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The manuscripts contained in this issue were double blind reviewed by the Editorial Board members. Our acceptance rate in this issue conforms to our editorial policy of less than 25%.

Thank you for your interest in the *Journal of Entrepreneurship Education.*

Ismet Anitsal
Tennessee Tech University

TEACHING ENTREPRENEURSHIP IN ACTION: USING EBAY AS AN EDUCATIONAL TOOL

Laurent Josien, Utah Valley University
Jacob Sybrowsky, Utah Valley University

ABSTRACT

The purpose of this paper is to present readers of the Journal of Entrepreneurship Education a different angle on how to teach entrepreneurship. Entrepreneurship education has received a lot of attention lately as many universities added either entrepreneurship classes or an entrepreneurship major at the undergraduate, graduate, and post graduate level. However, conflicting ways on how and what needs to be taught in such classes have emerged. After reviewing the different approaches used to teach entrepreneurship, we propose a new model on how one can teach entrepreneurship and test its effectiveness. In a pre-test post-test study, we analyzed the change in Carland Entrepreneurship Index score of entrepreneurship students engaged in an entrepreneurial activity using Ebay. The result of the analysis showed some significant changes in students score, from -5 points to +11 points with an absolute average change of 4 points (12% change) .

Keyword: Entrepreneurship, Education, Engage Learning, C.E.I.

INTRODUCTION

The concept of entrepreneurship has been around for a long time, yet, entrepreneurship education is only a recent addition to university curriculum. Indeed, the entrepreneurship concept has recently been a major focus in Higher Education Institutions (HEI) all over the world. In the US and UK, entrepreneurship classes are increasingly offered to students as part of their undergraduate and graduate choice in curriculum (Jack & Anderson, 1999; Morris et al., 2001; Klappa, 2004). Entrepreneurship as a major has been available in HEIs in the US since the early 1980s (Hills, 1998). Morris et al. found that the number of business schools in the US providing classes in entrepreneurship or new venture creation grew from roughly 25 in 1980 to over 700 by 2000. Bennett (2006) also reported a major growth in master's level provision of entrepreneurship programs. Many universities now offer entire undergraduate, graduate and even doctoral degrees in entrepreneurship or business enterprise (Adcroft, Wills, & Dhaliwal, 2004). Furthermore, a Kauffman study by Chaney and Libecap in 2000 also report that growth in entrepreneurship education offering: "Whereas 15 years ago only a handful of schools offered courses in entrepreneurship, today more than 1500 colleges and university offer some form of

entrepreneurship training…and more than 270 endowed positions in entrepreneurship, an increase of 120 percent in just the last five years." (Chaney and Libecap, 2000, page 1). As far as graduate program are concerned, the Entrepreneur journal published a ranking of the top 25 master level program, with more than 12,000 students enrolled in master level program in just these top 25 schools. Likewise, a search of the AACSB web site showed that there is 118 AACSB accredited schools with an undergraduate degree in entrepreneurship (108 in the U.S.), 62 Master degrees (57 in the U.S.), and 5 doctoral programs (4 in the U.S. and 1 in Canada). As a result of this expansion, two major schools of thought on how to teach entrepreneurship emerged: a skill based approach or an aptitude based method. Each method has its advantages and drawbacks; however they are not mutually exclusive. Hence, after reviewing both approaches, we describe an engaged learning exercise that aims to use both methods to teach undergraduate entrepreneurship students and we test its effectiveness in developing these students.

LITERATURE REVIEW

This increase in entrepreneurial education reflects the economic importance of entrepreneurial activities. Indeed, entrepreneurship has been recognized as an important part of the economy due to its macro- and micro-level effect (Bruyat & Julien, 2000; Henry, Hill, & Leitch, 2003; Carland & Carland, 2010). It is essential to giving birth to new ideas, creating new enterprises and jobs, and nurturing the economy as a whole (Hisrich & O'Cinneide, 1985).
However, the word entrepreneurship means different things to different people (Sexton & Bowman, 1984; Hills, 1988; Deamer & Earle, 2004). There is no single theory of entrepreneurship, and the research conducted in the field has broached different themes: theory, types of entrepreneurs, the entrepreneurial process, organizational forms, the external environment, and outcomes (Ucbasaran, Westhead, & Wright, 2001; Heinonen & Poikkijoki, 2006).

According to Schumpeter (1934, 1942), the entrepreneur tears down the existing economic order and replaces it with a new order through a process of identifying opportunities, creatively breaking patterns, taking and managing risk, and organizing and coordinating resources (Landstrom, 1998; Gibb, 2002). Therefore, entrepreneurship involves bringing together all factors of production (Pittaway, 2005); meaning that anyone who initiates and manages a new venture is, *ipso facto*, an entrepreneur.

Another stream of research advances that an entrepreneur can be quite distinct from an owner-manager (Sexton & Bowman, 1984; Morris et al., 2001; Pittaway, 2005). Indeed, the concept of intrapreneurs-- entrepreneurs within an existing organization, regardless of the size of the organization-- refers to emergent intentions and behaviors that deviate from the customary way of doing business (Heinonen & Poikkijoki, 2006). This concept creates another set of entrepreneurs different from the one developed by Schumpeter's theory expressed above.

Due to that lack of a unifying theory of entrepreneurship, Sexton and Bowman (1984) complained that "the content of a typical entrepreneurship course varies according to the teacher's personal preferences as to definition and scope." Furthermore, Gorman and Hanlon's (1997) literature review of entrepreneurship education noted very little uniformity among the courses offered. This issue is confirmed by Shane and Venkataraman (2000), who found wide variation in course content. They advance that the reason for such variety is rooted in the absence of a clear consensus on the definition of entrepreneurship and the lack of generally accepted paradigms or cohesive theoretical frameworks in the entrepreneurship education area. Moreover, Carland and Carland (2010) realized that while the growth in entrepreneurial programs is undeniable, it is far from ubiquitous as designing and executing an entrepreneurship program is extremely challenging.

Another issue in entrepreneurship education comes from the relationship that exists between the scholar and the entrepreneurship concept. According to Bechard and Gregoire (2005), who conducted a content analysis of entrepreneurship education articles, there are five major obstacles for scholars "considering the educational implications of their research":

1. A strong focus on theoretical development rather than educational development.
2. A strong tendency to consider education related projects as less legitimate.
3. A very limited focus on pedagogy in doctoral training.
4. Very few grants available for educational research.
5. Few entrepreneurial scholars are interested/rewarded for pedagogical innovation.

Even with these difficulties, some advances have been made in entrepreneurship education and tools have been developed to enhance the teaching of entrepreneurship. This led to the creation of two major schools of thought in entrepreneurship education: skills-based approach and aptitude-based approach (Bennett, 2006).

The first approach is based on the skill set needed for entrepreneurs. Skills-based programs seek to teach students the mechanics of running their own business. They tend to be "highly structured, consensus-oriented and unstressful" (Sexton & Bowman, 1984, p. 21) and usually involve instruction on how to raise finances, how to choose one's location, taxation, employment, legal requirements, entry level book-keeping, and other basic instructions.

Teaching methods usually include case studies, lectures, and assigned reading intended to develop the student's critical judgment and capacity to digest, understand, and analyze information (Collinson & Quinn, 2002; Davies, Hides, & Powell, 2002; Ladzani & Van Vuuren, 2002). Assessment and coursework typically comprises written reports and the development of a business plan (Hills, 1988). Courses of this nature are said to be popular because enrollees frequently desire practical, highly specific, and "hands on" information about small business management issues (Collinson & Quinn, 2002; Ladzani & Van Vuuren, 2002).

Hills' (1988) survey of entrepreneurship education programs in universities in the US found that instruction in small business management processes was the primary activity of most courses. An important justification for a university deciding to run this kind of program is the substantial body of evidence that exists suggesting that new businesses rarely fail because their owners lack innovation, self-confidence, imagination, etc.; but mainly in consequence of their owners' ignorance of management, marketing, finance, budgetary control, employee recruitment, and other aspects of personnel administration (Hambrick & D'Aveni, 1988; Jansen & Van Wees, 1994; Davies et al., 2002, Ibrahim & Soufani, 2002; Peterman & Kennedy, 2003; Keogh & Gallaway, 2004). According to the skills-training approach, entrepreneurs are "born" entrepreneurs, and entrepreneurship education should help entrepreneurs in supporting skills like marketing and management.

The second approach described by Bennett (2006) is an attitude development approach. That attitude development approach emerged from the criticism of the skill training methodology. Some scholars view the skills training approach as "passive", "mechanistic", and contrasting "with the reality of the entrepreneur operating with intuition and limited information under acute time pressure" (Henderson & Robertson, 1999, p. 238). Rather than focusing on a "best practice" way, critics suggest that entrepreneurial education should try to "inculcate the necessary attitudes, values, and psychological sets" of the successful entrepreneur (Curran & Stanworth, 1989, p. 13), and develop appropriate personal attributes such as innovativeness, the willingness to take risks, to fail and start afresh, creativity, and determination and self-direction (Garavan & O'Cinneide, 1994; Jansen & Van Wees, 1994; Hynes, 1996; Engelen, 2002; Gibb, 2002; Deamer & Earle, 2004).

Contrary to skills-based approach supporters, advocates of the attribute development approach to entrepreneurship education advance that entrepreneurship is a "learned competency" rather than an inherited predisposition or cultural trait (Etzkowitz, 2003, p. 326). As mentioned before, the skills-training approach embraces the view that entrepreneurs are "born not made", i.e. that successful entrepreneurs deviate from "normal" small business owner-managers in terms of having been born with exceptional personalities that impel them towards innovative and highly creative commercial behavior (Bennett, 2006). The counter argument to the "born not made" hypothesis is that many entrepreneurial aptitudes and attributes are in fact acquired experientially (Haynes, 2003). Hence, because education is part of a person's life experience it follows that entrepreneurship education can enhance an individual's capacities for innovative behavior, creativity, flexibility, self-direction, and the ability to respond to widely different situations (Bannock, 1981; Garavan & O'Cinneide, 1994; Rauch & Friese, 2000; Collinson & Quinn, 2002; Walton, 2003). In other words, life experience (including relevant educational experience) can itself engender and encourage innovativeness, self-determination, imaginative problem solving, and so on (Haynes). According to this line of thought, entrepreneurship education should be designed and implemented in ways that nurture and reward innovation,

creativity, flexibility, autonomy, self-direction, and the capacity to respond to widely differing situations (Bennett).

Research has shown that active learning is more appropriate for nurturing entrepreneurial attributes than passive pedagogical methods (Garavan & O'Cinneide, 1994) and that active learning is positively correlated with learning, entrepreneurial intention and interest (Shariff, Hasan, Mohamad, & Jussoff, 2010). The reflective teaching techniques used in the skills-based approach (e.g. lectures, hand-out, required readings, programmed instruction and content-oriented examination) help students to acquire knowledge about the mechanics of running a business but, according to Garavan and O'Cinneide it ignores the complexities of the environment in which entrepreneurs actually operate.

In response to such criticism, tools were developed for the skills-based approach that enhances classroom education in entrepreneurship, such as computer simulation and problems-based learning exercises. The main goal of such tools was to try to mimic what happens in the real world in order to better prepare students. However, even if these tools have been proven effective and useful (Tan & Frank Ng, 2006), they face a major criticism: simulation and problems are static. Moreover, these methods replicate just a few facets of the complexities of the environment in which entrepreneurs act. For instance, a computer simulation cannot take into consideration a student/entrepreneur's ability to convince someone through his or her communication skills. Also, the computer simulation offers only a limited amount of choices to pick from and will hinder one's imagination and ability to solve a problem.

The question now becomes: how can we truly use real life situations in the classroom? How can we blend the mechanics and the instinct necessary to become a successful entrepreneur? Starting a business might be the best way to learn how to run a business; however, that is a near impossible task for students and scholars alike.

COMBINING BOTH METHODS: A PROPOSED ENGAGE LEARNING EXERCISE

In order to solve the issue discussed above, a new path was used for students to practice their entrepreneurial skills. In order for students to be as close to the real world as possible, it was decided to let them interact with it. This particular assignment required students to purchase items from garage sales or auctions and then list these items on eBay in order to generate a profit.

By doing so, students had to invest their own money into the venture. Like real entrepreneurs they had to take ownership of the items and pay for them (equivalent to stocking with cash payment). They also had to negotiate prices with real people, which necessitated excellent communication skills. Research skills were also put to the test: not everything found in garage sale can be sold for a profit on e-Bay. Students needed to know what to look for in order to generate profit (finding opportunity). Creativity skills could also be used in the eBay listing in order to attract more bidders and achieve a higher profit.

In addition to the developments mentioned above, students also learned some valuable lessons in time management (when to find the best items at a garage sale, when to list and end the auction), accounting (keeping track of their costs), customer service (answering questions about their items), and shipping and handling (how much to charge, where to find packaging material, who to use for shipment).

As a result of that exercise, students have been able to not only develop their business skills but also their entrepreneurial attributes.

EFFECTIVENESS OF PROPOSED EXERCISE

Research Method

In order to measure the effectiveness of the exercise, the Carland Entrepreneurship Index (CEI) (Carland and Carland, 1997, see Appendix A) was used. The CEI is a 33 item questionnaire that measures one's entrepreneurial ambition. Respondents can score from 0 to 33, with 0 representing the lowest possible score, indicating that the respondent is low in entrepreneurial aptitude.

We used a convenience sample of students who self-selected into an elective entrepreneurship class offered at a small faith-based, liberal art college located in the Midwest. Their average age was in the low 20s, and there was 7 male and 5 female students enrolled.

The students were tested before the beginning of their entrepreneurship class and retested at the end of the semester. Table 1 presents the measurement recorded of these tests and the change between the two tests.

Table 1: CEI Score

Student	Pre Test	Post Test	Change
A	26	23	-3
B	25	20	-5
C	24	26	+2
D	24	27	+3
E	22	21	-1
F	20	21	+1
G	19	20	+1
H	17	28	+11
I	16	24	+8
J	16	23	+7
K	15	14	-1
L	15	20	+5

Findings

As table 1 indicates, there was some significant change in the student scores from the pretest to the posttest. While five students remained close to their original score (+/- 2 points), seven had sensible change, one of them increasing his or her score by 11 points. Overall, the absolute average change was 4 points, which represents a 12% change in their overall score.

A paired samples test was conducted and the results indicated that the overall change for the sample had a p-value of .115 (t=-1.714, 11 degrees of freedom), which for such a small sample (N=12) can be considered slightly significant.

Of the seven students with high difference in scoring, five changed positively while the other two scored lower on the posttest. This seems to indicate that an entrepreneurship class can lower one's entrepreneurial attitude.

Finally, Table 2 shows that it is possible for students to generate a substantial amount of money in a short period of time (the exercise was conducted in a five-week period). Student "I" focused his or her efforts on video games and items with high appeal and multiplied his or her investment by over 300% after all fees were paid.

Table 2: Example of a Student Activity

Item	Cost	Sold	Gain
Rayman 2 (N64 game)	$0.50	$7.20	$6.70
Newsboys: Shine The Hits CD	$0.50	$7.28	$6.78
Harley Davidson Motorcycle Seat	$20.00	$98.35	$78.35
Star Wars: Knights of the Old Republic	$0.50	together for	
Madden NFL 2005	$0.50	$25.50	$24.50
Tom Clancy's Ghost Recon	$0.50	$6.75	$6.25
ESPN NFL 2K5	$0.50	$5.75	$5.25
Unreal Championship	$0.50		
Counter Strike	$0.50		
Brute Force	$0.50	4 games together for	
NFL Blitz 20-03	$0.50	$27.25	$25.25
NFL Street	$0.50	$5.50	$5.00
NFL Blitz: Pro	$0.50	$9.75	$9.25
Madden NFL 2004	$0.50	$7.01	$6.51
International Business book	$20.00	$51.59	$31.59
Practical Financial Management book	$15.00	$39.50	$24.50
Sociology book	$1.00	$9.00	$8.00
Total	$62.50	$300.43	$237.93

Limitations

As with any research, limitation on the generalization of the findings exists. For instance, we used a small, convenient, sample of students for our research. With such a small sample (12 students) we have to be careful about what we learn from the research. Our finding show a slightly significant change in the entrepreneurial score of our sample, which seems to indicate that using both the skill based approach and the attitude based methodologies have an impact on student's CEI score. However, the validity of our results can be questioned by the size of our sample and further research will need to be done in order to solidify our results.

Discussion

The goal of our research was to conduct an exploratory experiment to see if the research instrument and idea was productive. The results we obtained indicate that our research seems to be worthwhile.

First of all, we found that entrepreneurial education had an impact on entrepreneurial score. However, in order to establish the reliability and validity of our research, we will need to replicate our research with a larger sample. Hence, we would encourage our fellow JEE readers to use our proposed exercise to develop convergent validity of our results.

The skill set approach, focusing on how to raise finance, selecting location, taxation, business formulation, and accounting among its major subjects, is said to be popular among students as it is seems as an "hands on" learning about small business creation. Simultaneously, this approach is also criticized as passive and mechanistic and said to be out of touch with reality. On the other hand, the attitude based approach focuses on developing personal attributes like the willingness to take risk and the ability to overcome failure, but is said to be difficult to organize. The value of our experiment is that it combines both methodologies to educate students in entrepreneurship. By forcing the students to interact with elements outside the classroom, i.e. independent sellers (garage sale vendors) rather than using a computer or a classmate to negotiate, it introduces "real life" features where the aptitude based approach can enhance student learning. Furthermore, by having the students to take care of their accounting and finances, it also uses the strength of the skill based methodology. We strongly believe that these two methodologies are not mutually exclusive, that there is merit in each methodology, and that combining both approach will be beneficial to entrepreneurship students.

Another of our findings was the fact that entrepreneurial education can yield a negative outcome. Indeed, at least one student experienced a decrease in its entrepreneurial score (up to -5), which would shows that learning about entrepreneurship can decrease one's interest about creating their own business. This, in itself is not a bad outcome, knowing what to expect, experiencing the amount of work that need to be provided to successfully start a business, basically removing the "romantic" view of the entrepreneur (little work for huge reward) can be

an "eye opening" event that could prevent someone to start an entrepreneurial activity when they are not suited/ready for it.

