by the entrepreneurs. These topics are highlighted in Table 2 and the available competencies among the PROST group are presented in Table 1. The possibilities of offering complementary competencies and the competence mix among the group of people (PROST) from the four different research institutions, was definitely a factor that was tried to achieve in the composition of the group in the planning phase of the program. During and after the program this is also a factor the group itself evaluated as criteria of success.

-There is so much knowledge and competence in this group, - an overwhelming experience, WOW!. - I feel we have managed utilizing the complementary strengths in our group in a better way than I maybe thought before the program started.

Even the entrepreneurs were commenting on the same in their program evaluations. Here we have concentrated some reflections after workshop 5, just to exemplify the material. We find very much the same comments after other workshops. First some reflections in relation to the topics highlighted:

-The lecture that x held about competition forces was thought-provoking. -It was very useful to learn more about financing and business models.-The lectures you gave yesterday were rather valuable for me. -I admit that my knowledge about business models and bootstrapping was limited. I now can see that there are some important aspects here I need to take into consideration in relation to my business plan.

Then some reflections in relation to the process and process material that was taught by PROST:

- I take the 20 million you gave me (fictive imagination exercise) with me as an experience not to be stuck in my own mental limitations.-The exercise we did yesterday made a great impression. I realized that I need to look around more to see what's going on. What and how do others do? And what can I learn from them?. -Through the exercise I once again realized the importance of this network and how much energy I get from it. I'm impressed by the willingness to share experience and advice. I'm proud to be part of this team. Very competent researchers (PROST) and businesswomen.

Finally some general comments from the same workshop:

-I have regarded this program as an internal training, a possibility for competence development. -To be inside the walls of the university once again, it feels great! -I am impressed by the competence within the PROST group. -I want to give PROST a big hand! -The competencies within the PROST group are great! -It gives such inspiration only to be together with all of you. It is gold I take with me home.

Still, it is also important to underline that this experience was not reached without time-consuming discussions and even confusion. As mentioned above, the development program was prepared for almost one year before the first workshop. The evaluations among the researchers/trainers (project staff) emphasize the necessity of this period. Partly, the pilot study (questionnaire) to 5500 women entrepreneurs in mid-Sweden/Norway was time consuming to develop and complete. In addition, a lot of time was needed to talk through the learning and development philosophy. As reflected by three members of the project staff.

-We needed much more time for preparation of the first workshop, than we did for the rest. – We experienced, in the preparation phase, that we needed time to talk things through. Even though we say the same and use the same words, the individual meaning of them might be very different – My reflection after this first workshop is the need of continuous work with and clarification of our role as project staff.

This clarification work among the staff also helped the entrepreneurs to find their role and understanding of the program philosophy.

-For me it became easier to participate from workshop 2 on. Then I had a better understanding of the premises of the program and we all knew each other better.

To summarize this discussion: When studying, especially the reflections during and after each of the workshops, no doubt there is reason to conclude that the mix of various competencies within the PROST group was a great advantage for the training situation. This experience is in line with other researchers' recommendations regarding the development and design of entrepreneurship education, but even entrepreneurship research, as it will be reflected upon later (Janssen, Eeckhout, Gailly & Bacq 2009, Hynes, O'Dwyer & Birdthistle 2009, Mendes & Kehoe 2009, Silberzahn & Silberzahn 2010).

Expanding the understanding of trainers as a group

Following the learning philosophy and the characteristics of enterprising learning models (Hynes, O'Dwyer & Birdthistle 2009), the exchange of experience and learning from others in a similar situation was a central aspect of *Women & Growth*. The value of this is so overwhelming in the reflections from the entrepreneurs that it would therefore be completely unreasonable not to declare that the understanding of the entrepreneurship trainer must include other entrepreneurs as well.

-It was an eye-opener to me to experience and understand the value of utilizing the whole group (of entrepreneurs) as facilitators and coaches, to discuss with this group, being helped in problem solving and to get feedback and support. – Finally I'm not alone any more. – This will be a community for mutual development, - I want to find the right way for me, exchange experience and give help to each other. – It is amazing how experienced the people sitting next to me are and how important this is for my own development. – I'm surprised about the willingness to share experience. – Most important for me is being able to take a meta-view upon my own enterprise with the help of the others, we have so much to give each other. I didn't expect to feel myself as comfortable as I do, because of previous experience, together with all these women. Common interests and goals though create a spirit of solidarity in another way than only experiences. – I feel I have learned a lot what I might do and not do because of the network with other entrepreneurs. – My colleagues, sharing experience and conversations with them have been the most important support.

The individual value of other entrepreneurs in the development program, as part of the learning network, is obvious, but there are also strong indications that this network will have value in a longer perspective. Lifelong learning is a conceptual model that has influenced most educational areas since the mid-1990s (Hagen & Skule 2008). The transfer from linear to circular thinking where learning and knowledge creation are seen as a continuously ongoing and lifelong activity has also reached the scene of entrepreneurship education (Fayolle & Kyrö 2008). Even though there is no reason to claim, at this stage a year and a half after the formal closure, that the *Women & Growth* program and the networks created among the women entrepreneurs, have a lifelong character, there is reason to look upon the program as a possibility for continuous learning. According to Fayolle & Kyrö (2008) this challenges entrepreneurship education since long-term educational offers and support cannot exclusively be directed towards specified entrepreneurship groups and ages, more multidisciplinary programs are needed as well as programs that cross different educational borders. Related to *Women & Growth*, the heterogeneity of the group also reflected educational level, but it is important to mention that this never was problematized as a drawback for the learning and development process, rather the heterogeneity even with regard to this aspect is mentioned as a positive factor. The multidisciplinary orientation was taken care of, at least to some degree, by the recruitment of staff as presented in Table 1 and even when the entrepreneurs were recruited to the program, as mention in the method section. The following reflections are all given by entrepreneurs after last workshop in January 2013.

-Thinking about the network I have developed gives me pleasure. I know it will be useful in the future. – I've learned that I've never learned enough. – Business consultancy is an ongoing process for me. But I don't need to do everything myself, a lot of competencies are available. – The network we have developed needs to be taken care of. - The changing network was important for me. I broke out from my old one that I thought I was dependent upon, but I was not. When I changed direction much more action occurred. The program removed my blinders. I experienced the possibility of working across different professions.

It seems evident that this development program gave possibilities of continuous learning in the network that was established. One and a half year after ending the program we know something about continuous business relations and cooperation between the entrepreneurs, but we do not know the dimension of this. What we have decided though, is that sales and revenues from the anthology will be used in a follow-up meeting between all participants, entrepreneurs and staff (PROST). This will be a good occasion to find answers to questions about long-term effects of the program.

In the literature, the concept of “knowledge reservoirs” (McGrath and Argote 2000, Widding 2005) is used to describe the total knowledge network that is available when developing businesses and exploit opportunities. (Shane and Venkataraman 2000, Sarasvathy 2008). The concept seems to be useful within the context of this paper as a description of the whole learning community or network the 24 entrepreneurs drew upon in their ambitions to grow their businesses. The dynamic nature of the knowing and knowledge reservoir building (Sveiby 1997, Choo 1998), also seems to fit the process that is described by the entrepreneurs themselves. They constantly tested their assumptions and strategies on the available knowledge network especially by means of knowledge sharing and reflections. Through these methods it also seems probable that a lot of tacit knowledge was brought up to explicit and verbalized knowledge (Nonaka 1994). Given that entrepreneurial firms are primarily based on entrepreneurs' knowledge, the firms' knowledge reservoirs largely consist of personal tacit knowledge. By emphasizing open and shared reflection and personal experience the program offered possibilities to conceptualize individual bound tacit knowledge and made this available for the whole learning network.

The mix of trainers' competencies and effects upon research

Women & Growth was established upon an INTERREG base which implies assumptions about cross-border cooperation being preferable regarding factors such as innovation, competitiveness, knowledge development and research (<http://www.interreg-sverige-norge.com/>). Figure 1 illustrates different goals pursued in this program, among them two research goals, research goals pursued by the 24 entrepreneurs and the PROST group in cooperation and research goals pursued by members of the PROST group. Among the first group, the anthology (von Friedrichs & Rennemo 2013) definitely was the most important one. Among the other group paper publications like this one is an example. For both types of goals though data delivered by the entrepreneurs were the main source and cooperation between PROST and entrepreneurs, but also between entrepreneurs were crucial in order to succeed. In this connection the cultural or cross-border dimension is an interesting factor. If we first consider the entrepreneurs and the inter-relations between them, the material points in one direction. Even though mid-Sweden and mid-Norway are quite similar in most cultural factors (Lindvert & Rennemo 2013), the cross-border dimension was appreciated by the entrepreneurs (Ibid.). The illustrative examples below tell about a situation of similarity that did not make obstacles for cooperation. On the other hand, the differences experienced created motivation and energy.