CONCLUSIONS

The skill-set approach seeks to enhance future entrepreneurs by developing the entrepreneur's skills in running their own business, while the attitude development approach tries to enhance the entrepreneur's entrepreneurial aptitudes and attributes. Both approaches can bring some value to burgeoning entrepreneurs. As the results of this study show, these two methods do not have to be mutually exclusive; it is possible to integrate both the skills and the attribute approach in entrepreneurship education.

Thanks to the emergence of new methods of running a business, especially with e-commerce, it is now possible to join together real life situations and entrepreneurial education. We can not only teach the foundation skills in marketing, management, finance, and accounting that will be necessary to run and maintain a successful business, but we can also nurture entrepreneurial aptitudes by moving the scope of the instruction out of the classroom and bringing live, random input from real customers. By bridging together these two approaches, we can enhance the classroom experience that students in entrepreneurship are seeking while enrolling in such classes. With such an engaged learning experiment, every student will be able to find some elements of the educational process to help them in their entrepreneurial endeavors.

Finally, by introducing real money into the process, students were much more interested in the outcome of their work than the regular pursuit of a grade, and comments received in the post analysis phase indicated that students had enjoyed the competition with their classmates and had learned a lot about entrepreneurship.

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Website used:

http://www.entrepreneur.com/topcolleges/index.html

http://www.unm.edu/~asalazar/Kauffman/Entrep_research/e_ed_grow.pdf

Appendix A: Carland Entrepreneurship Index

1. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o Written objectives for this business are crucial
- o It's enough to know the general direction you are going

2. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I like to think of myself as a skillful person
- o I like to think of myself as a creative person

3. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I wouldn't have started this business if I hadn't been sure that it would succeed
- o I'm never sure whether this business will succeed or not

4. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I want this business to grow and become a major force
- o The real purpose of this business is to support my family

5. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The most important thing I do for this business is plan
- o I am most important in day to day management of this business

6. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I like to approach situations from a sympathetic perspective
- o I like to approach situations from an analytical perspective

7. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o My primary purpose here is to survive
- o I won't rest until we are the best

8. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o A plan should be written in order to be effective
- o An unwritten plan for development is enough

9. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I probably spend too much time with this business
- o I balance my time between this business, family and friends

10. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I tend to let my heart rule my head
- o I tend to let my head rule my heart

11. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o My priorities include a lot of things outside this business
- o One of the most important things in my life is this business

12. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I'm the one who has to do the thinking and planning
- o I'm the one who has to get things done

13. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o People who work for me, work hard
- o People who work for me, like me

14. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I look forward to the day when managing this business is simple
- o If managing gets too simple, I'll start another business

15. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think I am a practical person
- o I think I am an imaginative person

16. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The challenge of being successful is as important as the money
- o Money, which comes with success is the most important thing

17. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I'm always looking for new ways to do things
- o I try to establish set procedures to get things done right

18. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think it is important to be sympathetic
- o I think it is important to be logical

19. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I think that standard operating procedures are crucial
- o I enjoy the challenge of invention more than anything else

20. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I spend as much time planning as in running this business
- o I spend most of my time running this business

21. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I have found that managing this business falls into a routine
- o Nothing around here is ever routine

22. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I prefer people who are realistic
- o I prefer people who are imaginative

23. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The difference between competitors is the owner's attitude
- o We have some things which we do better than the competitors

24. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o My personal objectives revolve around this business
- o My real life is outside this business with family and friends

25. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I enjoy the idea of trying to outwit the competition
- o If you change too much, you can confuse the customers

26. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The best approach is to avoid risky moves whenever possible
- o If you want to outdo the competition you have to take some risks

27. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I hate the idea of having to borrow money
- o Borrowing is just another business decision

28. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o Quality and service aren't enough. You must have a good image
- o A fair price and good quality is all any customer really wants

29. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o People think of me as a hard worker
- o People think of me as easy to get along with

30. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The only undertakings this business makes are those that are relatively certain
- o If you want the business to grow you have to take some risks

31. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o The thing I miss most about working for someone else is security
- o I don't really miss much about working for someone else

32. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o I am concerned about the rights of people who work for me
- o I am concerned about the feelings of people who work for me

33. Please check the box next to the ONE of each pair of statements which comes CLOSEST to representing the way you USUALLY feel.

- o It is more important to see possibilities in a situation
- o It is more important to see things the way they are

THE STRUCTURE AND SCOPE OF ENTREPRENEURSHIP PROGRAMS IN HIGHER EDUCATION AROUND THE WORLD

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ABSTRACT

Entrepreneurship, new business start-ups and small business growth are viewed by most countries as a means to improved growth in gross national product, reduced unemployment and increased quality of life. Entrepreneurship offers individuals a chance to build successful careers without having to join large corporations with little ability to impact decisions. Many institutions of higher education around the world have stepped forward to support entrepreneurship by developing programs that provide students with the skills, knowledge, abilities and opportunities to be successful entrepreneurs and small business managers. The types of programs available, however, vary greatly.

This study provides a description of these diverse programs from 321 universities located in over 60 countries representing all continents except Antarctica. The programs are described in terms of a number of factors including: courses available, types of programs, faculty positions and infrastructure, program location in the university and types of external support. This substantial descriptive dataset creates an opportunity to better understand differences, and informs efforts to better define best practices and effectiveness metrics.

INTRODUCTION

Research and practice at the interface of education and entrepreneurship has made significant progress, fueled in large part by the dissatisfaction of students and accrediting agencies with traditional approaches to business education (Solomon & Fernald, 1991). The challenge to universities and individuals tasked with developing and delivering entrepreneurship education is to build sustainable communities of learning that balance the requirements of academic rigor with the realities of entrepreneurship. This challenge was recently considered in discussions of university-based entrepreneurship ecosystems (UBEEs), wherein analysis and conclusions were based on case studies from six universities (Fetters, Greene, Rice & Sibley Butler, 2010). This research paper, however, reports on the entrepreneurial communities of more

than 300 universities around the world, highlighting trends of where and how resources are obtained and distributed in an effort to build these sustainable communities.

Many scholars have noted the important contributions of entrepreneurs, new businesses and small businesses to the economic and social sectors of the environment through their impact on job creation, innovation and economic renewal (Chrisman, Chua & Sharma 2003). Kuratko (2005) reported that in the U.S. from 1995 to 2005 roughly 600,000 new businesses were developed each year, and that firms with less than 500 employees employ 53% of the private workforce and make up 51% of gross domestic product. Reynolds, Hay and Camp (1999) reported that sixty-seven percent of all new inventions in the U.S. were developed by smaller firms.

There has been increasing demand to produce and deliver high-quality entrepreneurship education because entrepreneurship and innovation have been recognized as critical drivers of sustainable economic development and competitive advantage (e.g., Katz, 2003; Matlay, 2008; Solomon, Duffy, & Tarabishy, 2002). Further, it has been argued that all individuals should be exposed to entrepreneurship training and development (Gibb, 2002) because entrepreneurship graduates are three times more likely to start their own business, three times more likely to be self-employed, have annual incomes 27% higher, own 62% more assets, and are more satisfied with their jobs (Charney & Libecap, 2004). Universities have increasingly recognized the importance of these societal trends and instituted and expanded entrepreneurship and small business programs (Bechard & Gregoire, 2004; Katz, 2003; Solomon, Duffy, & Tarabishy, 2002).

While a few programs existed earlier, significant growth of entrepreneurship programs began in the early 1970s when the University of Southern California offered a concentration in their MBA program in entrepreneurship and then a year later offered a concentration in entrepreneurship at the undergraduate level as well. In 1991, Robinson and Hayes stated that entrepreneurship programs had come a long way but several weaknesses remained. A major concern was the lack of depth in many of the programs then in existence. According to Kuratko (2005), by 2005 there were 2200 courses being offered in some aspect of entrepreneurship at over 1600 universities. While this explosive growth was taking place in the U.S., it was also being mirrored in countries around the world (McDougall & Oviatt 2003; Zahra, Hayton, Marcel & O'Neil 2001). Critical to these universities seeking to develop and implement a program of entrepreneurship education is obtaining and distributing resources in the form of human capital (for instance, students and faculty) and financial capital. This paper highlights these capital trends across over 300 universities around the world.

REVIEW

Where Are Entrepreneurship Programs Housed?

According to Vesper (1999), entrepreneurship programs have generally been developed as an add-on to business education and, as a result, tend to be housed in business schools at many universities. This is not necessarily a good fit, as business schools are often structured around

increasingly specialized functional areas (i.e., marketing, finance, human resources, operations) while entrepreneurship programs more often cross functional boundaries. Zeithaml and Rice (1987) believe that education in entrepreneurship covers the entire scope of business, and because of this they are similar to the original concept and design of management education in universities. While many entrepreneurship programs remain small, some programs have developed enough to be housed in their own department. This independent department may reside in the business school or elsewhere, or may be in centers of entrepreneurship or small business development. A trend toward distinct entrepreneurship program identity seems to be emerging, which may indicate an increase in the perception of importance and the sustainability of entrepreneurship in higher education (Zahra, Newey, & Shaver, 2011). Entrepreneurship and small business centers are often developed to offer education and support to local entrepreneurs and small business owners, as well as to house educational programs aimed at undergraduate and graduate students.

What Facilities and Positions Are Available to Entrepreneurship Programs?

One important dimension to consider in determining the developing maturity of entrepreneurship programs is the types of facilities and positions provided to these programs. As noted by Zeithaml and Rice (1987), education and assistance programs for practicing small business managers and entrepreneurs are often handled by universities through entrepreneurship or small business centers established specifically for this purpose. Most centers target the local geographic region. According to Zeithaml and Rice (1987) these centers are often divorced from the university's teaching and research programs. This is perhaps unfortunate because they can provide faculty and students access to important knowledge and skill development opportunities. Research comparing U.S. and international academically-based entrepreneurship centers shows that while the U.S. has led in their development, there is evidence of increasing growth elsewhere (Bowers & Alon, 2010; Bowers, Bowers, & Ivan 2006; Zahra et al., 2011).

Positions allocated to entrepreneurship programs are also seen as an important indicator of the development of these programs. Katz (2003) found that there are 406 endowed positions in entrepreneurship at universities across the US, reflecting a steady increase from the early 1990s. Rice, Fetters and Greene (2010) identify strong programmatic and faculty leadership as one of seven key success factors and state that it takes a team of people with skills in the full range of program development and management to create an environment that sustains successful entrepreneurship programs.

What Courses Are Taught in These Programs?

As previously noted, entrepreneurship education covers the entire range of business disciplines (Zeithaml & Rice, 1987). It is likely that highly developed programs might have entrepreneurship courses in such areas as management, marketing, finance, law and technology and innovation. In addition, Vesper and Gartner (1997) and Solomon et al. (2002) found that the growth of university level entrepreneurship programs has tended to broaden the view of

entrepreneurship from one of new business entry to include other topics such as family business, managing smaller enterprises, and managing high growth businesses. The process of starting a business also introduces the possibility of starting a non-profit business or that of starting a new business within an existing business (corporate entrepreneurship). Tied closely to the process of start-up is small business management and growth management. According to the Zeithaml & Rice (1987) study, 31 schools (of 72) offered a single course and 10 schools offered more than two courses. In their study of 240 two and four-year colleges and universities, Solomon et al. (2002) found that the most predominant course offerings were small business management and entrepreneurship, but they also found consistent mention of courses focused on family business, franchising, venture capital, and technology and innovation.

What Types of Concentrations Are Offered?

It is important to explore how common entrepreneurship concentrations have become since their introduction at the MBA and undergraduate levels at the University of Southern California in the early 1970s. Equally important is how PhD programs have been developed in this discipline, and whether programs being built for students outside the business school. According to Solomon et al in 2002, among four-year colleges and universities, individual courses were the primary mechanism for delivering entrepreneurship education, with concentrations being a distant second, and minors and majors an even more distant third. Among the common elements of university-based entrepreneurship ecosystems identified by Rice et al in 2010, were concentrations, minors and majors, as well as courses for non-business majors. This reflects a trend toward increased development and growth from previous studies (Gartner & Vesper, 1994; Zeithaml & Rice, 1987) that showed few universities offering entrepreneurship concentrations or degrees.

What Types of Collaboration and Funding Exist for These Programs?

Collaboration and funding from outside parties are also considered to be important elements in the development and support of entrepreneurship programs. Collaboration with local business groups like Chambers of Commerce or municipal innovation centers can offer important resource funding and development opportunities. State, regional and federal agencies like the Small Business Administration in the U.S, can offer services and funding for these programs. Also, private institutions like the Coleman Foundation and the Kauffman Foundation may provide resources for program development and growth. In the Rice et al (2010) discussion of effective university-based entrepreneurship ecosystems, strong relationships at the local, national and global levels with the business community, investment community, other universities, non-governmental organizations and government agencies are considered requirements for success.

What Opportunities Exist for Students in These Programs?

Many universities offer students of entrepreneurship opportunities to learn and network outside of the classroom (Solomon et al., 2002). Examples of some of these opportunities include guest speakers, onsite visits to entrepreneurial companies, business plan competitions, elevator pitch competitions, internships, small business consulting opportunities, case studies, and student organizations devoted to entrepreneurship to name a few. The extent to which a program offers these additional experiential opportunities can be seen as a further measure of program development and potential for growth. Networking events, student clubs and business plan competitions were commonly found among the six case study institutions in the work of Rice et al (2010). In their analysis of the entrepreneurial ecosystem at USC, it was noted by Allen & Lieberman (2010) that for the new generation of students who grew up with access to the internet, unstructured learning (rather than more traditional structured academic programs) and an understanding of the power of collaboration and social networking are central to the way students engage with the world. These opportunities are part of the basic lexicon of many entrepreneurship programs.

Does the University Have Entrepreneurship Programs Outside the College of Business?

While most entrepreneurship programs have been add-ons to the curricula of the business school it is essential that entrepreneurship be infused in other non-business programs as well (Laukkanen, 2000; Streeter & Jaquette, 2004). There is increasing demand and interest in entrepreneurship education from beyond the business school in areas such as engineering, science, technology, and the arts (Streeter & Jaquette, 2004). This can be seen in programs such as those at Millikin University and Case Western Reserve, where entrepreneurship is an integral part of students' learning process in various arts programs, and at Massachusetts Institute of Technology, where entrepreneurship is an integral part of the engineering program.

Because entrepreneurship can be thought of as a process of discovering, evaluating, and developing opportunities, students in any discipline, with any career path, could benefit from being exposed to and learning an entrepreneurial mindset and skill set (Shane & Venkataraman, 2000; Greene, Rice & Fetters, 2010). For instance, Block and Stumpf (1992) found that interdisciplinary programs are using faculty teams to develop programs for the non-business students and there is a growing trend in courses specifically designed for art, engineering, and science students in entrepreneurship education in order to expose these students to the concepts, thought processes, and skills related to entrepreneurship.

METHODOLOGY

As part of a larger research effort to understand the effectiveness of entrepreneurship education (The Entrepreneurship Education Project http://www.entrepeduc.org), representatives from universities were solicited to complete a web-based survey examining the present state of entrepreneurship education at their universities. Representatives were identified and contacted

through listservs (i.e., Academy of Management Entrepreneurship Division, United States Association for Small Business and Entrepreneurship), journal article authorship and Internet searches of universities around the world offering entrepreneurship education. In total, representatives from 321 universities in over 60 countries completed the English-language survey.

Data was collected in the following general categories or dimensions relating to the scope and content of entrepreneurship programs:

- Where the program was housed in the university
- The types of courses taught
- Facilities and faculty positions directed at entrepreneurship or small business,
- Programs offered to students (undergraduate, graduate, Ph.D., certificate)
- Outside collaboration and funding
- Experiential opportunities for students
- Entrepreneurship programs outside the business college

These variables were generally treated as dummy variables with 'yes, the university has it' equal to '1' and 'no, the university does not have it' equal to zero. Summary variables were also created for each major category. As an example, all variables listed under types of courses were added together to form a variable indicating the total courses offered by the program. Finally, the six summary variables were added together to provide an overall measure of program development. All analyses were conducted using SPSS 18, and descriptive statistics were used to assess the data.

RESULTS

Entrepreneurship programs are found in various parts of the university, although the most common location is in business schools. As Table I shows, 57% of the entrepreneurship programs are located in a college or school of business. Based on written comments from respondents, it appears the most common location is in management departments. About 10% of the programs were found in entrepreneurial centers and another 10.6% had their own department of entrepreneurship or small business. Only 5% of the programs were housed in other colleges with no one college standing out as a clear second choice.

Table I: Where are the Entrepreneurship Programs Housed?

	Freq	**%**
Entrepreneurial Center	32	9.9
Department of Entrepreneurship or Small Business	34	10.6
College or School of Business	184	57.3
Other	16	5.0

Table II shows the distribution of facilities and faculty positions in participating entrepreneurship programs. Entrepreneurship centers are often located outside any particular

academic college and are focused exclusively on entrepreneurship courses and services. Faculty teaching courses in the entrepreneurship program may have offices there, and the center may also provide services for community members interested in entrepreneurship. Nearly 58% of participating universities had entrepreneurship centers or endowed entrepreneurship centers. In addition, nearly 28% of participating universities had centers for small business or endowed centers for small business. Chair positions at a university are given to faculty who have shown expertise in a particular academic area. Almost 26% of entrepreneurship programs had entrepreneurship chair positions, and an additional 16% had endowed entrepreneurship chair positions. The Coleman Chair is a prestigious chair directed at entrepreneurship; 3% of the respondents had Coleman Chair positions, and an additional 9% had endowed Coleman Chair positions. Approximately 14% of the universities had a small business chair or an endowed small business chair, 48% of the programs had either entrepreneurship professors or endowed entrepreneurship professors, and 24% of the universities had professors of small business or endowed professors of small business.

Table II: Entrepreneurship Facilities and Positions

	YES	%
Entrepreneurship Center	149	46.3
Endowed Entrepreneurship Center	37	11.5
Entrepreneurship Chair	85	26.4
Endowed Entrepreneurship Chair	51	15.8
Coleman Chair	9	2.8
Endowed Coleman Chair	28	8.7
Entrepreneurship Professor	110	34.2
Endowed Entrepreneurship Professor	44	13.7
Center for Small Business	59	18.3
Endowed Center for Small Business	31	9.6
Small Business Chair	18	5.6
Endowed Small Business Chair	28	8.7
Small Business Professor	46	14.3
Endowed Small Business Professor	31	9.6
External Grants	229	71.1

Table III shows the distribution of courses taught in participating entrepreneurship programs. The two most popular courses taught in the programs were Introduction to Entrepreneurship (67.4%) and New Venture Creation (41%). Also popular was Small Business Management (30.7%), practicum or consulting courses directed at entrepreneurship (30.7%), and Creativity and Innovation (39.8%). As can be seen from the list of courses, entrepreneurship spans many functional areas of a normal business school, including marketing, finance, economics, and law. The average number of courses taught across all programs was between four and five, with one program indicating up to 21 different courses. There were also 61

universities that indicated they offered no courses related to entrepreneurship, suggesting a wide variety of number of courses taught overall.

Table III: Courses Taught in Entrepreneurship Program		
	YES	**%**
Introduction to Entrepreneurship	217	67.4
New Venture Creation	132	41.0
Small Business Management	99	30.7
Practicum/Consulting/Experiential	96	29.8
Creativity and Innovation	99	30.7
Technology and Entrepreneurship	86	26.7
Strategic and Entrepreneurial Management	86	26.7
Special Topics on Entrepreneurship	85	26.4
Social Responsibility and Entrepreneurship	77	23.9
Entrepreneurial Marketing	73	22.7
Small Business Finance	58	18.0
Family Business	53	16.5
Corporate Entrepreneurship	50	15.5
Small Business Marketing	42	13.0
Law and Entrepreneurship	38	11.8
Non-profit Entrepreneurship	36	11.2
Economics of Entrepreneurs	34	10.6
Growth Management	33	10.2
Franchising	25	7.8
Sustainable Venturing	25	7.8
Minority Entrepreneurship	7	2.2

Table IV identifies degree programs and other opportunities offered through the entrepreneurship program. Undergraduate degrees are fairly popular in these programs, with 25% indicating that they offered an undergraduate entrepreneurship major while 48% indicated they either offered an undergraduate minor for business or non-business students. Graduate degrees were not uncommon but a bit less popular, with 41% of the programs offering graduate major degrees to business or non-business students. In addition, 25% of the programs offered graduate minors to business or non-business students. Approximately 19% of the programs surprisingly offered entrepreneurship PhD programs.

In terms of experiences offered to students, internship opportunities at local companies were fairly popular at 36%, and collaboration opportunities in other countries were somewhat less popular, with 15% of participants indicating availability. Small business incubators were also popular, with 32% indicating this was available. The average number of offerings across all universities participating was approximately three, with the highest number of programs at 15. There were 75 universities that offered no programs or opportunities for students.

Table IV: Degree Programs and Other Opportunities Offered		
	YES	**%**
Entrepreneurship/Small Business Management PhD	61	18.9
Executive Development in Courses in Entrepreneurship	73	22.7
Entrepreneurship Graduate Minor for Non-Business	31	9.6
Entrepreneurship Graduate Minor for Business	51	15.8
Entrepreneurship Graduate Major	59	18.3
Entrepreneurship Undergraduate Minor for Non-Business	73	22.7
Entrepreneurship Undergraduate Minor for Business	82	25.5
Entrepreneurship Undergraduate Major	80	24.8
Entrepreneurship Undergraduate Certificate	45	14.0
Continuing Education Program in Entrepreneurship	78	24.2
Distance Learning in Entrepreneurship (via the Internet)	49	15.2
Internship Opportunities at Local Companies	117	36.3
Collaboration Opportunities in Other Countries focused on Entrepreneurship	49	15.2
Entrepreneurship/Creativity Lab	62	19.3
Small Business Incubator	102	31.7

Table V provides participants' responses to the types of outside support opportunities available through entrepreneurship programs. Responses can be divided into two types of support, collaboration with outside agencies and funding from outside agencies, both at three different levels: local, state or regional, and the federal level. Most collaboration with programs came from the local (56.5%) or state/regional level (45%). Some support came from the federal level, with 28% of the programs indicating collaboration with federal agencies. In terms of funding, the distribution was fairly equal across all three levels, with the greatest at 27% directed from state/regional agencies. The average number of support opportunities for all programs was two, with a maximum of all six categories. Nearly one-third of the universities (99) indicated no support from any of these six outside sources.

Table V: Outside Support Opportunities		
	YES	**%**
Collaboration with Local Agencies	182	56.5
Collaboration with State or Regional Agencies	145	45.0
Collaboration with Federal Agencies	90	28.0
Receive Support for Entrepreneurship from Local Agencies	70	21.7
Receive Support for Entrepreneurship from State or Regional Agencies	86	26.7
Receive Support for Entrepreneurship from Federal Agencies	77	23.9

Table VI identifies opportunities in additional to academic coursework available for entrepreneurship students through their programs. The most popular opportunity provided is guest speakers focused on entrepreneurship or small business; 71% of programs offered this opportunity. The next most popular was providing a business plan competition. Student clubs or organizations focused on entrepreneurship or small business were fairly common at nearly 47%

of the programs. Internships focused on entrepreneurship or small businesses were also popular at 40%. The average number of opportunities for students across programs was 3.7, with a maximum of 10. Sixty-three universities indicated that they did not make available any of the opportunities listed in Table VI.

Table VI: Opportunities For Entrepreneurship Students		
	YES	**%**
Guest Speakers Focused on Entrepreneurship/Small Businesses	230	71.4
On-site Visits Focused on Entrepreneurship/Small Businesses	120	37.3
Business Plan Competition	186	57.8
Elevator Pitch Competition	77	23.9
Internships focused on Entrepreneurship/Small Businesses	129	40.1
Feasibility Studies	110	34.2
Community Development Focused on Entrepreneurship/Small Businesses	88	27.3
Student Club/Organization Focused on Entrepreneurship/Small Businesses	150	46.6
Kauffman Foundation FastTrac Program	11	3.4
Global Entrepreneurship Week Events	78	24.2

While most entrepreneurship programs seem to be housed within business schools or within an entrepreneurship or small business center, they can also be found in other areas of the university. Table VII provides locations of entrepreneurship programs located outside business schools. Twenty-two percent of the universities participating in this survey indicated that they had entrepreneurship programs housed in their college of engineering. Also popular were health sciences (11.5%), environmental sciences (10.2%), art/fine art (10.6%), and biological sciences (9.3%). These responses demonstrate that entrepreneurship activity extends beyond business to the sciences, engineering and other disciplines at universities as well. The mean occurrence for entrepreneurship programs outside business schools is 0.90. Two hundred- seventeen, or 67%, of universities had no entrepreneurship programs outside the college of business.

Table VII: Entrepreneurship Programs Housed Outside the College of Business		
	YES	**%**
Music	18	5.6
Art/Fine Art	34	10.6
Environmental Sciences	33	10.2
Engineering	72	22.4
Health Sciences	37	11.5
Architectural/Urban Planning	16	5.0
Biological Sciences	30	9.3
Law	29	9.0
Veterinary Medicine	9	2.8
Clinical Medicine	11	3.4

Table VIII provides descriptive statistics on summary variables created for all items in each of Tables II through VII. The average number of courses offered was 4.5 with a high of 21. At the same time 61 universities had no courses and 87 (27.1%) had one course. The average number of facilities was less than one (.86) and the average number of positions was 1.4. Thirty-seven universities reported only one facility or faculty position. The average number of programs offered was 3.15. Seventy-five schools indicated that they offered no programs for their students. Only eleven universities offered degree programs in entrepreneurship at the undergraduate, graduate and PhD levels. One hundred and eighty-one schools offered no degree programs. Sixty-four schools had some collaboration at the local, state and federal levels while 102 had no collaboration at any level. In terms of funding 24 schools got funding from all three levels while 180 received no funding from any level. The average number of opportunities for students was 3.67. Sixty-three universities provided none of the opportunities included in the survey. Programs outside the business school existed but were not common. Two hundred and seventeen schools indicated not having a program outside of business. Development was a summary variable that totaled the scores of all items from Tables II through VII. As can be seen the average score for this variable was 20.4 with a high of 64. This suggests that there continues to be a wide range in the development of these programs around the world.

Table VIII: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Total Courses	321	.00	21.00	4.52	4.13
Total Facilities	321	.00	4.00	.86	.89
Total Positions	321	.00	10.00	1.4	1.81
Total Programs Offered	321	.00	15.00	3.15	2.86
Total Support	321	.00	6.00	2.02	1.87
Total Opportunities	321	.00	10.00	3.67	2.65
Total Outside COBE	321	.00	10.00	.90	1.80
Development	274	1.00	64.00	20.4	10.17
Valid N (listwise)	274				

DISCUSSION

The data in this study taken in the context of previous work indicates that entrepreneurship education is alive and well, and continuing to develop and grow. Trends in line with previous studies demonstrate a rise in course offerings, majors, and funding targeted at entrepreneurship education (Katz, 1994; Solomon et al., 2002). While entrepreneurship education still seems to be predominantly the domain of the business disciplines, there is evidence indicating a trend toward moving entrepreneurship across the campus. As other disciplines realize the value of entrepreneurial training, this trend can help lead to beneficial results such as enhanced technology transfer and increased economic growth (Hill & Kuhns, 1994; Laukkanen, 2000).

An interesting finding in this data relates to the breadth of course topics being offered under the umbrella of entrepreneurship. Broad course offerings are available, from creativity to

social responsibility to marketing to law and beyond, spanning the concepts and skills relevant to developing the next generation of entrepreneurs in many different disciplines. Significant collaboration with various agencies outside the academic institution is also evident. While the majority of this collaboration occurs naturally at the local level, significant collaboration is also taking place at both the state/regional and federal levels. This opens the door to knowledge sharing across universities, as they collaborate with the same agencies to enhance entrepreneurship education offerings. These collaborative relationships also provide an opportunity to involve constituents and policy makers in the planning and delivery of entrepreneurship education, thereby linking students into their local, state, and federal economies and governments.

One especially encouraging finding in this study was the breadth and depth of extracurricular and experiential entrepreneurial activities offered to students. From competitions to internships to student clubs, students are increasingly presented with the opportunity to enhance and apply their learning outside the classroom through many different vehicles. In order to develop effective entrepreneurs, we must expose them to learning in many different areas (McMullen & Long, 1987). Scholars have argued that for an entrepreneurship education program to be effective it must offer and emphasize actions in entrepreneurial ways and separate from traditional hallmarks such as business plan writing (Honig, 2004). Action learning and experiential learning such as student business start-ups, live cases and simulations close the gap between academic experiences and real-world requirements (e.g., Kuratko, 2005; Revans, 1978). These experiences promote skill set diversity and authenticity in students (e.g., Grisoni, 2002; Pittaway & Cope, 2007). The results of this study provide preliminary evidence that universities are indeed enhancing programs to provide students interested in entrepreneurship with this type of learning.

Perhaps the most promising finding, however, is the substantial number of entrepreneurship degree programs. Nearly half of the more than 300 institutions offered either majors or minors of entrepreneurship, or both. This appears to support the generally accepted legitimacy of and commitment to entrepreneurship in the curriculum. Even more promising is that nearly 20% of the surveyed institutions had Ph.D. programs in entrepreneurship. These graduate programs support the continued development of the field and the growth of programs moving forward. One finding, however, that highlights the need for continued emphasis on entrepreneurship in higher education is that over half the universities did not have a professor of entrepreneurship and over 75% did not have a small business professor. This may in part be the result of entrepreneurship programs housed in a non-entrepreneurship department (e.g., management), where professors teaching entrepreneurship courses are titled as professors in their department (i.e., management professors). As evidenced in the work of Fetters et al (2010), universities enhance their ability to establish strong programs by providing a distinct identity for entrepreneurship, whether by defining a major, minor, department, center, professors and/or chairs of entrepreneurship.

The implications that can be drawn from this study focus on the breadth and depth of entrepreneurship education, both within and outside the university. Entrepreneurship as an academic discipline must push beyond the cozy walls of the college of business in order to connect with a broader population of students interested in entrepreneurship. Additionally,

universities are increasingly connecting with various agencies and sources of funding in the community in order to enhance their entrepreneurship education program. These connections should be pursued with gusto as the increased resources enhance the students' learning experiences, and develop stronger linkages between students and their surrounding community, which can have enormous implications for local and regional economic development.

Study findings should be put in the context of several limitations. Universities from one country to another can have very different organizational structures and external environments. These variations in context may impact how respondents answered particular questions. Language and cultural differences may lead to varying interpretations. The survey was designed to cover a broad range of the content and scope of entrepreneurship programs but certainly is not all inclusive. There may be other important aspects of these programs left unexamined. The extent to which participating programs represent all programs is also unclear.

That said, a better understanding of variations in the organization, priorities, processes and economic, political and cultural environments of universities and entrepreneurship programs across countries or regions of the world could significantly enhance our understanding of entrepreneurship education. As an example, the *grande écoles de commerce* in France were set up by the regional business community and are funded in part by regional chambers of commerce and engaged area businesses. This model is far different from most U.S. universities, but the methods and processes for collaboration may provide ideas for improved practice here in the States - particularly if better understood. The Fetters et al (2010) work is based on case studies of six universities, including one in Mexico, one in France and one in Singapore, but no systematic, generalizable examination has been undertaken of how political, economic and societal differences influence effective entrepreneurship education. It is possible that the identification of meaningful measures of effectiveness might be facilitated by examining differences in international contexts. Appropriate processes and structures for and outcomes from entrepreneurship education might be somewhat different in an undeveloped versus developed economy. For example, how critical or necessary is social entrepreneurship? What happens when the necessity for entrepreneurship exists but collaborative relationships and support are not readily available? How do these situations impact appropriate practice for the development of entrepreneurship? There is a dearth of research that examines entrepreneurship and entrepreneurship education from this type of cross-cultural perspective. Given the potential for entrepreneurship to be a powerful force driving constructive change for society, this area of future research is worthy of further pursuit.

In a similar vein, do differences exist in programs in the U.S.? Are there meaningful differences in entrepreneurship education practices between large, research institutions and regional comprehensive universities that might influence how effective practice is understood and measured? Do effective collaborative partners vary? Also, how might the approach to entrepreneurship education be impacted by relationships with regional economic clusters? Much is left to consider about varying contexts and impact on program development and ultimate effectiveness and impact. Clearly, many opportunities to further examine effectiveness in entrepreneurship education remain.

CONCLUSION

If entrepreneurship as an academic discipline is to guide students toward productive, impactful career trajectories and contribute meaningfully to economic development, it must move beyond the walls of the business discipline, shed the traditional pedagogical approach, and develop strong connections in the local, regional, national, and even global community. In recent years, entrepreneurship education has received the zealous attention of academic and economic communities across the globe. This study adds to the conversation begun in the late 1970s by examining the state of entrepreneurship education and providing some evidence that it is changing for the better for students, academic institutions and communities around the world

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CREATIVITY IN THE ENTREPRENEURSHIP PROGRAM: A SURVEY OF THE DIRECTORS OF AWARD WINNING PROGRAMS

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ABSTRACT

This study discusses the links between entrepreneurship and creativity, methods of measuring and assessing creativity, and surveys the chairs/directors of programs listed in the top twenty-five undergraduate entrepreneurship programs as identified by Entrepreneur magazine for the years 2009-2011. Respondents are asked about their perception of the importance of creativity/innovation in entrepreneurship programs, where creativity is taught in the program, what methods are used to teach creativity, and how it is measured or assessed in these programs, to provide guidelines for developing programs or current program review. Eighty-two percent of respondents perceived including courses in creativity/innovation as very important in their programs. Seventy-one percent of programs have stand-alone courses and eighty-six percent have a unit or units in their major. Eighty percent of the programs require training in creativity for their major either as a stand-alone course or units in a course and fifty-seven percent require both a stand-alone and a course with a unit or units. Although a variety of methods are used to teach and measure creativity, the dominant method is team based products followed by instructor/team evaluations. The study identifies courses in which creativity is taught and methods of instruction and evaluation, and raises issues for curriculum development.
Key words: creativity, innovation, undergraduate entrepreneurship programs, teaching, assessment

INTRODUCTION

Entrepreneurship is linked to creativity in many ways. Yar Hamidi, Wennberg and Berglund (2008) found that high scores on creativity tests and prior entrepreneurial experiences were positively associated with entrepreneurial intentions and should be included in models of entrepreneurial intent. Fillis and Rentschler (2010) found creativity was critical throughout the entrepreneurship experience from problem identification to leadership and development of the product. They contended that "in today's economy in many parts of the world, it is the creativity of the entrepreneur which offers the best chance of stimulating business" (73). An American Management Association (2010) survey identified creativity and innovation as one of the four skills needed for success today and in the future. A recent IBM poll of 1,500 CEO's also identified creativity as the No.1 "leadership competency of the future" (Bronson and Merryman).

Youl-Lee, Florida, and Acs (2004) posit that entrepreneurship itself "is a form of creativity and can be labeled as business or entrepreneurial creativity because new businesses are original and useful" (p.882) Golshekoh, Hassan, Gholamreza, Mirsaladin, Askary, and Alireza (2010) consider creativity and innovation inseparable from entrepreneurship. Sarri, Bakouros, and Petridou (2010) emphasized the importance of entrepreneur training in creativity and innovation.

As creativity is a critical skill for the entrepreneur, the question of how it fits in the entrepreneurship program is important. The purpose of this study is to collect data from directors of award winning entrepreneurship undergraduate programs on how important they think creativity is to entrepreneurship programs and how their programs are teaching and assessing creativity to help identify best practices and their implications for the entrepreneurship curriculum. The authors review the general components of creativity, methods of assessment, creativity in entrepreneurship education, and discuss the results of a survey of the directors of successful programs.

What is creativity?

Sternberg and Lubart (1999) defined creativity as the ability to produce work that is both novel and appropriate. This definition relates to the two general approaches to creativity, divergent thinking (generating lots of unique ideas) and convergent thinking (combining these ideas into a best result) (Guilford, 1950). Theorists contend that alternating between divergent and convergent thinking is important as there is a role for both creating new ideas and for validating these ideas (Amabile, 1996; Bronson and Merryman, 2010). Treffinger, Young, Selby, and Shepardson (2002) identify two other components of creativity that are critical for the entrepreneur: "openness and courage to explore ideas" and "listening to one's inner voice". "Openness and courage to explore ideas," referred to as "openness" in the rest of the paper, includes personality traits and relates to interests, experiences, attitudes and self-confidence. They include characteristics such as problem sensitivity, curiosity, sense of humor, risk-taking, tolerance for ambiguity, and adaptability. "Listening to one's inner voice" includes a personal view of self and involves self-reflection, vision, and the traits of perseverance, concentration, energy, and work ethic.