-Irrespective of country it is valuable and helpful to get input and feedback from people in other countries, it gives new perspectives on culture, business legislation and so on. -I have got important feedback and information from both countries, the differences are small but being from different countries gives an extra dimension and increases my curiosity.

More important was probably the cross-border and cross-campus cooperation within the team of researchers (PROST). As mentioned, the group of ten came from four different research institutions, three from Norway and one from Sweden, four Swedes and six Norwegians. The institutions have different programs in entrepreneurship education and different research areas and traditions as well. This was definitely helpful in developing interdisciplinary results and offered complementary competencies. Several researchers have argued that this is a way of developing entrepreneurship education and research (Janssen, Eeckhout, Gailly & Bacq 2009, Hynes, O'Dwyer & Birdthistle 2009, Mendes & Kehoe 2009), but there is a lack of successful examples. The cooperation between the four Scandinavian institutions is evaluated as successful by the researchers themselves, their institutions and the funder. An evident output of this is the publishing activities as a result of the research goals in the program (Figure 1). Apart from the anthology, up to now 10 articles are published in international journals and more are in production. In addition a lot more conference papers are presented. Most of this research was conducted and later published by means of cross-campus cooperation. As for the entrepreneurs there are strong indications that the cross-border network among the team of researchers (the PROST group) will last for years and that the cooperation between research institutions is strengthened as a result of the program. The data being produced in the program will probably show value for years and for different research purposes. As one member of the PROST group put it in one of his/her research reflections: *I'm swimming in empirical data!*

FINDINGS AND IMPLICATIONS

Some main findings are emphasized; the first one is related to the competencies that seem to be crucial to develop among growth oriented entrepreneurs. The *Women & Growth* project as well as others (Gstraunthaler & Hendry 2011) underlines the necessity to focus on developing an entrepreneurial mind-set (Von Friedrichs & Rennemo 2013, Bogren & Mørkved

2013, Dahlborg 2013). It can also enrich the entrepreneurs with a variety of perspectives (Bogren, Rennemo & Widding 2013) enabling them to think and act creatively and “outside the box” and encourage them to take risks. An action-oriented program over a period of time seems to be very suitable as a program design to manage developing such competencies. In this program the entrepreneurs were supported by a great variety of competencies among the trainers/researchers which seems to have been very important. The trainers’ competencies were able to reflect or mirror the competencies that were needed to develop among the entrepreneurs in different periods of the development program, needs that were recognized as well on individual as well on group levels. But even though the learning network among the entrepreneurs themselves is part of this “knowledge reservoir” (Widding 2005), the focus on learning from each other, as a basic principle in action-oriented programs generally, seems to have been very important. Another positive outcome of the AR process in this program was the competence development among the teachers and researchers from different mid-Scandinavian universities or research institutions involved in this program. Researchers have argued that there is an increasing gap between the steadily raising entrepreneurial education programs offered by universities and the lack of qualified teachers in all educative levels (Singh 2008). This program has demonstrated the effectiveness of the AR strategy in developing competencies among the group of trainers. Also, as shown by others (Finkle, Soper, Fox, Reece & Messing 2009), regional collaboration among different universities enables the whole group of trainers to benefit from the strengths that are only found in some of the locations.

The findings in the article are presented with reference to a Scandinavian development and research program based upon general principles from AR. Even though the findings presented about design principles and heterogeneity and complementarity among the team of trainers/coaches/researchers seem evident, we have to consider the cultural dimension of the findings. As Hytti (2008) argues, education does not take place in a vacuum. The effects of regional, cultural and environmental aspects need to be taken into consideration when designing an educational program. *Women & Growth*, took place in the Scandinavian region. Here the Scandinavian or Nordic welfare model dominates. It emphasizes elements such as equality, consensus, autonomy, empowerment, cooperation and relational orientation (Schramm-Nielsen, Lawrence & Sivesind 2004, Lindvert & Rennemo 2013). Consequently, it might be that the action-oriented path in entrepreneurship education and training is more suitable to follow in this part of the world than elsewhere. This is an interesting follow-up question for further research.

Finally, another follow-up research question from this study is further investigation in the same group of entrepreneurs that participated in *Women & Growth* in order to find out more about long-term effects of such an action-oriented program. This applies both to the project staff (PROST group) and the long-term effects of cooperation among the four research institutions involved.

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REFERENCES

- Ahl, H.J. (2002), *The Making of the Female Entrepreneur a discourse analysis of research texts on women's entrepreneurship*, Jönköping: Jönköping International Business School.
- Argyris, C., (1990), *Bryt forsvarsrutinene. Hvordan lette organisasjonslæring*, Oslo: Universitetsforlaget/Pentice Hall.
- Argyris, Putnam & Smith, (1985), *Action Science - Concepts, Methods and Skills for Research and Intervention*, Jossey-Bass Inc., Publishers.
- Arpiainen, R-L, Lackeus, M., Täks, Marge & Tynjälä, P. (2013), "The source and dynamics of emotions in entrepreneurship education learning process", *Trames*, 17(67/62), 4, 331-346.
- Birch, D. (2004), "Education matters – but does entrepreneurship education?", *Academy of Management Learning and Education*, Vol. 3(3), 289-292.
- Bogren, M. & Mørkved (2013), "Den kvinnelige entreprenøren – utvikling av foretakeridentitet," Ch. 5 in Von Friedrichs, Y. & Rennemo, Ø. Eds., *Kvinnens foretak og foretakende kvinner – Vekstentreprenører i Skandinavia*, Trondheim: Akademika Forlag.
- Bogren, M., Rennemo, Ø. & Widding, Ø. (2013), Ch.7 in in Von Friedrichs, Y. & Rennemo, Ø. Eds., *Kvinnens foretak og foretakende kvinner – Vekstentreprenører i Skandinavia*, Trondheim: Akademika Forlag.
- Brydon-Miller, M., Greenwood, D. & Maguire, P. (2003), Why action research? *Action Research*, vol. 1, 9–28.
- Chandler, G. N. and Lyon, D. W. (2001), 'Issues of research design and construct measurement in entrepreneurship research: the past decade'. *Entrepreneurship Theory and Practice*, vol. 25, 4, 101–13.
- Choo, C. W. (1998), *The Knowing Organization*. New York: Oxford University Press.
- Coghlan, D. & Brannick, T. (2010), *Doing Action Research in Your Own Organization*, London: Sage.
- Czuchry, A., Yasin, M. & Gonzales, M. (2010), "Effective entrepreneurial education: A framework for innovation and implementation", *Journal of Entrepreneurship Education*, vol. 7: 39-55.
- Dalborg, C. (2013), "Tillväxt i kvinnors företag", Ch. 4 in Von Friedrichs, Y. & Rennemo, Ø. Eds., *Kvinnens foretak og foretakende kvinner – Vekstentreprenører i Skandinavia*, akademika Forlag.
- Daly, S.P. (2001), "Student-operated internet business: true experiential learning in entrepreneurship and retail management", *Journal of Marketing Education*, vol. 23 (3), 204-216.
- Davidsson, P., Low, M. and Wright, M. (2001), 'Editors' Introduction: Low and MacMillan ten years on: achievements and future directions for entrepreneurship research'. *Entrepreneurship Theory and Practice*, vol. 25, 3.
- Dick, B. (2006), 'Action Research literature', *Action Research*, vol. 4: 439-458.
- Fayolle, A., (2010), "Insight from an international perspective on entrepreneurship education" in Fayolle, A. (ed.), *Handbook of Research in Entrepreneurship Education*, vol. 3, Edward Elgar Publishing, Inc.
- Fayolle, A. & Kyrö, P. (2008), *The Dynamics between Entrepreneurship, Environment and Education*, Cheltenham: Edward Elgar.
- Finkle, T.A., Soper, J.C., Fox, D., Reece, J. & Messing, J. (2010), «Constructing an innovative model of entrepreneurship education thorough regional collaboration» *Journal of Entrepreneurship Education*, vol. 12: 43-66.
- Grant, S. (2007), Learning through being and doing. *Action research*, vol. 5, 265–274.
- Greenwood, D.J. & Levin, M. (2007), *Introduction to action research: social research for change*, Thousand Oaks Calif: Sage
- Gstraunthaler, T. & Hendry, S. (2011), "Entrepreneurial and accounting education through action-based learning: The genesis project", *Journal of Entrepreneurship Education*, vol. 14: 125-146.
- Gummesson, E. (2000), *Qualitative Methods in Management Research*, Thousand Oaks, CA: Sage, 2nd edition.
- Hagen, A. & Skule, S. (2008), *Kompetansereformen og livslang læring, Status 2008*. Fafo-rapport 2008:7
- Heron, J. (1996), *Co-operative Inquiry – Research into the Human Condition*, UK: Sage Publication Ltd.
- Hills, G. E. (1988), Variations in University entrepreneurship education: An empirical study of an evolving field, *Journal of Business Venturing, Volume 3, Issue 2*, 109-122.
- Hynes, B., O'Dwyer, M. & Birdthistle, N. (2009), "Entrepreneurship education: meeting the skills needs of graduates in Ireland", in Page West II, G., Gatewood, E.J. & Shaver, K.G., *Handbook of University-wide Entrepreneurship Education*, UK/USA: Edward Elgar.
- Hytti, U. (2008), "Enterprise education in different cultural settings and at different school levels," in Fayol, A. & Kyrö, P., *The dynamics between Entrepreneurship, Environment and Education*, Cheltenham: E. Elgar.
- Janssen, F., Eeckhout, V., Gailly, B. & Bacq, S. (2009), "Interdisciplinarity in cross-campus entrepreneurship education", in Page West II, G., Gatewood, E.J. & Shaver, K.G., *Handbook of University-wide Entrepreneurship Education*, UK/USA: Edward Elgar.
- Kuckertz, A. (2013), "Entrepreneurship education: Status Quo and prospective developments", *Journal of Entrepreneurship Education*, vol. 16: 59-71.

- Kyrö, P., (2008), "A theoretical framework for teaching and learning entrepreneurship", *International Journal of Business and Globalisation*, 2,1,39-55.
- Lautenschläger, A. & Haase, H. (2011), "The myth of entrepreneurship education: Seven arguments against teaching business creation at universities", *Journal of Entrepreneurship Education*, vol. 14:147-160.
- Lave, J. & Wenger, E. (1990), *Situated learning: Legitimate Peripheral Participation*, Cambridge: Cambridge University Press.
- Lindvert, M. & Rennemo, Ø. (2013), "Skandinavien som arena för kvinnliga entreprenörer", chap. 3 in Von Friedrichs & Rennemo (eds.) *Kvinnens foretak og foretakende kvinner – Vekstentreprenører i Skandinavia*, Trondheim: Akademika Forlag.
- McGrath, J. E., and L. Argote. (2000), "Group Processes in Organizational Contexts." In *Blackwell Handbook of Social Psychology: Group Processes*, edited by M. A.Hogg and R. S. Tindale, 603-627. Oxford, UK: Blackwell.
- Mcmullan, W. E., & Long, W. A. (1987), Entrepreneurship education in the nineties. *Journal of Business Venturing, Volume 2, Issue 3*, 261-275.
- Mendes, A. & Kehoe, C. (2009), "Academic entrepreneurship: possibilities and pitfalls," in Page West II, G., Gatewood, E.J. & Shaver, K.G., *Handbook of University-wide Entrepreneurship Education*, UK/USA: Edward Elgar.
- Minzberg, H. (2004), *Managers not MBAs: A Hard Look at the Soft Practice of Management and Management Development*. Harlow, Essex: FT Prentice Hall.
- Nelson, T. & Duffy, S. (2010), "Entrepreneurship education: women, men, sex and gender", in Fayolle, A. (ed.), *Handbook of Research in Entrepreneurship Education*, vol.3, UK/USA: Edward Elgar.
- Page West III, G., Gatewood, E.J. & Shaver, K.G. (2009), *Handbook of University-wide Entrepreneurship Education*, UK/USA: Edward Elgar.
- Pittaway, L. & Cope, J. (2007), "Entrepreneurship education: a systematic review of the evidence, *International Small Business Journal*, Vol. 25 (5) 497-510.
- Reason P. & Bradbury H. (2008), *The Sage Handbook of Action Research*, Sage Publications.
- Rennemo, Øystein (2006), *Levér og Lær – aksjonsbasert utvikling i resultatorienterte organisasjoner*, Oslo: Universitetsforlaget.
- Revans, R. (1977), "Action learning and the nature of knowledge", in *Education and training*, Nov/Dec. 1977.
- Sarasvathy, S. D. 2008, *Effectuation: Elements of Entrepreneurial Expertise*. Cheltenham, UK: Edward Elgar.
- Schramm-Nielsen, J., Lawrence, P. & Sivesind, K.H. (2004), *Management in Scandinavia: culture, context and change*, Cheltenham: Edward Elgar.
- Sexton, D. L. (1997), 'Entrepreneurship research needs and issues'. In Sexton, D. and Smilor, R. (Eds), *Entrepreneurship 2000*. Chicago, IL: Upstart Publishing Company.
- Shane, S., and S. Venkataraman. 2000, "The Promise of Entrepreneurship as a Field of Research." *Academy of Management Review* 25 (1): 217-226.
- Silberzahn, Philippe. & Silberzahn, Pierre (2010), "Artists and scientists as entrepreneurs: a call for a new research agenda for entrepreneurship". In Fayolle A., *Handbook of Research in Entrepreneurship Education. Volume 3: International Perspectives*. Edvard Elgar Publishing, Inc.
- Singh, R.P. (2008), "The shortage of academically trained entrepreneurship faculty: Implications, challenges and opportunities", *Journal of Entrepreneurship Education*, vol.11:117-130.
- Sveiby, K. E. 1997, *The New Organizational Wealth. Managing and Measuring Knowledge-Based Assets*. San Francisco: Berrett-Koehler Publishers, Inc.
- Torbert, W. (2004), *Action inquiry : the secret of timely and transforming leadership* / Bill Torbert with Suzanne Cook-Greuter ... [et al.]. - San Francisco, CA : Berrett Koehler.
- Von Friedrichs, Y. & Rennemo, Ø. Eds. (2013), *Kvinnens foretak og foretakende kvinner – Vekstentreprenører i Skandinavia*, Trondheim: Akademika Forlag.
- Widding, L. Ø. (2005), Building Entrepreneurial Knowledge Reservoirs, *International Journal of Small Business and Enterprise Development*.12, 4, 595-612.
- Åsvoll, H. & Jacobsen, P.J. (2012), "A case study: Action based entrepreneurship education. How experience problems can be overcome and collaboration problems mitigated," *Journal of Entrepreneurship Education*, vol.15: 75-97.

BUILDING AN INTELLECTUAL PROPERTY AND EQUITY OWNERSHIP POLICY FOR ENTREPRENEURSHIP PROGRAMS: THREE DIFFERENT APPROACHES

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ABSTRACT

Intellectual property (IP) protection and co-ownership of student businesses is an issue every entrepreneurship program needs to address. However, there is little literature about how to do this. After reviewing the literature, we present three different approaches to such policies: a hands-off approach, an evolving approach, and a structured approach. For each, we describe the methods for student IP and co-ownership issues and the justification behind these approaches, offering insight for educators seeking to build their own programs. At the end we suggest factors to consider for developing a university policy or refining an existing one.

BACKGROUND

Many entrepreneurship classes and programs throughout the U.S. have students work in teams to develop ideas. Sometimes such exercises are just that—opportunities for students to practice skills taught in the class. Other times, they are serious efforts to help students launch businesses. Pedagogically, there are a variety of justifications for doing this, one of the key being that it offers hands-on and realistic experiences under the supervision of a faculty or staff mentor. Other schools have Tech Transfer Offices or otherwise offer students the opportunity to develop businesses based on other people's ideas under the supervision or with the involvement of the school. But as anyone who works with students can attest, not every student idea actually works out. For a variety of reasons, student teams may dissolve, fall apart, or just fade away.