How is creativity taught and assessed?

Although researchers differ in approaches, they do agree that creativity can be enhanced and taught (Treffinger, et.al. 2002; Bronson and Merryman, 2010; AMA, 2010). Researchers measure creativity by divergent thinking (creativity tests); attitude, biographical and interest inventories; personality and self-reports/reflection; case studies of successful people or projects; evaluations by peers, judges, instructors, supervisors of individual or team based products (Hocevar, 1981).

The most common method of assessing divergent creativity is the use of divergent thinking (creativity tests), noting that creativity tests, unlike IQ tests, require a multitude of responses rather than a single response. Among the divergent thinking approaches used are the

following: the Torrance test¸ the alternative uses tests (in which subjects are asked to think of alternate uses for a variety of common objects such as a shoe, pencil, etc.), plot title tests (in which subjects are asked to generate clever titles to two stories), and the picture-word test (in which subjects are shown a picture and asked to write as many reactions to the picture as they can in one minute). The reactions in the picture-word test are counted based on the number of ideas or reactions and the variety in type of reactions (e.g. items of senses- sight, taste, feel, sound, products, colors, experiences, etc.). Divergent creativity can be taught through many creative exercises such as mind mapping, brainstorming, and fish-boning (Hocevar, 1981).

Convergent creativity is often tested by assessing creativity through the ratings of peers, instructors, judges or by rating portfolios produced by an individual or group (Lindstrom, 2006). This data can be collected through simulations or real life presentations such as business plan competitions and presentations. Convergent creativity is also taught and measured through the examination of cases and biographies of successful people and developments (Fillis and Rentschler, 2010; Kidane and Harvey, 2009).

"Openness" and "listening to one's inner voice" can be measured or taught through the use of various inventories of interests, personalities, and self-reports/reflection. Examples of inventories of interests are the Guildford–Zimmerman Interest Inventory "creative interests" scale and the Holland and Baird Preconscious Activity Scale. Both inventories ask questions about one's attitudes or approaches to problem solving such as the following, "When I was a kid I was constantly asking questions", "My memory is good", "I like thinking puzzles", or "I read a lot about unrelated topics". Other useful measures are leadership inventory tests, personality tests, problem-solving inventories or creative attitude survey tests. Journaling about one's experiences can also provide awareness.

Creativity in Entrepreneurship Education

Although Timmons (1994) argued that creativity should be central to entrepreneurship education, one of the criticisms of entrepreneurship education is the "lack of creativity and individual thinking required" (Solomon, Weaver, and Fernald, 1994). Yar Harmidi *et al*. (2008) argued that divergent thinking exercises ought to be included in entrepreneurship education. Despite these advocates and the increasing importance of creativity, there is not much information about the creativity in the entrepreneurial curriculum. In a national survey of entrepreneurship programs for 2004-2005, Solomon found that in response to a question asking for popular courses offered only 9% of the 279 respondents from two- and four- year universities and colleges listed a course in creativity. While Solomon's study identifies methods used in teaching entrepreneurship courses, it does not specify which methods are used for specific courses. In fact, most entrepreneurship core courses still focus primarily on writing the business plan/concept, often within specific time periods and templates (Bird, 2002; Solomon, 2007).

CURRENT STUDY

Each year *Entrepreneur* magazine publishes a list of the top twenty-five undergraduate programs. Our sample is comprised of chairs/directors whose programs have made this list at

least once in the years 2009, 2010, and 2011. The total sample is thirty-five schools and the schools are listed in Table 1. These programs were chosen as the sample because, although a small group, their programs have been recognized for excellence in entrepreneurship education and should reflect best practices. Additionally, these programs are often used as models for developing programs.

Chairs/directors of these programs were sent a mail survey followed by an email reminder/survey. The survey asked chairs/directors how important they perceived courses in creativity/innovation are to an entrepreneurship program, in what courses in their programs creativity/innovation is taught, what methods are used to teach creativity, and how their programs assess or measure creativity. Twenty-two responses were received from the thirty-five programs for a return rate of 63%. The responses were tabulated and are presented in percentages. For the full survey see the appendix.

Table 1: Schools with Programs Identified in the Top 25 Undergraduate Programs by *Entrepreneur* Magazine 2009, 2010, 2011

Babson College	University of Alabama
Ball State	University of Arizona
Baylor University	University of Dayton
Belmont University	University of Houston
Bradley University	University of Iowa
Brigham Young University	University of Maryland, College Park
Chapman University	University of Missouri-Kansas City
City University of New York-Baruch College	University of North Carolina at Chapel Hill
DePaul University	University of North Dakota
Drexel University	University of Notre Dame
Lehigh University	University of Oklahoma
Loyola Marymount University	University of Southern California
Miami University	University of Utah
Northeastern University	University of Wisconsin- Madison
Oklahoma State University	Washington State University
Syracuse University	Washington University in St. Louis
Temple University	Xavier University
Texas Christian University	

RESULTS

Program Details

Of the twenty-two programs responding twelve are private and ten are public institutions. Fifteen of the programs are at universities with a student population of over 10,000; six at universities with student population of 5,001-10,000, and one at a university with a student population of 2,001-5,000. Twenty-one (95%) of the twenty-two programs have an undergraduate major in entrepreneurship and eighteen (81%) have an undergraduate minor in entrepreneurship. Two of the four programs that did not have a minor identified

entrepreneurship as an emphasis in the management track. Of the twenty-one programs with a major, in six programs (30%) the major was available to *all students* at the university and in fifteen programs (68%) *only available to school of business students*. Of the eighteen programs with minors, in sixteen programs (89%) the minor was available to *all students* at the university and in two programs (11%) the minor was *available to all students except school of business students*.

Importance of Creativity/Innovation courses in an entrepreneurship program

Directors were asked to identify how important (on a scale of 1 to 10, with 1 being very important and 10 being not very important) it was to include courses in creativity/innovation in an entrepreneurship program. Eighteen of the twenty-two directors (82%) rated including courses in creativity/innovation as very important (13 at 1, 3 at 2, 1 at 3). Two directors (9%) ranked it as moderate in importance (1 at 5 and 1at 7) and two directors (9%) ranked it as not very important (1 at 8 and 1 at 10).

Where is creativity/innovation taught in entrepreneurship programs?

Stand- alone courses

Directors were asked if their program had a stand-alone course in the major in creativity/innovation. Of the twenty-one programs with a major fifteen (71%) did have a stand-alone course (one had a 3-course sequence for creativity/innovation); six (29%) did not, but one of the six directors indicated they were currently working on one and three directors indicated that creativity/innovation was taught or embedded in several courses in the major. (Table 2) Of the fifteen programs with a stand-alone course, eight (53%) required the class for the major and six of these programs had prerequisites. The prerequisites were: a required freshman course in foundations of management and entrepreneurship; principles of management; intro to entrepreneurship; fundamentals of entrepreneurship; organizational management; and a 3-course sequence in creativity/innovation.

Directors were asked if they had a stand-alone course on creativity/innovation in their minor. Of the eighteen schools with a minor, eight (44%) have a stand-alone course in creativity /innovation and ten (56%) do not (Table 2). Of the eight programs with a stand-alone course, half required a course. Four of the eight programs had prerequisites for the course: a 3-class sequence in creativity/innovation and a required freshman course in fundamentals of management and entrepreneurship; fundamentals of entrepreneurship; and organizational management. Two of the programs without a stand-alone course indicated that creativity/innovation was taught in several courses.

Table 2: Stand Alone Courses		
	Major (n=21)	Minor (n=18)
Required	(8) 38%	(4) 22%
Elective	(7) 33%	(4) 22%
None	(6) 29%	(10) 56%

Courses with units on creativity/innovation

Directors were asked if they have a course or courses with a unit or units on creativity/innovation in their major or minor. Of the twenty one programs with a major, eighteen (86%) had courses with a unit or units on creativity/innovation while three (14%) did not. Fifteen of the eighteen programs (72%) required the course/courses that contained the unit (Table 3). Table 4 lists the required and elective courses within the major that had a unit or units on creativity (Table 4).

Table 3: Courses with Unit(s) on Creativity		
	Major (n=21)	Minor (n=18)
Required	(15) 72%	(10) 56%
Elective	(3) 14%	(4) 22%
None	(3) 14%	(4) 22%

Table 4: List of Courses with Unit(s) on Creativity and Number of Schools Citing Course			
Major	Number of Schools Citing	**Minor**	Number of Schools Citing
REQUIRED			
Introduction to Entrepreneurship	8	Introduction to Entrepreneurship	6
Entrepreneurial Strategy	3	New Venture Development	3
Entrepreneurship and Opportunity Recognition	3	Entrepreneurship and Innovation	1
Entrepreneurial Marketing	2	Entrepreneurial marketing	1
All courses	2	Feasibility analysis	1
		Entrepreneurship Opportunities	1
New Venture Development	2	Entrepreneurship strategy	1
Business Model Development	1	Integrated product development	1
Business Planning	1	Integrated business and engineering freshman seminar	1
Creativity and Innovation	1		
Creative Strategic Thinking	1		
Feasibility analysis	1		
Organizational Behavior	1		
ELECTIVE			
Imagination	1	Imagination	2
CEO –Founder	1	Managing Creativity	1
Managing Creativity and Innovation	2	Integrated Product Development	1
		Integrated Business and Engineering Freshman Seminar	1

Chairs/Directors of programs were asked if their program had a course or courses with a unit or units on creativity/innovation in their minor. Of the eighteen schools with a minor fourteen (78%) have courses including units on creativity/innovation while four (22%) did not. For ten of the fourteen programs with units in a course, the course is required for the minor. Three had courses with units, but the course is not required in the minor (Table 3).

Methods Used to Teach Creativity

Directors/chairs were asked what methods were used to teach creativity. Nineteen of twenty-two directors (86%) responded to this question. Directors could choose all options that applied. The results are listed in order of frequency of use in Table 5.

Table 5: Creativity Teaching Methods (n=19)	
Team projects	(18) 95%
Individual projects	(16) 85%
Creativity Exercises	(15) 79%
Cases	(12) 63%
Other:	(8) 41%

There was a wide range of methods used in teaching creativity/innovation. Convergent methods were listed most frequently. Eighteen of nineteen programs (95%) used team projects and sixteen of nineteen programs (85%) used individual projects as teaching methods. The team projects were primarily business concepts or business plans. Among the individual projects listed were portfolios of creative works, and an assignment to redevelop an obsolete product into a new product. Creativity exercises which test divergent thinking methods were also cited by fifteen of the nineteen programs (79%). Exercises listed were: generating bug reports (things that bug you), mind mapping, Scamper, Snowball and exercises from Michalko's *Cracking Creativity*. Cases (listed by 63% of the respondents) were the most varied of the categories. Cases included both divergent exercises such as teaching the use of the metaphor by requiring students to use a toy as a basis for description of him or herself to a partner and then requiring the partner to introduce the person, developing a new game, and convergent thinking exercises by examining the lives of entrepreneurs. In the "other "category eight directors (41%) listed activities such as boot camps, workshops, presentations, videos, guest speakers, simulations, customer and opportunity research (answering the question what is missing in our lives), idea excursions such as to art museums, and multidisciplinary network problem finding exercises.

How is creativity assessed?

Directors/chairs were asked how they assessed creativity development. Again 86% responded to this question. The results are listed in order of frequency of use (Table 6).

Table 6: Creativity Assessment (n=19)	
Team Products produced	(15) 79%
Team instructor ratings	(14) 74%
Portfolio of work	(12) 63%
Creativity tests	(6) 32%
Student interviews	(3) 16%
Personality tests	(2) 11%
Other	(2) 11%

Convergent methods of assessment were used most frequently. Fifteen of nineteen programs (79%) used team products, and fourteen of nineteen programs (74%) used team/instructor ratings for assessment. Instructor ratings were made both on individual and team projects. Team ratings of individual members were done mostly on completed projects, but also some for generating and developing ideas. Twelve programs (63%) mentioned portfolios for assessment and these were split with half (32%) looking at individual projects (convergent thinking) and half (32% identifying a creativity journal in which students completed inventories and self-reflection assessing "listening to one's inner voice" and "openness". Six programs (32%) also assessed "openness", "listening to one's inner voice", and divergent thinking through creativity tests. Two of these tests/exercises were self-created. One exercise was for the student to create a 12 month plan with activities that would enable the student to explore creative interests based on reading from Jonathan Feinstein's *The Nature of Creative Development.* Two programs used the Basadur Applied Creativity test and two used the Creativity Potential Problem Solving Profile. Personality tests were only used by two programs (11%) and were not used for assessment, but for students' understanding. The tests used were the Hermann Brain Dominance Instrument, the Emotional Competency test, and the Entrepreneurial Profile test. Three programs (16%) used student interviews but did not identify how they were used. Two programs (11%) listed "other" methods such as examining trends from other programs, presentations, prototype/feasibility and problem solving techniques.

DISCUSSION AND CONCLUSIONS

The goal of this study was twofold. First, to provide some best practices on how creativity/innovation is valued, taught, and assessed in top undergraduate entrepreneurship programs. This information is valuable in providing direction for developing entrepreneurship programs or for evaluating existing entrepreneurship curriculum. Second, to discuss what concerns/ issues are raised about the entrepreneurship curriculum.

The first major issue was the importance of creativity in the curriculum and where it should be taught. The results show that inclusion of courses, stand-alone and as units in other courses, on creativity/innovation is perceived as very important in the entrepreneurship curriculum by (82%) of program directors/chairs. A majority of programs (71%) have stand-alone courses in their major and 44% in their minor, much higher than the 9% in Solomon's 2007 nationwide study of programs. Additionally, 86% have units on creativity/innovation in courses in their entrepreneurship major and 78% have courses with units in their minor. The

most frequent course for unit/units on creativity is the Intro/Foundations of Entrepreneurship (a beginning course in the program). This was the course most frequently offered by 53% of the respondents in Solomon's (2007) study. Several programs offered units in more than one course.

Overall, combining the stand-alone courses and courses with units on creativity, seventeen programs (80%) **require** some training in creativity in their major and twelve programs (67%) **require** some training in creativity in their minor. Two programs (10%) offer course work in creativity but do not require it. Only two programs (10%) do not offer any course work on creativity in their major and four programs (22%) do not offer course work on creativity in their minor. These findings indicate that creativity training should be included in the entrepreneurship curriculum.

While these findings support creativity in the curriculum, the question of whether creativity should be taught as a stand-alone course, a unit in several courses, or both remains. Stand-alone courses can identify the importance of creativity in a more prominent way then a unit in a course does. Stand-alone courses allow the instructor to use a broad range of approaches. However, Morrison and Johnston (2003) argue that creativity should be introduced into the curriculum systematically rather than using a stand-alone course. Units in several courses can reinforce the value of creativity throughout a program. Friedlan (1995) found, in a study of accounting students, that when other skills were integrated into accounting courses students perceived them as more important than when the skills were taught in stand-alone courses. We would contend that creativity should be integrally involved in the entrepreneurship program both as a stand-alone course and integrated in courses throughout the program. This is the approach twelve (57%) of the award winning programs used.

The second major issue was how creativity was taught and assessed in the curriculum. Convergent creativity was taught through team projects in 95% of the programs and individual projects in 85%. Divergent creativity taught through creativity exercises in 79% of the programs was also high. Additionally, cases used by 63% of the programs were split between convergent and divergent creativity methods. However, there is no discussion of teaching "openness" or "listening to one's inner self". In assessing creativity the picture becomes more uneven. Methods evaluating convergent creativity again dominated with team products used by 79% of the programs and team/instructor ratings used in 74%. Additionally, in half of the programs using portfolios (32%) the portfolio was of individual work focusing on convergent evaluation. Although a large portion of time was spent teaching divergent thinking, there was not as much focus on assessing divergent creativity. Only half of the programs (32%) reporting using creativity exercises and creativity tests which highlight divergent thinking, "openness" and listening to one's inner voice" as a form of assessment. Additionally, only 11% of the programs used personality test for assessment, primarily to expand self-reflection in "listening to one's inner voice. While 16% of the programs used students interviews for assessment, there is no information on what type of questions were asked.

These findings raise some concerns about the entrepreneurship curriculum. First, is the emphasis in assessing creativity focusing on convergent thinking by relying heavily on team/individual projects and evaluation the best approach? Does this approach send a message to students that creativity is more about problem solving as opposed to problem finding (identifying issues) and then solving them? Fillis and Rentscheller (2010) indicated that

creativity is important throughout the entrepreneurial process. Additionally, recent studies show a serious drop in divergent thinking scores on the Torrance tests for U.S. students (Bronson and Merryman, 2010). Problem finding methods need to be a larger part of the assessment process to demonstrate their importance in the process. Finally, there is not much assessment on the two creativity characteristics of "openness" and "listening to one's inner voice", both essential to entrepreneurship. This type of self-reflection and idea generation is important and needs to be reinforced throughout the process.

The second issue is this type of convergent assessment focuses more on lateral thinking and less on one's approaches to creativity. We wonder if the real value in a course in creativity lies in challenging one's approach to solving problems so that students can generate not only new ideas, but also adapt to new/different approaches to problem solving? For example, in order to work in the global culture identified in the AMA study the ability to think and problem solve in different ways is essential. Different cultures as well as different fields approach creativity in different ways. For example Eastern cultures favor more holistic than analytic approaches to conflict, negotiation, problem solving and problem finding than Western cultures (Choi, Koo, and Choi, 2007; Martin and Nakayama, 2007; Ting-Toomey, 2005). This means that Eastern cultures may favor a more circular approach to generating ideas, such as the Lotus Blossom technique, than the linear approach of Western cultures, such as a force field analysis. Berglund and Wennberg (2006) found differences even between fields within cultures. In their study of engineering and business students from the same culture and in the same entrepreneurship program, there were differences in creative approaches. Creativity develops the ability to be comfortable with the new or ambiguous and see things through varying perspectives. In building a program it is critical to provide a wide range of approaches to and assessment of various creativity approaches to ensure students are prepared for today's business climate. This may mean that programs and instructors may have to change or expand their approaches to teaching and assessing creativity.