The problem, though, is that as soon as two or more people work together on a business idea, they are legally partners in a business entity (Uniform Partnership Act §101). Many people are unaware of this law and how it connects to every student team. Even worse, many faculty and staff are unaware of the legal ramifications that may affect them as a result, potentially with significant legal or financial ramifications for all parties involved—which includes the instructor, other classmates, and even the school.

Three Scary Stories

At Quinnipiac University, two students formed a team to create interactive stories about current events for children. Over the course of the semester, they both worked incredibly hard and, with a shoestring budget, created a functional app—and a deep, abiding hatred of each other. When the semester ended, both students disagreed with who had the rights to the business. With no clear policy to guide them, they threatened to bring in lawyers. They both ended up pursuing other ideas before that final step.

At California State University, Chico, two students formed a team to create an early version of a crowdsourcing platform for inventors. The pitch was compelling and believable and the students were encouraged by various mentors, family and friends. A significant amount of progress was made and meaningful milestones were accomplished. One student graduated and out of necessity had to move back home and find work. The other remained in school, where he was able to actively pursue the business idea. Shortly, the two began arguing over the lack of effort by the participant living remotely. The student who remained active argued that the other should give up all equity or reengage. That individual refused on the grounds that his early contributions were substantial. Several months later, after much arguing, talking with attorneys, and the realization that without costly legal action no further progress would be made - two very aggravated individuals both began to pursue other ideas and an opportunity was lost.

At Ohio Northern University, faculty and guests watched a senior capstone presentation given by a collaborative team of business and engineering students on the feasibility of an automated mower. A faculty member asked who owned the product. After some confusion the business students pointed at the engineering students who shrugged and said, "Yeah, we think it's ours." There was a minor uproar from the back of room as a third group, the original student team who had pitched the product in an elevator pitch competition, informed all present that it was their idea. All the students were upset as well as the faculty advisors over the confusion of ownership. With the intervention of a parent, who happened to be a patent attorney, and pizza, the issue was eventually resolved.

If these stories sound disconcerting, they should, and they happen every day on campuses worldwide. The purpose of this paper is to provide some basic guidance on how to solve these problems for colleges and universities the U.S. This is not meant to be legal advice. Each country has its own laws and regulations, so the solutions presented in this paper may not be applicable to faculty and staff in other countries.

The Inadvertent Partnership Problem

There has been a plethora of research into technology transfer policies on campuses primarily covering licensing agreements, joint research ventures, and the impact of policies on faculty and researchers (Siegal & Phon, 2005). This paradigm concentrates on the organizational level of entrepreneurial partnership activity on campuses between the universities, faculty, and businesses/government organizations (Siegal & Phon, 2005). Other researchers in this area concentrate on entrepreneurship pedagogy impact. For example, Silva, Henriques, and Carvalho (2008) examine entrepreneurial education for engineering students, citing the need for "intellectual property awareness" and how they teach this in an entrepreneurship course.

However, one of the biggest potential legal risks arising on campuses today comes out of student business plan teams, and in particular, the claim of co-ownership that might be raised by team members under traditional principles of partnership law. After extensive research, it was found that despite the potential problems that could arise, little literature has addressed this topic, and of the relevant topics, most were written by Professor Anthony Luppino, culminating in his most recent articles on the topic (Litton, Patterson & Little, 2014; Luppino, 2009, 2012). While Luppino has done an excellent job discussing the legal ramifications that arise from this challenge, the lack of literature indicates that the dangers of the inadvertent partnership—student teams that form legal business entities even without any formal acknowledgement or documentation—may not be adequately addressed by entrepreneurship programs and classes, leaving open the possibility of potential harm to students, professors, and schools alike.

When students work on a team, the potential for disputes regarding the intellectual property rights that can be asserted by faculty, students, and the university can arise when innovation occurs at a university or with the use or assistance of university resources. Luppino (2009) identifies these issues as a potential impediment to university-based innovation and entrepreneurship. He also addresses the problem of what he calls the “accidental or ill-defined partnership.” For this paper, we will refer to these as “inadvertent partnerships” as we believe this phrase captures both accidental and ill-defined partnerships.

Luppino specifically addresses the problem of a co-ownership claim arising out of student teamwork at universities including student team projects in traditional classroom settings and student team projects in business planning or idea/innovation competitions. With regard to a team project in a traditional joint course-work assignment, he explains:

Thus, it is possible that, if the assignment generates valuable property, claims to ownership or at least shares of proceeds from exploitation of that property might logically be made by every student on the team, course instructors or teaching assistants and perhaps the university itself (Luppino, 2009; pg. 414).

These concerns are exacerbated by the fact that there is a precedent for successful businesses arising from student work as part of a class (such as in the case of Fred Smith and FedEx), extracurricular activities or work (such as with Bill Gates and Microsoft), or from social interactions or experiences directly connected to the school (such as with Mark Zuckerberg and Facebook). Such high success businesses have financial and reputational impacts on the school, the professors, and the students who may have participated in the formation of a business (Herrington, 2010). This means that participants in the process have an incentive to pursue—possibly through legal channels—any windfalls. (Herrington 2010, 22) notes:

When those products are patentable, universities’ and students’ contributions often become mixed, which leads to legal consequences for both students and their universities. Not only students but also professors and administrators who work with them would benefit from clear assessments of their legal relationships before entering them.

The courts have ruled that schools are not entitled to any portion of the works (the business itself or intellectual property developed for it) or any results (financial, reputational, etc.) of student businesses unless the students were employed by the university or college and such stipulations were included in the employment contract and/or the students were utilizing resources and equipment exclusive to the school, such as a strain of bacteria only the school has access to. Similarly, a professor has no claims to the ideas or intellectual property developed in a class unless the professor acted beyond his or her capacity as an instructor and truly contributed to the business, such as substantive financial investment or assuming a key role in the business, and/or the development of its intellectual property, such as contributing substantively and creatively to the creation of the intellectual property (Luppino, 2009). However, this leaves open the dilemma of students working in a team in the class.

According to the Uniform Partnership Act §101 (1994) a partnership is “an association of two or more persons to carry on as co-owners a business for profit.” While intent to form a co-ownership association for profit is necessary to create a partnership, the parties do not need to have expressly intended to form a “partnership.” Partnership statutes generally include a list of factors that will help to determine the existence of a partnership relationship, but there is no bright line test for making this determination. This means it is left to the courts to determine the

issue on a case-by-case basis. For students on a team, this means that they may have co-ownership claims on any and all intellectual property developed as a result of a class unless they have an alternative option to pursue for the class. Universities that have established policies and/or professors who implement policies in their classrooms can help to mitigate any potential problems, but there is no perfect solution.

While Luppino concludes that “it seems unlikely a court would find all of the necessary elements of partnership in a typical course project,” there is a stronger claim of co-ownership in a course structured as a business planning class (Luppino, 2009; pg. 415). While by itself this can create long-term problems, such classes often face short-term dilemmas as well as the classes may be connected to competitions, either as part of the class itself or encourages students and student teams to participate in external competitions. These competitions usually have financial and in-kind rewards in addition to the notoriety of placing in the competition. The addition of these external prizes that go beyond a grade mean that the students must wrestle with the ownership issues such as dividing “profit” (the winnings from the competition) and reputational considerations like titles in the business and dealing with publicity for their business (Luppino, 2009).

Litton, Patterson & Little (2014) note, “the average undergraduate business student has no appreciation for the realities of the business organizations they may have formed.” Professor Luppino’s advice to universities is clear: “First and foremost, a university should inform students of what is at stake when they create innovations in course projects, advise them that significant rights and obligations may be involved from the outset and explain to them that they would be well served to get the advice of their own legal counsel in sorting through these matters” (Luppino, 2009; pg. 417). Luppino further recommends that students be given disclosures about the legal ramifications of their actions and decisions. They should be given information on how to find and engage legal counsel, particularly lawyers with relevant specialties and who may offer their services for free or at discounted rates.

Additionally, Litton, Patterson & Little (2014) suggest that universities consider four factors when forming students teams; 1) voluntariness; 2) profitability; 3) intent; and 4) timing. Voluntariness refers to whether students formed teams or the instructor formed the teams. Partnership formation requires voluntary formation; however, even if students are placed together, if they choose to work on an idea and pursue it beyond a class assignment, such an action indicates an agreement to voluntarily enter into a partnership with their teammates. Profitability is determined by the purpose of the course and the team. If the course requirement is completion of an assignment and not pursuit of profit, then for all of the teams in the class, most likely a partnership is not formed. However, intent refers to what students hope to accomplish. Again, if the goal of the team is the pursuit of a grade, then generally a partnership is not formed, but if the team seeks to earn profit, whether for a grade or for business, partnership status applies. Timing refers to when the project changes into actual pursuit for profit and the intent of the team. While these factors need to be considered, every university has differing policies and local, state, and federal laws could potentially impact this issue. As a result, no one approach seems to fit every situation.

THE THREE APPROACHES

There is not necessarily one “right” way to create IP and ownership policies. Rather, there are multiple ways that are dependent upon many factors. These approaches can range from putting the responsibility for co-ownership on the students (a hands-off approach) to having a detailed and involved approach to cover all legal bases (a structured approach). However, these are two endpoints of a continuum, and many schools, based on their comfort with entrepreneurship, concern about legal ramifications, the comfort level of the professors, and the culture of the school and students, among other considerations, may fall somewhere in-between. Presented are three approaches that three universities, Quinnipiac University, California State University, Chico, and Ohio Northern University use: one from each end of the continuum and one from the middle. Each approach was developed to meet the needs of our students while matching the culture of the entrepreneurship programs we have built. These are examples of how schools can approach building their own policies, explaining the justification the decisions made by the three universities so that others may understand the thinking and use these as a basis for crafting their own policies. Provided below is a summary of the three approaches, followed by an in-depth look at each school to better explain the reasoning behind it, the environment in which it has been applied, and any drawbacks to the approach.

A Hands-Off Approach: Quinnipiac University

At Quinnipiac University, when approaching how we wanted to address the topic of inadvertent partnerships (students working on a team together to build a business), we considered the following:

1. We did not want our students to focus so much on this topic that it would become a barrier to them sharing ideas. At the same time, we wanted them to understand the full legal implications of their actions in and out of class.
2. We wanted students to use ideas that they were serious about starting, rather than using fictional ideas. Passion leads to greater learning outcomes, and we wanted to facilitate this.
3. We wanted to encourage collaboration not only between students on a team, but also across teams. Ideas formed in isolation are rarely as high quality as those developed with input from other people.
4. Any document or policy we developed needed to be fair to all people involved: the student(s) who had the idea, any that helped develop the idea, and the professor of the class or staff member mentoring the team.
5. Asking people to sign non-disclosure agreements is not an effective way to protect an idea. First and foremost, they are incredibly difficult to enforce. Students are bound to discuss interesting ideas outside the classroom, which may include the team’s ideas and the ideas of other teams. In addition, we have designed our program to encourage people to actively test and validate their assumptions about their business models, including verifying with their target market that they are in fact interested. This leads to further dissemination of the idea and additional people who would need to sign the document. Moreover, at least one class has a competition open to the public at the end of the semester with the ideas presented to a panel of judges and the public, while others encourage students to be involved in entrepreneurship events and competitions outside the school.

6. We wanted to avoid a Facebook-like scandal of people arguing that their contributions to a successful business were not given credit as a situation like that would be detrimental to the Entrepreneurship program, the University as a whole, the professor or staff member in charge, and team members acting in good faith.
7. Entrepreneurship professors and most staff members mentoring teams are rarely experts in legal matters or intellectual property, and asking professors to guide students through the complexities of the law and intellectual property regulations is doing both the professors and the students a disservice.

Our solution to these problems was two-fold. First, we developed a disclosure statement. This statement alerts the students to the challenge of who owns an idea in a team, using an abstracted example of a team of four students who develop a business idea in the class. After the class ends, one of the students continues to pursue the idea, developing it into a successful business. The other team members find out and, after complimenting their peer, note how the business was all of their idea, followed by asking about when they might see the profit from “their” idea.

After presenting the students with this scenario, we then offer them alternatives to sharing their idea in class if they are concerned that such a scenario might happen to them. The first option is that the student may choose to be a “free agent,” a person who helps someone else develop his or her idea. The second option is that the student could develop a business they designed specifically for the course rather than sharing an idea they have been working on independently or as part of an independent team.

We conclude the disclosure statement with a notice to the student that the University supports and encourages students to work collaboratively. We point them to relevant University policies (of which Quinnipiac University has few). Finally, we note that this disclosure statement is not legal advice and that students are encouraged to seek their own legal counsel if they have questions or concerns.

During the first week of any class in which the students are creating a business, we introduce the students to the disclosure statement and have them read it as assigned reading. Students are encouraged to discuss the course policy and the disclosure statement with their teams and work out an arrangement that best suits them.

Students are also informed that no one will sign NDA or confidentiality agreements as part of the class nor in any outside events connected to the class such as business plan competitions or events, even ones run as part of the class.

Non-Exclusive Right to Pursue Ideas

In an entrepreneurship class, the students will inevitably hear the other teams’ ideas, some of which have the potential to be highly successful ideas. However, once the class is over, the instructor has little to no ability to follow up with every single student for the foreseeable future (much less the indefinite future) to ensure that only those people who worked on an idea from the class are pursuing it. In addition, someone pursuing an idea usually further refines and evolves it, combines it with other ideas, or modifies it in some other way. We, as academics, instructors, and mentors, do not want to assume a policing role, having to determine whether or not an idea is sufficiently changed to be considered a “separate” idea, determining where an idea

came from since a person may be exposed to an idea from multiple sources, and having to continually follow up with people to check whether or not they are following the class policy. In addition, this more closely maps to the U.S. patent system that allows—and indeed encourages—people to build upon the ideas of others.

To date, no student over the past five years, to our knowledge, has intentionally or unintentionally used another person or group's idea. What we have found, and many of our colleagues have also found, is that there are two major barriers to students starting businesses around ideas other people have created. The first is that students tend to view the amount of work and effort another team invested into a business as a huge obstacle to pursuing the idea themselves. The original team has already invested a semester of their time at a minimum, which includes meetings with experts, planning sessions, and countless discussions and debates over the span of months. To have to recreate even a portion of that is daunting.

The second barrier is that students are rarely as passionate about another team's ideas as they are about ideas they create themselves. The end result is that, no matter how interesting the idea appears to be, students are rarely motivated to claim that idea for themselves. The prospect of working on someone else's idea is a bit too similar to having to work for a company for those who are truly entrepreneurial, while at the same time needing to launch a business is too entrepreneurial for people who are more intrapreneurs. The end result is that students may talk about what a great idea someone has, but rarely do they go any further than the conversation.

Equal Ownership of an Idea

By law, all people in a team who contribute to the development of a business idea and/or intellectual property (whether a patentable idea, copyrightable code, or some other protected material) are equal owners with non-exclusionary rights to pursue and use the idea. To reinforce this, we specifically choose to remain independent of any determination of who the originator of an idea was and what contribution each person made to it. Not only is such determination incredibly difficult, we also have no legal right to say that one person's contributions to the group were or were not significant and thereby affects ownership of the idea. For example, while one person may have an idea coming into the class, that idea gets shaped by the team over the course of the semester, sometimes radically. Determining who contributed which part of an idea is difficult enough; accounting for the fact that one or more ideas that were not included in the final design led to those ideas makes the situation even more complicated. As we want students to focus on contributing to the business's development rather than on documenting each individuals' contributions, having a default policy of equal ownership makes the most sense.

Letting the students determine how they wish to divide ownership of a business or intellectual property at a pace of their choosing also reflects that the teams rarely know up front who will want to continue pursuing the idea after the end of the class, who will be in which leadership positions, who will contribute money, resources, knowledge, expertise, and time to the project, among many other considerations that could affect ownership. By freeing the students from determining this at the beginning when their idea is barely formed or requiring it at the end, we allow them to actively focus on the business and discuss the topic in a time and manner when it best suits their needs.