LIMITATIONS AND FUTURE RESEARCH

One limitation of our study is that it was sent to directors/chairs. These directors/chairs may not be teaching the class and may not know the methods for teaching or assessment. In fact two directors sent the form to the faculty person teaching the courses to fill out this section of the survey and three directors did not fill out this section. Additionally, the questions on teaching and assessment may not have provided enough options to clearly identify all the methods used. For example, several directors checked creativity exercises or individual projects, but did not indicate what type of exercises or projects. Future studies should do more follow up through interviews to clarify if these exercises or projects were more directed toward divergent, convergent, or openness to ideas/listening to one's inner voice forms of creativity, as well as to provide more examples other instructors could use.

This study provides a start at identifying some guidelines and best practices for programs. Training in creativity should be included and, given the findings, should be required in programs, especially for the major. Furthermore, in teaching and assessing creativity, exercises and projects should include all types of creativity: divergent, convergent, "openness", and "listening to one's

self' (self-reflection). Future studies should focus on more information about specific courses, particularly the stand-alone courses and required course units, and the teaching and assessment methods used in programs. This information would be helpful to be sure entrepreneurship programs are adapting to the needs of the twenty-first century and fully developing future entrepreneurs' potential.

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Survey on Creativity

1. Do you have an undergraduate major in entrepreneurship? Yes___ No ___
   Do you have an undergraduate minor in entrepreneurship? Yes ___ No___

The following questions are for the undergraduate programs only.

2. How important on a scale of 1-10 with 1 being very important and 10 being not very important is including courses in creativity/innovation in an entrepreneurship program?
   Very important 1 2 3 4 5 6 7 8 9 10 not very important

3. Do you have a standalone course in creativity/innovation in your major? Yes___ No___
   If yes, is this a required course in the major? Yes___ No___

4. Is there a prerequisite for your course in Creativity/Innovation? Yes___ No____
   If yes, what is the prerequisite please list_____

5. Do you have a standalone course in creativity/innovation in your minor? Yes___ No___

   If yes, is this a required course in the minor? Yes ___ No ___

6. Is there a prerequisite for your course in Creativity/Innovation? Yes___ No____
   If yes, what is the prerequisite please list_____

7. What methods do you use to teach creativity in these courses? Please list all that apply
   Team projects _____
   Cases _____
   Individual projects _____
   Creativity exercises _____
   Other please list _____

8. How do you assess creativity development in these courses? Please list all you use.

   Creativity tests- please list _____
   Personality tests- please list _____
   Team products produced _____
   Interviews with students _____
   Portfolio of work _____
   Team/Instructor ratings _____
   Other- please explain _____

9. Do you have a course/s with a unit on creativity in your major? Yes ___ No___
   If yes, what is/are the name/s of the course/s

10. Please star any of the above courses that are required for your major.

11. Do you have course/s with a unit on creativity in your minor? Yes___ No ___
    If yes, what is/are the name/s of the course/s

12. Please star any of the above courses that are required for your minor.

13. Is your major open to: all majors ___
School of business students only____
certain majors-please list

14. Is your minor open to : all majors____ School of business students only___ certain Majors–please list

15. Is your institution public_____ private_____

16. What is the total population of your institution
Under 2000_____
2001-5000 _____
5001-10,000_____
Over 10,000 _____

17. What is the total number of students in your entrepreneurship minor and major? _____

Thank you for your help. If you would like a copy of the results, please send an email to Schmidt@jcu.edu

WHY SOME COLLEGE STUDENTS ENGAGE IN ENTREPRENEURIAL ACTIVITIES WHILE OTHERS DO NOT

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ABSTRACT

Exposure to entrepreneurship in school may increase the intention to become an entrepreneur. Yet to date why some college students engage in entrepreneurial activities while others do not remains relatively unstudied. We propose student college entrepreneurs are exposed to or use certain information sources "more" than the others and the interaction between these information sources and cognitive factors play a role in recognizing opportunities and engaging in entrepreneurial activities. In this paper we focus on college generated information sources and the mediating effect of certain cognitive factors in nascent student entrepreneurs' opportunity recognition and entrepreneurial activities. Considering how important entrepreneurship is for economic growth, we want to provide the impetus for additional entrepreneurship research, develop new theories and provide useful information to help potential entrepreneurs identify opportunities and engage in entrepreneurial activities.

OPPORTUNITY RECOGNITION

Opportunity recognition has long been considered a crucial step in the entrepreneurial process (Ventakaraman, 1997; Gaglio, 1997; Hills, 1995). Previous research provided valuable contributions in our understanding of the opportunity recognition process looking at various sources of opportunities. Contextual and environmental factors, social factors, personal traits, and psychological factors were studied to understand the opportunity recognition process. Various approaches were applied in opportunity recognition studies. Some research found opportunities exist "out there" in environment and the physical and social dimensions of the external environment provide information on opportunities. Other investigations found entrepreneurial opportunity recognition is a cognitive process, relying on the individual entrepreneur. Another group of research found opportunity recognition is a joint function of the individual (background, experience and education) and the environment, as entrepreneurs' interaction with the environment provides information and shapes the evolution of ideas (De Koning, 1999; Singh, 2000).

Although different perspectives were applied in earlier opportunity recognition studies, the common bond in previous research is that opportunity recognition is highly associated with

the cognitive skills of certain individuals and various information sources (Markman, Balkin, & Baron, 2001; Short, , Ketchen, Shoook, & Ireland, 2010). If cognitive skills and information play a crucial role in the opportunity recognition process (Gregoire, Barr, & Shepherd, 2010) then it will be worthwhile to further explore "why" some college students recognize opportunities while others not. In other words, we intend to study what these college entrepreneur students do differently to enable them to recognize opportunities. After all, information is available to all students; however, not everyone recognizes the same information as an opporuntity. So, if information is given to two students, it is an opportunity only to the student who recognizes the potential value that the information might later accrue in terms of entrepreneurial ventures (Shane & Venkataraman, 2000). To date, this issue has not received much attention in the entrepreneurship literature. Recent studies provided valuable contribution on academic entrepreneurship and entrepreneurs' assessments of government policy measures and how entrepreneurs perceive the usefulness of policy programs aimed at facilitating the development of academic ventures (Patzelt & Shepherd, 2008) yet why some college students recognize opportunities while others not remains relatively unstudied. We propose student college entrepreneurs are exposed to or use certain information sources "more" than the others and the interaction between these information sources and cognitive factors play a role in opportunity recognition. We believe there is a need to focus our attention on information sources and explore the mediating effect of certain cognitive factors in opportunity recognition to understand "why" some college students recognize opportunities while others not.

The purpose of this paper is mainly to examine the literature on entrepreneurial opportunity recognition to highlight the key factors that can be reflected in the current state of teaching and learning in the college environment. We suggest that a clear conceptualization and awareness of some critical factors are necessary in facilitating opportunity recognition through the college environment and guiding future entrepreneurship research. Therefore the paper also intends to provide a conceptual framework for future entrepreneurship research path that will help to increase the potential of student entrepreneurs in recognizing opportunities.

INFORMATION SOURCES

Social Networks

Previous research found social environment is one of the sources of information in opportunity recognition. Social learning takes place through observing one another or through personal interaction (Bandura, 1986). Social messages influence individuals' perception of entrepreneurs (De Pillis & Reardon, 2001). Social Network Theory suggests resources obtained from the individual's social network heavily influence the decision to embark on an entrepreneurial start-up process (Singh, 2000). Social networks allow entrepreneurs to enlarge their knowledge of opportunities and to gain knowledge (Floyd & Wooldridge, 1999). The size

of an entrepreneur's social network is significantly associated with the identification of a number of new venture ideas (Hills, 1997; Singh, 2000). Potential entrepreneurs recognize more opportunities by enlarging the total body of knowledge as they increase the size of their social network ties (Hills, Shrader, & Lumpkin, 1999).

Considering the importance of social networks in opportunity recognition, it is important to study social network opportunities that may arise for potential entrepreneurs through the college environment. In fact, the possible links that form between college and business could help increasing social networking possibilities for potential student entrepreneurs. Such possible links could be internships, attending business fairs and expositions and attending business seminars and workshops.

Internships

"Seeing isn't doing. For a stimulus to work its magic it appears we must have first-person interaction with it." (Hall & Peters, 2001, p.189). The Austrian School of Thought suggests "entrepreneurs have the ability, based on their knowledge, to exploit the identified opportunity" (Westhead & Wright, 2000, p.xiv). "An entrepreneur's ability to recognize an opportunity in a new technology might be enhanced by prior knowledge about how the new technology could be used to create a product or service" (Shepherd & DeTienne, 2005). Internships provide potential student entrepreneurs access to critical resources by enlarging the knowledge that leads them to pursue a set of ideas. In other words, internships facilitate face-to face contacts; give access to social infrastructure; ease knowledge expertise, know-how and skill transfer and thereby enhance one's self-efficacy in being more proactive in searching for opportunities. In sum, students with a background in a certain industry may recognize more entrepreneurial opportunities in that industry than those who have less background in the industry since knowledge, information, and skills obtained from prior training and work experience in a certain industry could help a person be more alert to opportunities (Shane, 2005).

Although previous research found prior knowledge is crucial in recognizing opportunities, to date, the role of internships and their influence on potential entrepreneurs' mind set was relatively unstudied. Extending previous findings on prior knowledge, we suggest internships provide work experience in the industry, give hands on business knowledge and invite experimentation. Internships also help students develop knowledge in a certain domain and equip them with certain skills and competencies that may help them link to the opportunities.

Proposition1: Student entrepreneurs who recognize opportunities for new ventures are more likely engage in internships compared to others who do not recognize opportunities.

Attending Business Fairs And Expositions

The involvement in casual informal networks was found important in entrepreneurial opportunity recognition (Marchisio & Ravasi, 2001). Social network theory informs us that casual acquaintances who see one another infrequently form weak ties in one's social network and they often serve as bridges and are more likely to provide unique information that is not necessarily contained within an individual's strong-tie network (i.e. family, close friends.). Therefore, attending business fairs and expositions could increase social networking possibilities and weak tie links for the potential student entrepreneur. Attending business fairs and expositions allows the potential entrepreneur the chance for direct contact with customers, suppliers and executives from other companies. These may all provide social network ties. These individuals can provide industry specific knowledge and link the potential entrepreneurs to information sources.

Proposition 2: Student entrepreneurs who recognize opportunities for new ventures are more likely to attend business fairs and expositions as compared to others who do not recognize opportunities.

Attending Business Seminars/ Workshops

In externally stimulated opportunity recognition opportunities during the pre-venture phase, entrepreneurs identify opportunities through learning from various external sources (Bhave, 1994). A great deal of learning may occur when attending seminars, and this may have a crucial role in facilitating the entrepreneurial mindset and activities. The frequency and intensity of exchanged information may lead individuals to learn environmental reality, new possibilities, form ideas and identify opportunities. Previous research found information obtained through participation in professional forums plays a crucial role in recognizing an opportunity. Extending previous research we suggest that students attending special seminars or workshops could be more alert to recognizing opportunities than those who do not participate in such seminars. Special seminars/workshops pack a lot of information in a small pace of time; present the newest research available; focus on new developments and offer a chance for the give and take of information. The skills and information gained from the seminars could be put into practice immediately and infuse learning and trigger mindset to be alert to possible new opportunities.

Proposition 3: Student entrepreneurs who recognize opportunities for new ventures are more likely attend business seminars and workshops as compared to others who do not recognize opportunities.

THE ROLE OF EDUCATION IN OPPPORTUNITY RECOGNITION

Previous research found that education also provides helpful information for those who pursue entrepreneurship. The role of training and education is central in identifying, assimilating and absorbing new knowledge (Knudsen, Dalum & Villumsen, 2001). Formal education may provide prior mental programming, which is positively correlated with venture start-up success (Vesper, 1990). "The role of training and education must necessarily be central to the process of absorption since it requires some level of knowledge to identify, assimilate and absorb new knowledge." (Knudsen et al. ,2001, p.4). Although previous research did study this role of education, to date how education facilitates potential student entrepreneurs' opportunity recognition remains relatively unstudied. Therefore, extending previous research, we suggest that it is important to investigate specific information sources that could be obtained through education. We suggest such information sources could be entrepreneurship/small business management courses and courses that introduce innovative learning methods.

Entrepreneurship Courses

Information is a trigger for opportunity recognition. Having specific information is crucial in evaluating a venture idea. Previous research found prior knowledge, developed from work experience, education or other means, might interact with the complexity of discovering opportunity. "Each person's idiosyncratic knowledge creates a "knowledge corridor" that allows him/her to recognize certain opportunities" (Shane, 2000, p.452). It was found that prior work experience or education may influence entrepreneur's ability to "comprehend", "interpret", "extrapolate" and "apply" new information (Shane, 2000). Extending previous research on prior knowledge and education, we suggest specifically looking at the influence of entrepreneurship courses that provide specific information on entrepreneurship and other entrepreneurial ventures. To date research on how taking such these courses facilitate entrepreneurial cognition and (especially certain cognitive factors) is limited. In fact, taking these types of courses could be valuable in triggering some students' mindsets and confidence in recognizing possible ventures as they include information on venture formation and opportunity recognition. These courses also teach students the fundamentals of how to write a business plan; how to scan and monitor the environment and recognize possible signals in the environment for venture ideas. In other words these courses introduce fundamentals of networking, creative problem solving, marketing, leadership, interviewing, presentations and prepare students' minds in seizing opportunities.

Proposition 4: Entrepreneurship/small business management courses facilitate potential student entrepreneurs' recognizing opportunities.

Proposition 5: *Student entrepreneurs who recognize opportunities for new ventures are more likely to take entrepreneurship related courses compared to others who do not recognize opportunities.*

Courses That Introduce Innovative Learning Methods

Courses that promote practical, experiential and teamwork learning and critical thinking skills help conceptualizing, applying, analyzing and synthesizing information. Students who take courses that introduce innovative learning methods learn to incorporate interwoven modes of thinking. Therefore, possession of information gathered from, or generated by, reflection, reasoning, experience and communication help students generate a set of mental skills that could help them be more alert to opportunities. Students who learn critical thinking skills and engage in experiential learning environments gather and assess relevant information, think open mindedly and communicate effectively with others in figuring out solutions to complex problems and thereby could recognize more opportunities in the environment for possible ventures compared to those who do not take these courses. Therefore we propose that:

Proposition 6 *Student entrepreneurs who recognize opportunities for new ventures are more likely take courses that introduce innovative learning methods compared to others who do not recognize opportunities.*

COGNITIVE FACTORS

Entrepreneurs use cognitive insights and spend more time than non-entrepreneurs in searching for information that leads to new opportunities (Ventakaraman, 1997). In contrast to the personality (Timmons, 1990; Hofer & Schendel, 1987) or trait approaches (Stuart & Abetti, 1990), the cognitive approach focuses on the way people think and process information (Baron & Markman, 1999). Further, Social Cognitive Theory (SCT) states that emotional, cognitive, and behavioral actions are shaped by the environments (i.e. social interactions) of individuals (Lent et al., 1996). In other words, an individual's behavior reflects his/her knowledge within a social context (Bandura, 1986). Building on the cognitive approach, prior research found that cognitive processes play a crucial role in recognizing opportunities (Ozgen & Baron, 2007; Grégoire et al , 2010). Opportunity recognition involves a cognitive process called pattern recognition through which individuals notice connections between independent events and detect meaningful patterns in these connections that lead to the formation of ideas for new ventures (Baron & Ensley, 2006).

Recent investigations revealed that recognizing opportunities is highly related to cognitions and that different mental connections and previous knowledge may facilitate this process (Grégoire et al , 2010). Previous research found self-efficacy, schema strength (Ozgen & Baron, 2007), openness to experience (Zhao & Siebert, 2006) and critical thinking (Dyer,

Geregersen & Christensen, 2008) are important cognitive mechanisms that play a role in the opportunity recognition process Although previous research contributed to our understanding of the cognitive mechanisms, how certain information sources in the college environments shape potential entrepreneurs' cognition in recognizing opportunities did not receive much attention to date. Extending previous research, we suggest potential student entrepreneurs' self- efficacy, schema strength, openness to experience and critical thinking are partially mediated by the extent of their exposure to information sources generated in the college environment.

Self- Efficacy

The cognitive approach emphasizes the notion of self as a crucial element of new venture creation (Delmar & Davidson , 2000). Self-efficacy was defined as beliefs in our ability to effectively accomplish certain tasks (Markman & Baron, 2001). Self-efficacy was found to be a crucial cognitive variable in opportunity recognition (Ozgen & Baron, 2007). Perceived self-efficacy is highly correlated with the intention to start up a new venture and explore new opportunities (Markman & Baron, 2001; Ozgen & Baron, 2007). Individuals high in self-efficacy are relatively confident they can develop the opportunities that they recognized.

Extending previous research, we suggest that exposure to certain information sources (i.e. taking entrepreneurship/small business courses; innovative courses, internships, attending business fairs and seminars) generated in the college environment will also increase the confidence of potential student entrepreneurs so they will be more proactive in searching for opportunities. Further, having an opportunity to participate in various entrepreneurship courses, leadership programs, and team work which would increase problem solving and decision making abilities regarding new venture start-ups or venture developments will affect the potential entrepreneur's self perception of one's skills and abilities and thus increase their confidence level in pursuing the opportunity and starting a venture.

Therefore we propose that exposure of such these information sources in the college environment will be partially mediated by self-efficacy.

Proposition 7: Effects of college generated sources of information on opportunity recognition will be partially mediated by self-efficacy.

Schema Strength

"As its most basic creating new ideas is a matter of association" (Hall & Peters 2001, p.188).

Schemas are mental frameworks centering around a specific theme that helps us to organize information or any other kind of information (Baron, 2003). Schemas represent knowledge about a concept and object, etc. and help us interpret the world. Schemas refer to

information processing and thinking processes and choices based on gathered and stored information in memory (Levander & Raccuia, 2001). Schemas also include the ability to acquire, classify and integrate information (Levander & Raccuia, 2001).In other words individuals' perceptions of the external world are shaped by the nature of their mental frameworks (Baron, 2003). Schema theories suggest that an individual's background forms certain schemas, which enables him/her to categorize stimuli differently and interpret the new knowledge. These theories posit that prior knowledge plays an important role in constructing schemas, which provide a framework for processing information and thus allows informed individuals to more likely identify stimuli relevant with their existing knowledge (Fiske & Taylor, 1984; Baron 2003). Previous research found the better developed entrepreneurs' schemas for knowledge in a given area, the more effectively they apply this information in recognizing opportunities for new ventures (Ozgen & Baron, 2007). It was found that the effects of socially-generated information (i.e. mentors, industry networks and professional forums) on opportunity recognition is partially mediated by schemas (Ozgen & Baron, 2007).