Not every team works on an idea created for the class; some work on an idea one or more people had and have worked on prior to the class. Not every team has everyone contribute equally, even if some or all of the people are going to continue working on the business after the class ends. For these instances among others, we allow teams to create their own ownership distributions without locking them into one fixed agreement. For example, we had one team with a person who had been working on his idea over the summer, doing an independent study even to help develop the idea. When he recruited his team, he added four individuals, but he was clear that he wanted to continue pursuing this idea as *his* idea, that the four other individuals would not have equity in the business. The four people were amenable to this, they put the agreement in writing, and the team had no issues relating to ownership. Another team revisited their ownership split halfway through the class when they realized that not all of the team was committed to pursuing the idea after the class finished. All of this was done independently of their instructors. Our students appreciate the flexibility and being treated as young professionals, and we as educators can direct them to experts when they have questions.

No Confidentiality Agreements/NDAs

Students are informed that they should be sharing their ideas with other people, but that they need to be smart about what they share. Such documents are near impossible to enforce, which means that having people sign them without proper follow-up could leave the instructor or mentor in a tough situation where s/he must attempt to unravel whether or not a breach of the agreement has happened, and if so, how and to what extent, often based solely on hearsay. It may also leave the instructor legally liable if the instructor is issuing and requiring the completion of the forms. We point our students to such documents and we discuss when such documents are appropriate, and we also discuss appropriate sharing of their ideas, encouraging discussion with legal expertise if students seek more information.

Drawbacks

While the hands-off approach has many advantages, there are several downsides to the approach. The first is the onus it places on the instructor or mentor to ensure that teams are educated about potential legal implications to their businesses and have access to or are pointed in the direction of adequate legal counsel. This approach requires an active involvement of the faculty and staff up front, which means planned interactions early in the students' academic careers and/or classes to convey the necessary information.

One other challenge for this approach is that some students may be uncomfortable with the necessary conversations they must have with their teammates about how they wish to structure the equity in their idea. Without a clear policy in place, such students may not have the structure they need to make the best decisions possible for themselves or their businesses. This approach depends on students having the maturity and drive to seek their own guidance. At the other end, students given the freedom to discuss co-ownership on their own time sometimes focus on the issue at inappropriate times, such as when the team is first forming. This can result in friction as the business develops and can detract attention from other more important components of the business. In addition, if the conversation happens when an instructor or mentor is not around, it is a lost opportunity for a teaching moment.

Hands-Off Approach Conclusion

By removing ourselves from the legal decisions relating to co-ownership and referring our students to subject matter experts, we prevent the faculty from being put in a position where, well-intended or not, they may be giving bad legal advice. Students get to experience the real-world decisions of forming teams and creating intellectual property and businesses with oversight, but they never feel locked into a position. In addition, faculty are not required to assume additional responsibilities as “idea police,” allowing them to focus on working with the students and their ideas. This comes at the sacrifice of control over the conversations—both in when and how they occur.

An Evolving Approach: California State University, Chico

This narrative speaks to the approach of a single course and incubator program and does not represent a University or program-wide policy, except where noted, or the approaches of other instructors in the Entrepreneurship program. The course and incubator programs described are intended to support students who would like to understand what a real attempt to launch a business requires; given that intention, it is especially appropriate for this course and related incubator program to concern itself with these issues. This write-up identifies the approach as it exists at the time of this writing.

At California State University, Chico, our e-Incubator program’s goal is to launch businesses online as directly and efficiently as possible, and there is a corresponding course which allows students to earn credit for learning similar materials. The e-Incubator program is available to students across the university and expects students to launch a business, the course is an elective in the entrepreneurship program and teaches students what is entailed in the process, offering them an opportunity to launch or not.

The nature of the e-Incubator and course is a focus on the “Lean Start-Up” approach, which favors a rapid launch to test business models. Our approach is, “Test the business model using customer development techniques, and adjust as needed.” We determined that for many student businesses, students themselves are potential customers, and so the course was ideal for a “mastermind” format where students from the whole class give significant feedback to all other student projects in the class. Students would sit in the “Founder’s Chair” and get peppered politely with questions by their peers. Right from the first instance of this course, students identified the mastermind approach as a very valuable element of the course.

Given the fast-paced nature of the course and the highly collaborative culture, several guiding principles emerged to ensure the program provides an effective experiential exercise to students and teams working toward launching businesses and testing business models. The following guiding principles emerged:

1. Acknowledge that there is an actual potential for ownership/partnership issues and take steps to avoid these issues by taking reasonable precautions using our best available understanding.
2. Encourage students to understand the implications associated with corporate structure, IP protection, and team structure reasonably early.
3. Encourage students to begin participating in the “mastermind” approach to sharing as early as possible; students should feel generally safe and secure while sharing, a feeling of camaraderie should emerge from the safety of the environment.
4. Impart a sense of seriousness about trying as many ideas as possible that students feel are good. In other words, if possible, don’t hold back your best idea—bring out your best stuff and go for it.

5. Recommend that students invest in legal advice as appropriate. Our experience indicates that students who pay for legal advice actually feel more committed, and thus by having some “skin in the game,” seem to have a sense of commitment and this translates into higher engagement.

As students encounter this program, they immediately recognize that the notions of collaborating and safeguarding IP appear to be at odds, and naturally raise these as issues. This further opens the door to additional concerns. These concerns can be summarized as:

The University Policy on student IP and how it affects student businesses and ideas;
Protecting ideas in a collaborative class;
Handling equity (splitting, retaining, getting it back) while working on a team;
Dealing with a desire to change ideas partway through the class;
Incorporating as a legal entity; and
Preparing for a pitch to the Accelerator Fund.

These concerns came up with regularity in each class and over the course of several semesters a common framework has emerged:

1. Present a set of overarching recommendations to provide context for the course;
2. Clarify the University Policy on student IP;
3. Clarify the classroom IP policy for intra-class understanding and agreement; and
4. Clarify the inter-student IP policy for managing teams and IP and encourage early understanding and decision making while remaining as flexible as possible.

Overarching Course Recommendations

First and foremost, students are encouraged to decide what they want to get out of this course. Students are encouraged to develop ideas they are passionate about. Most students arrive with one or more ideas they are passionate about and want to pursue. There are other students who come in without an idea they are passionate about, but instead have a desire to learn the techniques for anticipated use at a later time. There are also students who have one or more ideas but still prefer to learn the techniques now and apply them later. The point is to encourage them to understand what they want to accomplish, what the ramifications are related to that purpose, and what they need to understand so they can take the appropriate steps. For example, a student who comes into the course without an idea and wants to join another student or team should be ready to accept that he or she is working on the project as a course effort, not as a business partner.

Students in the course have been exposed to corporate forms in a previous required course. We encourage students to immediately review materials covered in the prerequisite course since different corporate forms have different ownership, profit distribution and tax implications. This is a key area for hiring an attorney given its importance and level of complexity. Information, but not advice, is provided on the topic. Students should be able to get to the point where they can articulate and defend, in their own words, reasons for choosing a specific corporate form as a strategic element of their business model.

University Student IP Policy

For our students, one of the central concerns is not the equity split, but rather the ownership of IP generated during the formation process. We thus focus much of our co-ownership discussions around IP and provide two sources of information on this topic. First, students are directed to the actual university executive memorandum. Then, in class, a brief discussion covers important highlights.

In any ordinary class or function in which students enroll or participate, students are creating intellectual property they own. The value of this IP is undetermined and may of course be negligible. The primary means our university uses to establish an agreement relating to ownership of student IP is termed “extraordinary support.” This level of support “is normally agreed upon in advance and set forth in a contract.” The memorandum indicates that in the absence of a contract with the university, it is likely that extraordinary support does not exist. Students are told that if there are questions in their mind about ownership, they have an obligation to themselves and their team to resolve this to everyone’s satisfaction. Students are responsible for clarifying the ownership question with a private attorney or university attorney dealing in such matters.

Classroom IP Policy

The course syllabus contains a few important statements. Neither has been tested in any legal process, but they do seem to give students a general sense that everyone intends to play fair. The first is a “No Partnership” statement, and the second is a ‘Confidentiality’ statement. The “No Partnership” clause states that students come into the class and agree that while they will provide feedback on many other students’ ideas presented in class, they agree that there is no implied partnership. The language is more expressive than that, but essentially they are relinquishing all rights to their contributions to other teams, much the way an independent contractor does in a professional client-contractor relationship. Given that they themselves receive feedback on their own project, there does seem to exist valuable consideration, which may be important when considering the enforceability of the language.

The “Confidentiality” clause is simply intended to put all students on notice that only the creators and/or owners of projects are free to discuss them outside of class. This clause is intended to ease students’ minds rather than provide legal protection; indeed many students participate in competitions, surveying and interviewing of potential customers at some point in the semester, and at that point, the ideas are exposed to the general public. The clause specifies that we as a class respect that we are privileged in that we are receiving confidential information on other students’ projects.

Neither of these approaches has been tested legally, so there is no precedent upon which to assume these are enforceable. However, they do serve to initiate the spirit of collegiality and support that we are trying to impart into the classroom, so they are important from that perspective. While the status of syllabi as legal contracts has been brought under scrutiny from time to time, it seems more prudent to include them than to omit them.

Inter-Student IP Policy

Over the course of a semester, interest in and expectations of the business idea can change dramatically. There are a few approaches that have been used here, and they are flexible so they can cover a range of situations. One approach is the use of a standard contract, another is the use of a “class project” contract, and the last is a new approach (or rather a new take on an existing concept of dynamic equity splits) we are experimenting with that allocates “potential” equity based on agreed upon factors and measured contribution.

In a case where student teams come into the class, have already agreed upon an equity split, and completed some development on the project, they are encouraged to formalize the agreement by putting it into writing via a standard contract. Despite how straightforward this appears on the surface, problems with these occur fairly often. The main problem that occurs is that one member decides he is not interested in the project anymore at some point, for example when the semester ends and the project has not yet taken off. Early project enthusiasm can lead to somewhat irrational thinking, and in retrospect, students may indicate they ‘over-shared’ equity and wish they had been more thoughtful about the division.

A “class project” contract is basically used by founders when they enter the class unwilling to give an equity sharing deal due to the amount of work they have already done on the project. Some students turn out to be very willing to join projects like this. They acknowledge that they are joining a project that a student has worked on previously, and that equity is not being offered. This approach has been used several times. In each case, the participants have decided that a modest monetary stipend was appropriate and subsequently was offered, negotiated and settled upon. The reason a monetary stipend was offered was based on suggestions by an attorney that a contract should provide value to each party and that some amount of money would demonstrate this was done. In two cases, an equity position was offered at the end of the semester to one or more of those who originally joined without an equity position.

Finally, there are many cases where students are unsure of how to structure a deal and want maximum flexibility, having team members earn equity. For this situation, , under the direction of legal counsel, students consider several approaches, one popular one being based on the ideas outlined by Mike Moyers in his book *Slicing Pie*. In this arrangement, different types of contributions are defined and categorized, and valuations are assigned. Contributions in the category of work like accounting and marketing are typically given hourly dollar valuations, which students can figure out fairly easily, along with multiplier values based on whether payment is made or not. Contributions in the form of cash, property, or other tangible goods are given agreed upon values. For example, the group may decide that early cash contributions are actually worth 4X the amount of the original contribution to account for risk. These valuations can be negotiated and agreed upon ahead of time. Then, as the team moves ahead, it tracks the investments for various contributions. In this approach, each individual is earning future equity.

Drawbacks

Whereas the hands-off approach allows great flexibility in who can be on a team and how roles may be structured, this more structured approach needs things to be better defined in order to ensure that the proper IP and co-ownership policies are applied to the team. This goes beyond just knowing whether or not the team was pre-formed or if the team will accept other people as employees rather than co-founders. Outside members joining a team may impose additional policies to come into play; for example, a professor or staff member joining a team may cause certain clauses of the university policy to apply with regards to IP and revenue sharing with the university, and these would need to be identified prior to the business being worked on in the class or program.

In addition, as discussed in the hands-off approach, getting students to sign confidentiality clauses or including such in the syllabus may give students a false sense of security or put the instructor or mentor in a difficult situation if a student seeks for it to be enforced. As noted, the legality of such documentation has not yet been tested, and the legal implications to the school are thus not fully understood.

Finally, dynamic equity splits are difficult to master and tedious to track, and because these are students who typically have relatively little work experience or business knowledge – it is challenging for them to establish what constitutes good value to a startup. Education and mentoring cannot completely mitigate the biases and naïvety they may bring to the discussions, possibly resulting in unbalanced weighting of contributions.

Evolving Approach Conclusion

This semi-structured approach allows students to join an existing idea if their goal is to learn the process of entrepreneurship rather than launching their own business. The approach also enables a student to continue to retain ownership if they bring the idea to the class and prefer this approach. Dynamic equity splits encourage students to discuss with their teams how they wish to handle co-ownership through the use of quantitative measures so that equity is not an “either you’re in or you’re out” approach. This enables teams to move ahead with flexibility and it addresses shortcomings of a formal equity split, and associated challenges that may arise.

A Structured Approach: Ohio Northern University

Ohio Northern University has developed its entrepreneurship program with the goal of embedding the entrepreneurial mindset (EM) in all students across campus. EM includes effective collaboration in a team setting; applying critical and creative thinking to ambiguous problems; constructing a customer- appropriate value proposition; persisting through and learning from failure; and effectively managing projects. EM is embedded in all business core courses and the Principles of Entrepreneurship (POE) course is required for engineering and pharmacy students with an increasing number of Arts & Science programs.

One of the primary methods of operationalizing these outcomes is ONU’s version of an elevator pitch competition held each semester. POE and other courses require students to participate. These teams can choose to submit their product ideas for consideration by the Business and Engineering colleges to become year-long senior capstone projects and seniors are encouraged to launch these products to market. POE students approached faculty with regards to

ownership of the ideas after hearing that several of the senior capstone projects were successfully launched. Inadvertently, ONU failed to consider ownership of the ideas by the original teams that developed them. Additionally, clear ownership was not established with the senior teams.

Complicating the matter was the need to negotiate ownership of the business when the original teams merged with the senior teams, which could be comprised of just engineering students, just business students, or an interdisciplinary team. This could take a partnership from the original five student team up to potentially seventeen student teams.

Faculty Concerns

1. The faculty needed to address the following concerns while maintaining EM outcomes:
2. Students needed to understand the legal issues of entrepreneurship without impeding creativity and innovation that is so vital to the entrepreneurial mindset.
3. Students needed to negotiate issues with others in ambiguous situations where the outcomes are not black and white and not all negotiations are successful.
4. Students needed to pursue taking their ideas to market knowing that there is a personal risk to the endeavor and that not all ideas are feasible or successful.
5. Encourage teamwork and communication skills with students within their disciplines as well as across disciplines.
6. Establish clear lines of ownership for the original teams to protect their ideas while allowing them to be open to new possible partnerships that might address their team weaknesses.
7. Avoid any legal complications due to public disclosure issues and equity positions among the teams. There needed to be frank and open discussions about ownership rights and the amount of equity position in the partnerships based on perceived contributions of the original or new team members.
8. Attempt to keep this as simple as possible given that the faculty members do not have the necessary legal backgrounds to address the many issues that might occur.

Student Concerns

In the POE sections, students prepare for an elevator pitch competition over a five-week period. They are required to develop a product idea that is creative, unique, innovative, feasible, and marketable. The excitement leading up to the competition encourages them to be motivated and committed to being successful beyond the need for a passing grade. This is particularly important for the non-Business students who have not considered the opportunities provided by an entrepreneurial career. Their passion and sense of ownership becomes even more evident as they work through the process of taking a product to market and it dawns on them that there is potential for profits while understanding the risks and potential for failure. Discussions within the team move from “Is the idea creative, unique, innovative, feasible, and marketable?” to “How do we protect our assets?” They express concern about how much to pitch—whether they want to submit their idea for consideration as a senior capstone project or maintain it solely as their own. They inevitably move from perceiving this event as a mere class assignment to the true entrepreneurial potential it can become for them.

Handling Ownership and Disclosure

Given all of the concerns, ONU developed a non-disclosure form and a simple one-page ownership equity form (OEF). The non-disclosure form is employed only during the elevator pitch competition and signed by the judges. The form provides protection for the students’

product ideas from basic public disclosure issues. It is explained to the judges that students may be taking their ideas to market and request that they do not ask questions that may impede patentability.

Leading up to the competition, IP and public disclosure issues are discussed with students in class. As teams, they explore the US Patent Office web site for prior art and complete internet searches to ensure that their idea is sufficiently unique from similar products to patent. Additionally, students are coached by faculty not to disclose any specifics that may impede patentability with other students or with the judges during the competition. While they are encouraged to produce prototypes, ONU discourages the use of CAD drawings or other detailed material, discussing the impact of this decision on their ability to patent their ideas.