Extending previous research we suggest that exposure to certain information sources (i.e. taking entrepreneurship/small business courses; innovative courses, internships, attending business fairs and seminars) in the college environment will also help potential student entrepreneurs possess certain information relating specific social environments, changes and demands in the environment and develop a flexible and better organized mental framework that prepares them be alert to opportunities. Access to these information sources may prepare a potential entrepreneur's schemas for specialized information. Therefore the entrepreneur can easily encode information consistent with his/her schemas, and better notice information gaps in the industry.

In sum, the exposure to such these information sources in the college environment will be partially mediated by the strength and development of entrepreneurs' schemas, so that the better developed these schemas, the more likely they are to recognize new business opportunities.

Proposition 8: Effects of college generated sources of information on opportunity recognition will be partially mediated by the extent of schema strength.

Openness To Experience

Openness to experience involves intellectual curiosity, the inclination to try new activities and consider external information (Harper, 1996; Shane, 2003). Openness to experience highly correlates with divergent thinking which relates to active imagination and the tendency to be intellectually curious and open to new ideas (Zhao & Siebert 2006). The five factor model which identifies the traits and structure of human personality in social psychology research defines openness to experience as being inventive and curious (Barrick and Mount, 1991; Costa & McCrae, 1992). In other words, openness relates to novel thinking, being broad minded, being

behaviorally flexible and having imaginativeness and therefore impacts how people gather and process information.

Individuals who scored high on openness to experience are creative, curious and adventurous (Scratchley & Hakstian, 2000; George & Zhao, 2001). Curious students can be more explorative in their research than non-curious students who build a narrower research (Ford, Wilson, Foster, Ellis, & Spink, 2002). Access to information and exploring novel ideas and critical thinking facilitate opportunity recognition. Zhao and Siebert (2006) found entrepreneurs scored higher than managers on the openness to experience trait.

Applying bivariate genetic techniques, Shane et al found that openness to experience relates to entrepreneurial opportunity recognition (Shane, Nicolaou, Cherkas & Spector, 2010). The researchers suggested that since environmental factors may also mediate the relationship between openness to experience and opportunity recognition, increasing a person's openness to experience may influence his/her entrepreneurial opportunity recognition (Shane, et al, 2010) Therefore their research reveals that training people to be more open to experience may increase the likelihood of their recognizing opportunities (Shane, et al, 2010).

We suggest that having access to various entrepreneurial initiatives though college will induce curiosity, creativity, imagination and reflection which will trigger openness to experience. We posit that students who are more open to experience will be more likely to use effort to obtain information, be persistent to master information and be more open minded and therefore be more alert to possible venture opportunities.

In sum, we propose that the exposure to such these information sources in the college environment will be partially mediated by the strength of entrepreneurs' openness to experience.

Proposition 9: *Effects of college generated sources of information on opportunity recognition will be partially mediated by the extent of the student's openness to experience.*

Critical Thinking

Critical thinking involves thoughts that include creativity, problem solving, intuition, insight (Garrison & Archer, 2000) and assessment of information (Fisher & Scriven, 1997). Critical thinking includes investigating facts and data and gathering evidence and reaching reliable, rational and sensible judgments (Van der Brink-Bungen, 1999). Critical thinking is a logical and realistic thinking that evaluates evidence through a multi-perspective analysis to guide decision making (Halpern, 2003). Critical thinking abilities vary from individual to individual and develop over time (Okudan & Rsaza, 2006). The ability to think creatively fosters "innovativeness" and helps develop new productive ideas which play a key role in opportunity recognition (Mattare, 2008). Applying inductive theory building and network theory it was found that recognizing and creating an opportunity and starting an innovative entrepreneurial venture is a function of the cognitive mechanism that involves observing, experimenting, idea

networking and "questioning" (Dyer, Geregersen & Christensen, 2008). We posit that through college generated entrepreneurship programs and initiatives, potential student entrepreneurs learn to communicate their ideas, develop their conflict resolution skills, engage in problem solving and critical thinking. Exposure to real life learning experiences where they can take risks, manage the results, and learn from the outcomes will facilitate increased problem-solving and decision-making abilities. In sum we suggest that college generated entrepreneurial initiatives will be partially mediated by the extent of students' critical thinking so that the better developed critical thinking skills, the more likely they are to recognize new business opportunities.

Proposition10: Effects of college generated sources of information on opportunity recognition will be partially mediated by the extent of the potential student entrepreneurs' critical thinking.

Bisociative Thinking

In "normal" thinking, individuals usually focus on connecting the elements in one matrix and then generate ideas (Koestler, 1976). This way of thinking can generate many ideas, yet these ideas are basically the extension of that matrix. Since similar elements in the same matrix were linked together, the ideas do not generate striking or original approaches. On the other hand, in bisociative thinking individuals link the elements of different matrices or domains and come up with completely original ideas that had not existed before (Koestler, 1976). In other words, bisociative thinking focuses on imagery and intuition (Koestler, 1976) and is highly correlated with innovative behavior (Scott & Bruce, 1994). Individuals with high bisociative thinking could apply intuitive problem solving styles rather than the systematic problem solving styles which are based on established rules (Scott & Bruce, 1994). Ko & Butler (2006) demonstrated that this implied an association process within the entrepreneurial mind and the process worked by linking elements in different domains or matrices. Individuals with high bisociative thinking ability have super flexibility in their thoughts and can easily move from one domain to another (Koestler, 1964). They can combine seemingly different and unrelated ideas (bisociation) by making connections among ideas where none previously existed—often crossing and joining domains. Since they can "think outside the box" they can generate original and innovative ideas (Ko & Butler, 2006) and therefore can be more alert to opportunities. In fact, Ko and Butler (2006) found that the bisociative mode of thinking completely mediated the relationship between prior knowledge and opportunity recognition.

In business colleges a strong focus on creative thinking, problem-solving and analytical skills are stressed by the prime specialized accrediting body, AACSB, in its standards and assurances of learning criteria. Courses in entrepreneurship, by their very nature, emphasize these 3 skills, especially in terms of innovative products and services. We posit that through college generated entrepreneurship programs and initiatives, potential student entrepreneurs are encouraged to analyze and scan the environments and produce novel marketable ideas for new

venture start-ups or venture growth. We expect students with high bisociative thinking ability to better relate seemingly different ideas in different domains and to better apply intuition and generate novel entrepreneurial suggestions. Since they can link unrelated elements and "think outside the box" they can be more alert to opportunities. This leads to our next proposition:

Proposition 11 :Effects of prior information on opportunity recognition will be partially mediated by the extent of the potential student entrepreneurs' ability in bisociative thinking modes.

IMPLICATIONS

Entrepreneurship programs have adopted various perspectives in teaching entrepreneurship. We now indicate that the through the literature review and building propositions the conceptual framework in this paper suggests "what" the focus of the future research needs to be and also clarify the educational outcomes expected from entrepreneurship education. To establish a level of awareness and understanding we now explain in greater clarity that entrepreneurial learning demands a clear conceptual perspective to prepare students to recognize opportunities for viable ventures. Therefore in this paper we tried to highlight the process of entrepreneurial opportunity recognition facilitated through the college environment and indicated the key factors that could be critical in maximizing the potential of students as potential entrepreneurs.

Studying opportunity recognition and firm formation will clearly have implications both for training nascent entrepreneurs and for entrepreneurship education programs. To better teach opportunity recognition it is necessary to study this process further and understand the influence and impacts of entrepreneurship education programs on potential student entrepreneurs. In other words exposure to various entrepreneurial initiatives through college will facilitate potential student entrepreneurs' personal development, social skills as well as business and market information that will help them identify viable venture opportunities.

Previous research on entrepreneurial characteristics focused either on individuals who intend to start-up new ventures (Littunen, 2000; Carswell & Gunaratne, 2005) or those who are the founders of surviving businesses (Carland, Hoy, Boulton & Carland, 1984). Both of these approaches are limited in understanding the underlying factors that lead individuals to pursue a new venture start-up and involved the risk of bias (Delmar & Davidson, 2000) since the findings were not highly associated with the actual entrepreneurial action towards a new venture start-up. "Highlighted bias refers to the risk of incorrect reporting due to memory loss or reinterpretation of facts as a consequence of events that have occurred after the time of start-up." (Delmar & Davidson, 2000. pp 2). Therefore for future entrepreneurial research we suggest studying nascent student entrepreneurs (i.e., those who are trying to start a new venture as owner or co-owner) sheds more light on understanding the process behind the new venture start-up.

Individuals who qualify as nascent entrepreneurs expect to be owners or part owners of a new venture; have been active in trying to start-up a new venture within the past 12 months and the effort is still in the start-up or gestation phase (Reynolds, 1999). One method would be to contact incubator centers and/or entrepreneurship center at various colleges. Nascent entrepreneurs are those who are involved in independent business start-up efforts (Delmar & Davidson, 2000) either alone or with others (Reynolds, 1999). This involves any behavior associated with starting a new firm.

a. earning money on sales
b. doing market research
c. saving money to start business (Delmar &Davidson 2000).

Further we suggest that future empirical studies on how college plays a role in triggering the entrepreneurial mind set will help educators develop a robust entrepreneurship curriculum incorporating real-life case studies, rigorous courses, flexible training programs, hands on learning experiences and internship opportunities. Since college generated information is partially mediated by cognitive factors, we suggest an effective entrepreneurship program that emphasize action-based learning will help develop self-efficacy, schema strength, confidence, boost openness to experience and critical thinking and prepare individuals more generally for life. For instance, business plan competitions prepared for real life financiers could help nurture self-efficacy and critical thinking immensely.

In sum, we believe that the concepts presented in this paper offer a perspective into the nature of opportunity recognition and provide insight to both theory and practice in the field of entrepreneurship. Considering how important entrepreneurship is for economic growth, it will behoove us to learn how to teach opportunity recognition in our Colleges of Business. Further study and more empirical research will be necessary if we are to fully understand opportunity recognition.

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ENTREPRENEURSHIP EDUCATION: STATUS QUO AND PROSPECTIVE DEVELOPMENTS

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ABSTRACT

This paper discusses the current state of entrepreneurship education particularly at the level of higher education institutions. Based on the premise that the main goals of entrepreneurship education are a) increasing the level of entrepreneurial competence and b) generating a positive attitude towards entrepreneurial behavior, I take stock of methods and tools that can be utilized to achieve those goals. Furthermore, based on this analysis of the status quo two trends are identified and discussed that may shape the future of entrepreneurship education. These trends are a) the tendency to narrow the scope of entrepreneurship education and to deliver entrepreneurial knowledge to specialized business audiences and b) the opposing tendency to widen the scope of traditional entrepreneurship education by introducing entrepreneurial concepts to audiences that could be considered unusual from a purely business perspective.

INTRODUCTION

Entrepreneurship education has been one of the most prominent success stories in higher education over the last few decades. While the idea to develop entrepreneurs was largely unknown in the 1970s, many universities have included some entrepreneurial component especially in their business curricula in the 1980s. This trend – originally emanating from the Unites States – has continued throughout the 1990s and the first decade of the twenty-first century.

Today, countless numbers of students worldwide are no longer educated solely for a career in established businesses and large corporations, but are being introduced to the idea of self-employment as well. For instance, in the United States more than 1600 colleges and universities offer entrepreneurship related courses (Kuratko, 2005). This development was strongly supported by the Association to Advance Collegiate Schools of Business (AACSB), that has helped ensure that in the United States nearly all nationally ranked schools now teach entrepreneurship (Katz, 2003) after indicating more than a decade ago that entrepreneurship would play a key role in future accreditation processes (Fiet, 2000b).

In other countries, such as Germany, entrepreneurship at higher education institutions has followed a similar growth curve, although one somewhat behind that of the United States, (Klandt, 2004; Kailer, 2009). There are at least two reasons for this development. From a

policymaking perspective, the argument that small and medium sized enterprises are disproportionately responsible for creating jobs within an economy (Kautonen et al., 2010) is compelling (Kuratko, 2005).

Moreover, if we consider the additional fact that new market entrants in particular are one of the main drivers of innovation and thus stimulate the overall competitiveness of the economy, the interest in creating more and better entrepreneurs becomes evident. Second, the idea to work largely autonomously without being held responsible for one's actions by superiors now seems to be quite attractive to large parts of the student body (Hynes, 1996). The success of entrepreneurship education is thus down to a combination of push and pull factors – policy makers foster the development of entrepreneurship programs due to the expected positive impact on employment rates and innovation, whereas prospective students increasingly demand that higher education institutions cater to their needs and interests. Interestingly, if conducted in the right way, entrepreneurship education seems to be able to deliver desirable results beyond those mentioned.

Charney and Libecap (2000) compared the career paths of graduates that had completed the entrepreneurship program at the University of Arizona to business school graduates of the same institution who were never exposed to entrepreneurial concepts because they chose different specializations. Their results suggest that entrepreneurship education not only produces graduates more likely to start-up new ventures or become self-employed, but graduates who are more successful–even if they decide on a more traditional career path–compared to their non-entrepreneurial counterparts. Positive effects of entrepreneurship education include substantially larger salaries, the likelihood of working for high growth firms or being involved in important strategic tasks such as the development of new products. In other words, entrepreneurship education not only affects how start-ups come into being and how many are instigated, but also indirectly affects established corporations significantly.

In particular, established corporations value graduates from entrepreneurship programs for their ability to think across functions and their ability to adopt a generalist view of the firm as a whole (Singh, 2008). The impressive development of entrepreneurship education has rendered obsolete the suspicion that entrepreneurs could not be taught, as they were supposed to be born (Kuratko, 2005). Entrepreneurs can indeed be taught, if the goals of entrepreneurship education are clearly defined (Fayolle, 2008). For instance, if it is the goal to educate *better* entrepreneurs, it seems obvious that there is a plethora of tools and concepts that educators can equip their students with and that are useful to enhance the probability of success (or that help to quickly cease work on entrepreneurial projects that only *seemed* promising).

Admittedly, if it is the goal to educate individuals to *become* entrepreneurs, that is, to change their perception so that they perceive the entrepreneurial career option as something attractive, and if those individuals were to be confronted with knowledge allowing them to freely decide or to reject the option to become entrepreneurs, the task would become more challenging. Entrepreneurship should therefore be taught differently to other business topics (Neck & Greene,

2011). Fortunately, entrepreneurship educators can rely on a number of measures to achieve both goals (see Kirby, 2007, for an alternative systematization of the goals of entrepreneurship education), as addressed in the following paragraphs.

Against this background, I will discuss the current state of the field. After discussing how educators can meet the standard challenge of entrepreneurship education (that is to educate better entrepreneurs), I will highlight what can be done to instill a positive attitude towards entrepreneurship, which can be considered the real challenge of entrepreneurship education. The second part of the paper addresses the issue of into which directions entrepreneurship education might evolve over the years to come – this future is likely to be shaped by two antagonistic trends; the tendency to narrow the scope of entrepreneurship education versus the tendency to extend its scope. The paper closes with some concluding remarks.

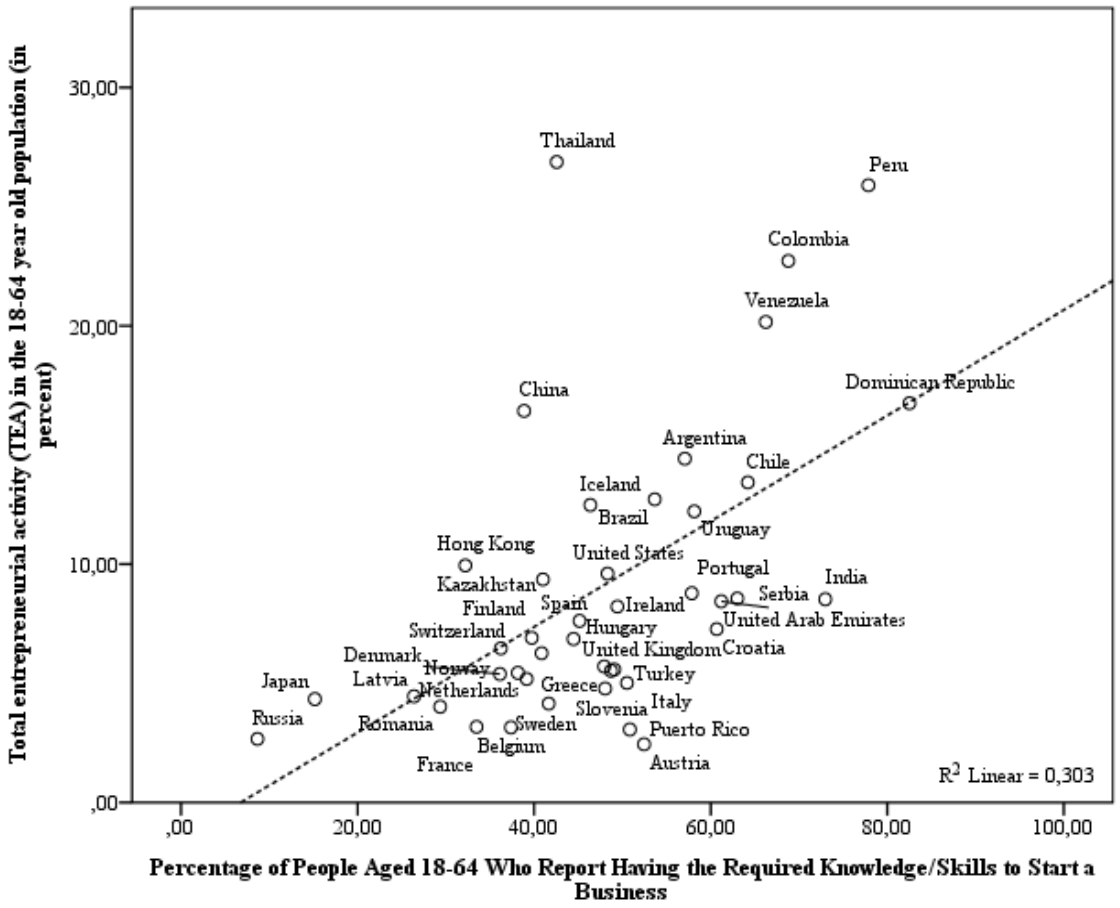
THE CURRENT STATE OF ENTREPRENEURSHIP EDUCATION: TEACHING ENTREPRENEURIAL COMPETENCIES VERSUS BREEDING ENTREPRENEURIAL ATTITUDES

Every entrepreneur faces the challenge of needing to identify an entrepreneurial opportunity upon which they can act (Shane & Venkataraman, 2000). The ability to identify such opportunities and to address them with appropriate tools, measures, and business models is crucial (Kollmann & Kuckertz, 2006). Figure 1 illustrates this point. Data from 2007 provided by the Global Entrepreneurship Monitor Consortium (2011) shows that on a global scale, countries where individuals feel that they possess the required competencies to start up a new firm can expect a higher level of total entrepreneurial activity (i.e. the combination of so-called nascent entrepreneurs who are currently establishing a new business along with entrepreneurs managing early-stage companies younger than 3 years).