The OEF was developed by a POE faculty who is a practicing attorney in the state of Ohio. Currently, it is only used in the POE course sections. It is very basic and written so that students understand what they are signing. The form consists of two options: Option 1 allows students to maintain all ownership rights to the product idea; and Option 2 allows students to relinquish all ownership rights. It is assumed that ownership is divided equitably among each team member unless agreed upon by the team differently.

Each team member is required to sign the form either maintaining or relinquishing their ownership rights. The form is distributed to the teams during class following a discussion on business formats, including what should be included in partnership agreements and basic articles of incorporation. Students are given time in class to negotiate with their team members about who wants to maintain or relinquish ownership, and, in some instances, they will negotiate equity positions. Recognizing that many of our students may not understand the ramifications of signing the form, we give the students additional time so that they may discuss the options with their parents/guardians.

If product ideas are considered for senior capstone projects, then the senior teams enter into negotiations with the original team that chose Option 1. The teams have two choices: one, negotiate a new partnership agreement with new equity positions established; or two, the senior teams can simply be considered as consultants. Negotiation for reimbursement of services if the original team takes the product to market then becomes necessary. It is also understood that not all students in the competition are interested in pursuing their ideas to market for any number of reasons and choose Option 2. However, some of these ideas are marketable and could still be considered for senior capstone projects. Option 2 allows the senior teams to pursue these opportunities unimpeded and under no obligation to the original team members.

Drawbacks

As noted before, one of the challenges with legal documents in a classroom or academic environment relating to co-ownership (including IP protection) issues is that they have not been tested in the courts. To what extent such documents would hold up, the university might be held liable, or the extent of language that must be provided is uncertain. That being said, the documents for ONU follow the structure of documents that would be provided to any person looking to start a business, so it seems reasonable to expect that the documents would be accepted in court.

At ONU, students are offered the option to decide whether they will retain or relinquish all ownership rights of their idea at the end of the POE class. Extrapolating this larger, structured approach encourages students to make the determination to what extent they wish to remain involved in the future of their business. However, students may not be equipped to handle such a decision at that point depending on their own personal process for making big decisions and whether or not they truly understand what they are being asked to decide. Even knowing that this decision is coming and given a week to consider the document, some students may feel rushed in their decision. Others may not like the binary states, instead preferring to have the option to leave, stay, or re-join the business later at their choosing.

Structured Approach Conclusion

Since instituting the use of the forms, ONU has not had any issues, but the form is untested and is continuing to be update to address new issues as they arise. Faculty appreciate the clear guidance, and many student teams are satisfied with the level of IP protection and clarity relating to co-ownership of the business that the forms provide. By treating the student teams essentially like newly forming businesses right from the start, ONU creates a professional environment and immerses them in the decisions businesses face. This comes at the expense of flexibility for the students and teams—decisions need to be made when the documents are offered to ensure that all teams are covered by the policy.

FACTORS TO CONSIDER WHEN BUILDING OR REFINING A UNIVERSITY POLICY

Each approach is different and comprehensive, and a person or group looking to implement or change their current co-ownership policy may be uncertain where to start when seeking to change their own university, program, or class's policy. Below, we outline the process all three schools used to change or create the policies discussed above.

At the university level, you first need to determine whether your university has a policy and whether students and faculty know about it. If there is a policy already in place, it needs to be actively disseminated to the students, faculty, and staff. Changes may be made after people are aware of the full extent of the policy as understanding the baseline is key to ensuring that any modifications are consistent with an approach fostering entrepreneurship, protecting the university, faculty, staff, and students, and staying true to Federal law. If there isn't a policy, all relevant stakeholders should discuss whether a policy should be developed at the university level and what it should cover. This process should then be repeated for increasingly smaller groups, such as for a School of Business, a major, and programs within the major. It is possible that several levels will not have a policy. At Quinnipiac, for example, there is little policy at the university level and none at the school or program level. The policy is currently applied throughout the major and is being considered for raising it up to the university level.

Once a policy (or policies) is in place, each class's syllabus should reflect the policy and direct students to where the policy can be found. If the language is dense or beyond the scope of the students' current understanding, class time or materials need to be made available to help the students understand the policy. Students should be notified what the classroom policy is prior to having to disclose any information about their ideas and before any teams are formed. Instructors

should consider how they wish to handle non-disclosure agreements, if at all, if such are not covered in the policy.

As a result of the policy, students should have a default process or state for their business. That is, the policy should not leave students in a void. At ONU and California State University, Chico, this is accomplished through the documents the students develop and sign. At Quinnipiac University, there is a blanket policy that clearly identifies students' relationships to their businesses in the event that the students do not create some other document. Thus, for any given group of students, students should negotiate a team contract or accept the default policy of the class. Prior to choosing an approach, they need to discuss how to handle under-, non-, and over-performers; equity ownership; and patent, trademark, and copyright ownership. Mentoring and class lessons can be provided to help facilitate this process.

CONCLUSION

Students gain academic value from collaborating with others in experiential learning activities in the classroom and extracurricular activities that may or may not create future intellectual property, such as patentable products (Herrington, 2010). But as discussed, it is important that students, faculty, staff, and the administration at universities have a clear understanding of the potential pitfalls. "When all parties to collaborative interactions are aware of the legal implications of their choices and make decisions that are consistent with the outcomes they desire, collaborative work can be beneficial to all" (Herrington, 2010, 49).

We have discussed here three different approaches: a hands-off approach that leaves the responsibility for ownership and IP protection in the hands of the students; an evolving approach that continually attempts to adapt to the co-ownership needs of its student teams; and a more structured approach with clear guidelines about establishing ownership of business ideas. All three approaches include education about ownership and IP protection issues, and all three allow students to make informed decisions about these topics. In addition, each approach also incorporates students receiving expert legal advice, through encouraging them to seek it out, through having such experts provide input into the design of the program, or both.

So far, none of the three approaches has been tested in a court of law, and indeed, that may very well be a sign that they are effective. Each approach attempts to prevent students from reaching the point where they feel that pursuing a lawsuit is the best (or only) option regarding their business idea. This is relatively uncharted territory since no major lawsuits have been filed against a school yet. However, the key word there is "yet"; with the growth of entrepreneurship programs across the country, there will come a time when such issues will arise. A school unprepared for that day may very well find itself implementing a set of policies that could quash the innovativeness and openness needed for a robust entrepreneurial community in its school. The goal of this paper is to begin a larger discussion of handling the legal side of entrepreneurship at all schools, allowing educators to create the best experiences for students and faculty alike.

REFERENCES

- Herrington, T. 2010. *Student rights in their intellectual products. Intellectual property on campus: Students' rights and responsibilities*. Southern Illinois University Press.
- Herrington, T. 2010. Legal effects of student collaborative efforts. *Intellectual property on campus: Students' rights and responsibilities*. Southern Illinois University Press.
- Litton, J., Patterson, R., & Little, A. (2014). Business organization legal issues arising from ideas generated by university students. *Southern Law Journal*. Fall2014; 24(2)267-280.
- Luppino, A. 2009. *Fixing A Hole: Eliminating Ownership Uncertainties To Facilitate University Generated Innovation*, 78 UMKCLR 367
- Luppino, A. 2012. *Some Approaches to Clarifying Ownership Issues for Student Inventors & Student Entrepreneurs*. Workshop presented at the United States Association for Small Business and Entrepreneurship, January 2012.
- Moyer, Mike, 2012. *Slicing Pie: Funding Your Company Without Funds. Version 2.3*. Kindle Edition. Retrieved from Amazon.
- National Conference of Commissioners on Uniform State Laws. Uniform Partnership Act (1997). Copy right 1994, 1996, 1997 by National Conference of Commissioners on Uniform State Laws.
- Siegel, D.S. & Phan, P. 2005. 'Analyzing the effectiveness of university technology transfer: Implication for entrepreneurship education', in Liebcap, G (Ed.), *Advances in the study of entrepreneurship, Innovation, and Economic Growth*, Amsterdam: Elsevier Science/JAI Press, pp. 1-38.
- Silva, A., Henriques, E., & Cavalho, A. (2009). Creativity enhancement in a product development course through entrepreneurship learning and intellectual property awareness. *European Journal of Engineering Education*, 34(1), 63-75.