Accordingly, preparing people for entrepreneurship and ensuring that a broader segment of the population possesses entrepreneurial knowledge seems to positively affect start-up rates and subsequent job creation. Fortunately, the experience of the last few decades suggests that entrepreneurial competencies can indeed be taught successfully. However, it is important to bear in mind that entrepreneurship education differs substantially from traditional business education. Entrepreneurs need a broader perspective and functional specializations that are typical of traditional business education seem ineffective in the start-up context (Hynes, 1996).

The tasks and challenges that entrepreneurs face during the entrepreneurial process (Bygrave, 1989) are numerous and differ depending on how far the venture has progressed. Moreover, different audiences might expect different concepts and information from entrepreneurship educators.

Figure 1: Relationship of entrepreneurial knowledge and total entrepreneurial activity in 42 countries for the year 2007 (author's calculations based on Global Entrepreneurship Monitor Consortium, 2011)



For instance, the content of entrepreneurship education should not only be tailored to specific phases of the overall process, but needs to take into account the overall institutional and economic setting in which graduates of the program will most likely be active. Consequently, the approaches taken quite often vary (Gorman et al., 1997) and entrepreneurship courses and programs offer a plethora of topics that are intended to help entrepreneurs to 'configure' (Harms et al., 2009) their venture in a sound way. Among those standard topics (Fiet, 2000a; Kuratko, 2005) that have turned out to be quite suitable for teaching are topics such as entrepreneurial finance and venture capital (Kollmann & Kuckertz, 2010), corporate entrepreneurship, entrepreneurial strategies (Kohtamäki et al., 2010; Sirén et al., 2012) and managing growth, psychological aspects of entrepreneurship and creating a realistic perspective on the risk (Barbosa et al., 2008) and tradeoffs of being an entrepreneur. The most important topics, however, that every entrepreneurship class should include (and which sets entrepreneurship apart

from traditional business education) are particularly related to three skills outlined by Gorman et al. (1997) and Aronsson (2004):

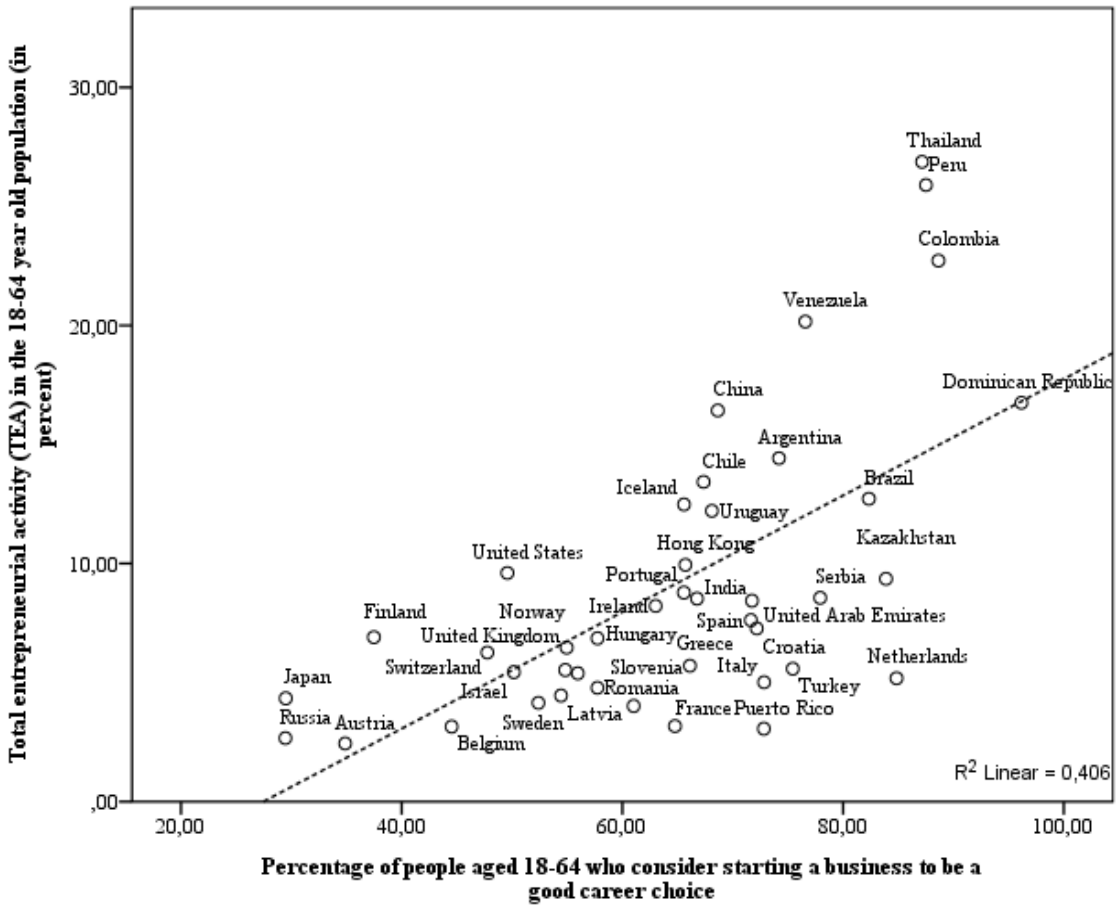
1. Competencies with respect to negotiation and selling, given that it is the entrepreneurs main task in the entrepreneurial process to convince various stakeholder groups of the viability and plausibility of the start-up
2. Competencies with respect to leadership and managing people, given that the restricted resources of a new venture render many traditional options of incentive-setting impossible
3. Creative thinking and the ability to translate this creativity into the continuous creation (Kuckertz et al., 2010) of new and innovative products or services

Consequentially, students of entrepreneurship need to build suitable competencies (Lans et al., 2008) rather than to learn about specific tools and instruments. That said, the more applied or 'hands-on' the teaching methods are, the greater the probability of success (Gorman et al., 1997; Edelman et al., 2008). The challenge for entrepreneurship educators that arises from this is related to the self-concept of many traditional universities. While business schools and polytechnics have embraced the idea of applicability, traditional (and especially European) universities might react skeptically towards such applied approaches diverging from the purely scientific.

Furthermore, the current challenge with respect to teaching entrepreneurial competencies seems less to be *how* to teach these competencies, but rather *who* will teach them, as many nations suffer from a severe shortage of qualified entrepreneurship staff, an issue that is particularly acute in the USA (Kuratko 2005). This shortage applies to every academic rank from the assistant professor level to more senior faculty positions (Singh, 2008) and can only be mitigated by further development of high quality and specialized doctoral programs focusing on entrepreneurship (Brush et al., 2003). Compared to teaching entrepreneurial competencies, improving entrepreneurial attitudes seems to be a far more demanding challenge for entrepreneurship educators.

In light of this challenge, some authors even consider the possible impact that educators could have on the development of an "entrepreneurial perspective" (Kuratko, 2005, p. 578) or an increased intention to start up a venture (Krueger et al., 2000; Kuckertz & Wagner, 2010) to be marginal. Of course, cultural conditioning (Aronsson, 2004) and family conditioning (Gupta, 1994) play an important role in this regard and may run counter to attempts of educators to foster an entrepreneurial attitude among students. Data from the Global Entrepreneurship Monitor (Figure 2) once again however illustrates how important a positive perception of entrepreneurship actually is; countries where many people deem the option of becoming an entrepreneur to be an attractive career choice can point to an increased total entrepreneurial activity.

Figure 2: Relationship of perception of entrepreneurship as a positive career option and total entrepreneurial activity in 42 countries for the year 2007 (author's calculations based on Global Entrepreneurship Monitor Consortium, 2011)



Against this backdrop, the role of educators wanting to foster an entrepreneurial attitude in their students is less about changing people directly, but is more about increasing awareness of entrepreneurship as an attractive career choice and the creation of an environment that fosters entrepreneurial behavior (Aronsson, 2004). Indeed, research has shown that in higher education institutions the level of entrepreneurial intent is–among other aspects–primarily dependent on the barriers that students perceive to hinder entrepreneurial activity along with the perceived support that potentially makes it easier to realize an entrepreneurial project (Lüthje & Franke, 2003). Nonetheless, apart from creating an entrepreneurial environment, students' attitudes towards entrepreneurship and their intent to engage in entrepreneurship themselves usually benefit from specific entrepreneurial experience that educators have to make happen. Pedagogies should therefore be largely practice-based (Neck & Green, 2011), but of course theoretically grounded

and justified. Attitudes are built through behavior (Stumpf et al., 1991) and thus at least two approaches have turned out to be quite promising in raising entrepreneurial attitudes. These are:

1. The exposure of students in class to specific role models like successful entrepreneurs (Aronsson, 2004; Souitaris et al., 2007; McCarver et al., 2010)
2. Project based learning (Gorman et al., 1997) and learning by doing (Fiet, 2000a), for instance, the involvement of students in actual start-ups or student consulting to entrepreneurs

It is extremely important to choose role models carefully, as it should be obvious that overly successful entrepreneurs (e.g., individuals who have developed a start-up from scratch to initial public offering or maybe created jobs for hundreds of employees) are too far away from the average students' experience to have a real effect. It seems far more promising to confront students with role models similar to themselves, that is younger entrepreneurs who are only two or three years ahead and to whom students can easily relate. Project based learning, on the other hand, is often considered to be the ultimate solution in entrepreneurship education (Gorman et al., 1997) as the deep involvement of students in entrepreneurial projects significantly affects their knowledge and perception.

An interesting approach allowing students to benefit both from role models and project based learning is entrepreneurial internship. For instance, at the University of Arizona (Charney & Libecap, 2000) students are required to complete an internship with either a start-up or a venture capital firm before they are admitted to the formal part of their entrepreneurship education. As internships permit close contact with entrepreneurs (role models) and simultaneously provide experience of working on tasks that are specific to start-ups, they are likely to be highly effective in changing attitudes towards entrepreneurship. Whatever is done to create such attitudes, it is, however, of utmost importance to start as early as possible; that is, while students still have a full set of career options (Gorman et al., 1997).

Table 1 summarizes what is required to achieve the two main goals of entrepreneurship education. Both the goal of educating better entrepreneurs and the goal of raising entrepreneurial attitudes can be differentiated into a number of sub goals that go along with different target audiences and requirements. The sub goals are presented in ascending order in terms of difficulty of achieving them. The goal of educating better entrepreneurs can thus be divided into the two sub- goals of acquiring knowledge about entrepreneurship and developing entrepreneurial competencies, whereas the goal of raising entrepreneurial attitudes is threefold and can be divided into developing entrepreneurial characteristics, changing prevalent attitudes and establishing an institution-wide entrepreneurial culture. While both main goals are definitely attainable, it becomes clear that in particular the goal of raising entrepreneurial attitudes requires considerable resources and a serious commitment by the respective higher education institution (McCarver et al., 2010) as the transformation of the whole institution into one with an entrepreneurial culture is one of the cornerstones of this goal.

Table 1: Goals / Sub-Goals of Entrepreneurship Education and Their Teaching and Learning Potential (adopted from Voege, 2010)				
Goal	***Sub goal***	***Didactic methods***	***Target audience***	***Requirements***
Educating better entrepreneurs	Acquiring knowledge & raising awareness	Classic instruments in the behavioral sense (lectures / presentations)	Complete student body	Willingness of students to learn
	Developing entrepreneurial competencies	Cognitive teaching methods	Students aiming for a career in an entrepreneurial context	Established entrepreneurial culture / constant application of what was learned
Raising entrepreneurial attitudes	Developing entrepreneurial characteristics and behavior	Project based learning	Students aiming for a career in an entrepreneurial context	Enduring relationship with students
	Changing attitudes	Project based learning and confrontation with role models	Students, who were already sensitized for entrepreneurship	Enduring relationship with students
	Establishing an entrepreneurial culture	Creating a lasting, institution-wide culture of entrepreneurship	Everyone in the higher education institution	Strategic commitment by management body and administration

Educating better entrepreneurs can easily be achieved through traditional teaching concepts and does not require extraordinary levels of resources. The real challenge follows from the attitudinal goal of entrepreneurship education. Project based learning, the necessity of developing enduring long-term relationships with students and creating an institution-wide entrepreneurial culture (Kailer, 2009) all serve to complicate the path to successful entrepreneurship education. In particular, building interdisciplinary, cross-campus programs usually turns out to be an enormous challenge. Although many universities have accepted entrepreneurship as a "third mission" (Vozikis & Mescon, 2010) along with their traditional teaching and research goals, university-wide cultural issues and cultural gaps between disciplines that need to cooperate (e.g., business and engineering (Janssen & Bacq, 2010)) often get in the way of an institution-wide culture of entrepreneurship. Successful examples such as the Frank Program at Washington State University (McCarver et al., 2010) illustrate, how such barriers can be overcome by adopting a long-term perspective and how establishing such a program can serve as a catalyst for an emerging, institution-wide entrepreneurial culture (Janssen & Bacy, 2010).

THE FUTURE OF ENTREPRENEURSHIP EDUCATION: NARROWING VERSUS EXTENDING THE SCOPE OF ENTREPRENEURSHIP EDUCATION

Though some authors (e.g., Katz, 2003) consider some markets for entrepreneurship education such as that in the US to be saturated, and predict that growth is more likely outside of the USA, the obvious success of entrepreneurship education is likely to continue for years to come. The main economic and societal problems to which entrepreneurial behavior is a promising solution persist and entrepreneurship educators have successfully shown that they can contribute to mitigating those problems. As entrepreneurs are as diverse as the organizations they establish, the scope of entrepreneurship education is likely to change in the future to address this diverse phenomenon. I suggest that we will witness the field moving into two specific directions: On the one side, more and more specialized entrepreneurship programs for traditional business audiences will emerge, on the other side, the scope will be extended so that new audiences will be exposed to entrepreneurial concepts. Some of these developments can already be witnessed and, if thought through, suggest a promising future for entrepreneurship education.

The trend towards narrowing the scope of entrepreneurship education is not to be confused with the so-called 'dilution effect' that has been criticized – and rightly so – by Kuratko (2005, p. 589). Narrowing the scope does not equate to labeling each and every business function as entrepreneurial–which makes obvious sense with some functions such as entrepreneurial marketing (Harms et al., 2010) or finance, and tends toward the absurd when it comes to functions such as accounting.

Narrowing the scope means developing focused entrepreneurship programs for certain parts of the business community who require specific knowledge. For instance, at Germany's *University of Duisburg-Essen*, the necessity to provide a focused program for students in information systems who are interested in starting ventures in digital markets has been recognized, significantly funded by the *Federal Ministry of Economics and Technology* and successfully implemented. The so-called *netSTART* program (www.netstart.de) is characterized by a vertical rather than a horizontal approach, meaning that it does not provide support to each and every academic entrepreneur, but rather concentrates on those who develop and aim to finance (Kollmann & Kuckertz, 2004) business models that benefit from and shape the continuing stream of innovations in information and communication technologies (Kollmann, 2006; Kollmann et al., 2010).

A similar approach can be found with the *Nano-Entrepreneurship-Academy*, which is backed by the German *Federal Ministry of Education and Research* and caters specifically to women with a nanotechnology background at several German universities. It is easy to envisage this concept being transferred to other high-potential industries, such as the life sciences.

This trend of narrowing the focus is contrasted by an opposing trend, namely the tendency to widen the scope of entrepreneurship education. Some authors (e.g., Gorman et al., 1997) argue that the prevalent focus on the university level is too narrow to make the most of the

promise of entrepreneurship and recommend starting education earlier (e.g., in primary or secondary school) and not to stop at the student level but to extend it to more mature audiences (e.g., entrepreneurship education for existing businesses or third-agers (Kautonen et al., 2011)). Likewise, there seems to be some consensus that there is more to entrepreneurship than simply the creation of ventures (Kuratko, 2005), and an extended scope will reflect this.

Entrepreneurs can be defined as individuals "who perceive […] an opportunity and create […] an organization to pursue it" (Bygrave & Hofer, 1991, p. 14; for a similar definition see Brazeal & Herbert, 1999). The important aspect here is that entrepreneurship is not defined by *business* opportunities; every individual or team aiming to establish any kind of organization can be considered to be engaging in entrepreneurial action.

The concept can thus be applied to organizations such as charities, political interest groups, sports clubs or any type of association. What unites these approaches is that a new organization delivers against demands emanating from its environment and is set up by an entrepreneurial individual. The field of social and sustainable entrepreneurship provides fertile ground for prospective entrepreneurship programs. As social and sustainable entrepreneurs manage to the triple bottom line, aiming for societal, environmental and economic goals simultaneously, they start out with motivations that differ substantially from more traditional entrepreneurs (Kuckertz & Wagner, 2010), face very different challenges throughout the entrepreneurial process and thus deserve to be educated in novel ways.

Another example can be found with *PEP* (www.prisonentrepreneurship.org), a Houston-based program that goes beyond traditional audiences of entrepreneurship education and develops the entrepreneurial competencies of convicted felons. Given that convicts in most societies face severe problems (re)entering the job market, starting an entrepreneurial career appears to be a reasonable solution. The program can refer to more than 600 graduates so far who have started 75 businesses; at the same time the recidivism rate of graduates has proved substantially lower than that of non-graduates of the program. Consequentially, other initiators have transferred this successful program to other countries (e.g., the German Leonhard-project – www.leonhard.eu).

Needless to say, neither of the trends (be it narrowing or extending the scope of entrepreneurship education) is preferable–programs in both areas meet a respective purpose and are a reaction to market demand for such programs. Taken together with more traditional approaches towards entrepreneurship education, they all contribute to a growing importance of entrepreneurship education and indicate the relevance of the field. This positive outlook, however, goes along with new challenges for the field as such, as the already prevalent shortage of qualified faculty (Singh, 2008) is very likely to worsen in light of demand not only for qualified faculty being able to teach entrepreneurship as such, but for heightened demand for specialized faculty as well.

CONCLUSION

Entrepreneurship education finally came of age in the last three decades (Katz, 2008) and should be considered an established part of higher education. Although established, it has not yet fulfilled its potential; a potential that has at least two components. The higher education landscape is likely to see more focused entrepreneurship programs delivering knowledge to and building skills in specific audiences such as entrepreneurs in the information and telecommunication industry, the life sciences or other growing markets. On the other hand, entrepreneurship educators will reach out to non-traditional audiences. With this comes a huge potential not only for entrepreneurship education but for society as a whole. On many occasions students of non-business subjects or other audiences with no relation to business matters exhibit a enormous interest in entrepreneurship (Shinnar et al., 2009), have huge creative potential, and many ideas of what could or should be done, but unfortunately lack the knowledge and skills to transform that potential into creating new organizations. It is our responsibility as entrepreneurship educators to help them to realize that potential.

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CREATING AN ENTREPRENEURSHIP INTERNSHIP PROGRAM: A CASE STUDY

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ABSTRACT

Internships have become a well-established type of active learning that is particularly useful in an applied field such as business. This research addresses a unique situation in which a program was renewed to exclusively assign students to work with entrepreneurs. Using a case research methodology, we address the issues associated with operating an Entrepreneurship Internship Program. We describe the efforts of one of the authors to develop and grow an existing internship program at a regional university in the Southeast. We describe the process of renewing an existing internship program with a mandate to improve it. We discuss insights gained through implementing the undergraduate entrepreneurship intern program and offer suggestions to those that may wish to implement an entrepreneurship internship program of their own. We conclude with observations on the practical implications of this study as well as a brief commentary on future research.

[Keywords: entrepreneurship, internships, business education]

INTRODUCTION

An internship is "controlled experiential learning where a student receives academic credit while employed by an organization in a chosen area of interest" (Stretch & Harp, 1991, p. 67). "Experience continues to be one of the key attributes any entry-level professional can offer a prospective employer, and internships provide one of the best ways for the ambitious to obtain it" (Gault, Redington, & Schlager, 2000, p. 45). In short, internships often lead to jobs (Cannon & Arnold, 1998). Internships offer employers a low risk, try-before-you-buy proposition (Coco, 2000). Employers can find talent fairly cheaply or even for free (Clark, 2003). Internships also create linkages (Neumann & Banghart, 2001; Tovey, 2001; Update, 1999) and dialogue between faculty and members of the business community that have been increasingly identified as highly desirable (Pearce II, 1999). Many employers have embraced internships as a valuable recruitment tool (Cannon & Arnold, 1998; Schmutte, 1985).

While internships have gained some attention in business education literature, they have focused almost entirely on student internships without acknowledgement of differences among small, medium, or large-sized businesses. This situation is rather surprising considering the

sheer magnitude of small businesses in the United States. According to the Small Business Administration (SBA), over 99% of all businesses in the country may be classified as small firms, according to the Small Business Act (The State of Small Business 2009)[1].

It is most likely that many of the student interns that were the subject of previous research on the subject were assigned to work for entrepreneurs. However, the extant literature is devoid of any research on working as an intern with an entrepreneur versus working as an entrepreneur for a more established firm where there may be vast differences in organizational cultures (Deal & Kennedy, 1982; Geertz, 1973; Schein, 1992; Trice & Beyer, 1993) and thus the very nature of the internships and experiences therefrom. Accordingly, this present paper constitutes on effort on the part of the authors to provide an initial contribution with the hope that future scholarly researchers will be encouraged to address an apparent gap in the literature that is specific to entrepreneurship internships. While the emphasis of this present paper is on developing an entrepreneurship intern program, some considerations from the point of view of students and entrepreneurs are also discussed.

Using a case methodology (Eisenhardt, 1989; Marsick & Watkins, 1997; Stake, 1994), we describe the efforts of one of the authors to develop and grow an existing entrepreneurship intern program. We briefly review the extant literature with an emphasis on literature about student internships as a whole, including some references to literature on entrepreneurship education in the U.S. in order to provide the proper context. We then discuss our research method and the rationale for it, followed by our case study of the Entrepreneurship Internship Program. The next section discusses the results of the case study which includes a list of insights gained by the process of renewing this program, and those gained insight while one of the authors (who served as the Entrepreneurship Intern Program Coordinator depicted in this case, moved to another university where entrepreneurship internships are provided on an ad hoc basis). The paper concludes with observations on the implications of this study as well as a brief commentary on future research on entrepreneurial internships.

LITERATURE REVIEW

The literature on entrepreneurship education is still in a developmental stage (Fiet, 2001a, 2001b). This conclusion is startling when one considers just how far entrepreneurial phenomena have come in the last thirty years. Research by Katz (2003) demonstrated that interest in entrepreneurship in colleges and universities has been nothing short of incredible. The growth rate has been phenomenal with more than 1,600 colleges and universities offering at least one course in entrepreneurship in the U.S. today.

Entrepreneurship education has been evaluated from a variety of perspectives including what is taught, why it is taught, how it is taught, and how well it works (see Katz, 2003; Kuratko, 2004; G. T. Solomon, Duffy, & Tarabishy, 2002). The problem with assessing entrepreneurship education is that no generally accepted pedagogical model has been adopted in the U.S. or

Europe (George T. Solomon, Winslow, & Ayman, 1998). Given that some researchers suggest that the "concept of entrepreneurship is inadequately defined [, and] this lack of a clear entrepreneurship paradigm poses problems for both policy makers and for academics" (Carton, Hofer, & Meeks, 1998, p. 1), the state of entrepreneurial education (Gorman & Hanlon, 1997; Katz, 2003; G. T. Solomon, et al., 2002) cannot be too surprising. If we cannot agree on the phenomena we are discussing, it becomes very difficult to develop a curriculum or build an academic program based upon those phenomena.

Solomon, et al. (2002), discussed the results of a twenty-year investigation of teaching entrepreneurial education and small business management in the U.S. Their data is based upon six national surveys. They believe a trend exists toward greater integration of practical applications and technology in entrepreneurial education. They note that new venture creation, small business management, and small business consulting remain the most popular courses in the field. However, they do not spend significant time discussing student internships.

In attempting to review entrepreneurship internship-specific research, authors used these search terms and variations in databases such as *Academic Search Premier, Business Source Premier, ERIC,* and *SocINDEX*; search efforts revealed a paucity of existing research. Expanded search efforts on internships at large provided far more results, but still, we submit that internships in an entrepreneurial context are logically different than those in larger, established firms (we propose several differences in the discussion topics that follow).

Internships

Most of the research on pedagogical issues in entrepreneurship education has focused on small business consulting and business plan writing (G. T. Solomon, et al., 2002). Rather than attempt an exhaustive review of past research, this section will emphasize research relevant to internships, a form of active learning (Fiet, 2001a) that has not been well investigated by researchers (Narayanan, Olk, & Fukami, 2010).

The literature on student internships in business has evaluated several perspectives, such as, but not limited to legal issues (Swift & Kent, 1999), extent of internships among colleges (Coco, 2000), academic content (Cannon & Arnold, 1998; Clark, 2003), and student perceptions (Cook, Parker, & Pettijohn, 2004). Perhaps not surprisingly, many of the articles on internships and internship programs are written by faculty based upon their observations (Rothman, 2007). Their research emphasizes suggestions to host companies about supervision (Coco, 2000), work assignments (Tackett, Wolf, & Law, 2001), as well as other issues, such as legal considerations (Swift & Kent, 1999).

.Most of the literature agrees that student internships have many benefits (Cherwitz, 2007; Crumbley & Sumners, 1998; D'Abate, Youndt, & Wenzel, 2009; Divine, Linrud, Miller, & Wilson, 2007; Henry, 2002). Cook et al (2004) completed a study of students that participated in student internships and found that most of them found the experience to be a positive learning

experience. In a study of 242 schools, Coco (2000) found 92% of the participating schools had internships. Gault et al (2000) found a link between internships and the recruiting efforts of business. They also found that students who had internships were able to find employment faster and at higher starting salaries than students that had not had internships, a conclusion which was widely supported in the literature as a whole (Beenen & Rousseau, 2010; Cobb, 2008; Hao & Liden, 2011; Hurst & Good, 2010; Scott, 1992).

While the pragmatic benefits are fairly obvious, the educational value of internships is less obvious to some observers (Clark, 2003). In response to this cynicism, Clark (2003) discussed the attempt at the University of Idaho to provide students with a menu of academic assignments to enhance the internship experience. Interestingly, Cannon and Arnold (1998) believe the opposite is true. They found that students use internships to enhance their job searches. They go on to suggest that business schools should require less writing, fewer exams, and less outside reading and add funding to increase the quantity and quality of internships. (Authors of this present paper do not necessarily agree that such a trade-off must occur in order to increase the quantity and quality of internships).

While most of the literature emphasizes the benefits of internships, some authors have noted some drawbacks to internships for various parties who may be concerned. For example, Hite & Bellizzi (1986) found that some students may become disappointed in their internships if the programs are not well thought out. Scott (1992) pointed out that internships can be costly to employers that are seeking a return on their investment, while Swift and Kent (1999) noted that legal issues must be addressed to reduce the legal liability of the university. Finally, as this paper will point out, the process of creating a full-fledged entrepreneurship internship program does require a considerable commitment of faculty time and university resources; this could also be considered to be a "drawback" for institutions that are not willing or able to make such an investment.

Perhaps one of the surprising findings about the extant literature is the failure to address firm size when discussing business internships. While the literature does not explicitly state that students in more traditional management programs (as compared to entrepreneurship programs) are only assigned to large or medium-sized companies, neither does it explicitly address the issues associated with assigning a student to a small or entrepreneurial firm or otherwise acknowledge firm size as a factor that was acknowledged in studies to-date. The differences also illustrate potential constraints. As observed by Lahm (2006b):

> *In essence, the entrepreneurial business can sometimes view the notion of taking on an intern as a distraction, because it must decide on a role, train, orient, and otherwise accommodate a new individual. The practical implications of this suggest everyday illustrations such as a small business owner having to find space in an already cramped office space, obtain equipment for an intern's use, and otherwise accommodate someone who had not been in the entrepreneur's plans.*

CASE STUDY RESEARCH METHOD

The challenge of conducting research about entrepreneurship education is that no generally accepted pedagogical model has been adopted in the U.S. or Europe (G. T. Solomon, et al., 2002). This assertion suggests that entrepreneurship education is still in the exploratory stage (Gorman & Hanlon, 1997). Thus, our choice of a research design was influenced by the limited theoretical knowledge researchers have of entrepreneurial education (Fiet, 2001a, 2001b). In such a situation, it is appropriate to use a qualitative research method (Bogdan & Biklen, 1992; Eisenhardt & Graebner, 2007; Maykut & Morehouse, 1994) in order to gather the necessary information (Eisenhardt & Graebner, 2007; Marsick & Watkins, 1997; Stake, 1994; Yin, 1994).

The current research necessitated that we observe (Adler & Adler, 1994) the process renewing and operating an entrepreneurship internship program. Thus, we adopted a qualitative research method described by Audet and d'Amboise (1998) which was broad-minded and flexible. Like their study, our aim was "to combine rigor, flexibility and structure without unduly restricting our research endeavor" (Audet & d'Amboise, 1998, p. 11). This research design has also been used in other research about entrepreneurship education (Heriot & Campbell, 2004).

In our case we provide background information about a regional university in the southeast U.S. Then, we discuss the steps that were taken to supervise the students and direct the program. In this study, we describe these as developmental components[2] which began in 2004 and continued through spring 2008 that were associated with an entrepreneurship intern program. Finally, we discuss observations of the program director upon going to another university without an established entrepreneurship intern program.

Each of the eight developmental components is highlighted in Table 1. These include: Component I, program evaluation (i.e., a situational analysis). Component II involved a process of getting started by establishing the initial priorities. In Component III the program coordinator established local contacts. Component IV involved deciding how to promote the program. Component V and VI were, respectively, supervising the first internships, and establishing procedures. Component VII saw the program expand to full-scale operation. Component VIII involves strategic planning to meet the challenges of continuous change (change that impacts entrepreneurial businesses, and thus the circumstances in which the Program operates in working with interns and those businesses).

Table 1: Entrepreneurship Internship Program Developmental Components		
Developmental Component	***Primary Focus***	***Comments***
I	Program Evaluation	Evaluate the current situation.
II	Getting Started	Prioritize what to do first and execute; create Website (including downloadable forms and information for students AND employers).
III	Establish Contacts	Networking is crucial with campus contacts (e.g., career services) and community leaders (e.g., chamber of commerce executives).
IV	Promotion	Attend campus and external career events; meetings with individual employers. (Press releases would have been beneficial but they were not used in this case.)
V	Supervising Interns	The first internships were assigned during the spring semester 2005.
VI	Operating Policies Evaluation	For instance, "can the internship be fulfilled internationally?" (Originally, the verbiage for the Program stated that internships were to take place in the local community.)
VII	Full-Scale Operation	Supervised 127 internships between January 2005 and May 2008.
VIII	Strategic Planning	This phase is on-going. The university will need to ensure they actively plan and evaluate this program to ensure continuity as the program coordinator accepted a faculty position elsewhere, and to adapt to other changes.

We do not suggest these components would be duplicated by others seeking to renew or start a new entrepreneurship internship program. They are offered for illustrative purposes as they provide a research method which was broad-minded and flexible (Audet and d'Amboise, 1998). Such an approach permits the reader to observe the entire process via the case study while being able to reflect on those portions that are appropriate to their own work.

The Case Study

Background

One of the authors was hired as a faculty member in the Entrepreneurial Studies program at a public university in the Southeast. The entrepreneurship internship program was established prior to the arrival of the author. Service as the Program Coordinator of the Entrepreneurship Intern Program was an additional duty.

Program

The Entrepreneurship Internship Program was organized under the university's Entrepreneurial Studies Program, which offers both a major and a minor in entrepreneurship. Approximately eight core entrepreneurship course sections are offered during a typical fall or spring semester, taught by four entrepreneurship faculty members (in addition to others who teach related courses, such as advanced business planning and small business management).

The University and Region

This regional university which had a student body of approximately 23,000 students during the time-frame under discussion. The university has programs of study in Arts, Business Administration, Fine Arts, Music, Science, Nursing, Social Work, and University Studies. The university has a broad array of academic majors and academic minors. In addition, it offers several masters degrees including the Master of Business Administration. Table 2 shows a profile of the university and the region in which it is located.

Table 2: Profile of University and Region

Item	Comment	Profile
Region	Southeast United States	Serves large regional area.
City	Small town	The city has a population of 75,000. The city has developed into a retail destination attracting shoppers from a 10-county region. Part of the reason for this phenomenal growth is that it is close to a city with 2 major Interstates as well as a "loop" highway that is designed to become an Interstate in the future.
University	Large Regional State University	Founded in 1911 as a state normal school for teacher education. The university has 23,000 students and offers degrees in Arts, Business Administration, Fine Arts, Music, Science, Nursing, Social Work, and University Studies. The College of Business is accredited by AACSB.
Instructor	New to the university	Terminally degreed at the Ph.D. level, with corporate managerial experience as well as entrepreneurial experience (including the prior ownership of a marketing firm).
Program	Entrepreneurship Intern Program	The faculty member was assigned as the Entrepreneurship Intern Program Coordinator; the course has prerequisites as well as specific requirements for the successful completion of the internship.

Internships

Between fall 2004 and spring Semester 2008, 127 students were enrolled in entrepreneurship internships. Table 3 summarizes the enrollments by semester in the Entrepreneurship Internship Program. Table 4 provides a profile of a representative selection of internships in which students participated. These internships are not intended to demonstrate the most predominant forms of internships, but rather to let the reader gain an appreciation of the variety of businesses in which students were assigned as well as to gain insights from comments submitted by students.

Table 3. Summary of Internships between January 2005 and May 2008

Semester	*Enrollment*	*Comment*
Fall 2004	0	Start-up semester; Website designed, promotional efforts and coordination completed.
Spring 2005	9	All ENTR majors
Summer 2005	7	6 ENTR majors
Fall 2005	12	All ENTR majors
Spring 2006	17	All ENTR majors
Summer 2006	8	All ENTR majors
Fall 2006	12	11 ENTR majors
Spring 2007	15	All ENTR majors
Summer 2007	14	All ENTR majors
Fall 2007	11	All ENTR majors
Spring 2008	22	All ENTR majors
Total	**127**	127 ENTR majors

Table 4: Examples of entrepreneurship internships in the Entrepreneurship Internship Program; comments are drawn from reflective papers submitted by students.

Industry	*Company*	*Duties*	*Comments*
Martial Arts	Company with three karate school locations.	Responsible for teaching and other aspects of business, servicing 80 students in one location.	"With over 36 years in the business it was not a hard decision to look to…[the owner] as a mentor for my future in the martial arts industry."
Sports Equipment (Skateboarding Industry)	Single unit retail store.	Customer service and sales, exposure to ordering, inventory control, and suppliers; paying bills, tax forms, finances.	"Working at…[the company] gave me a good idea of [what] running a small retail business would be like."
Insurance Industry	Local agent for national full-service insurance company.	Studied for banking industry spec. exam (did not pass); assisted with sales prospecting, customer service, some general office duties.	"[The owner] taught me what goes into being an entrepreneur. He majored in Finance and has opened my eyes to what goes into running a business for yourself."

Table 4: Examples of entrepreneurship internships in the Entrepreneurship Internship Program; comments are drawn from reflective papers submitted by students.			
Industry	***Company***	***Duties***	***Comments***
Recording Industry	Recording studio.	Sound reinforcement and recording of live public performances and studio work.	"From day one I was saturated in it, I learned pre-production, microphone placements…the patch bay, compression, pre-amp stages, player performance techniques from a studio great, mix-down applications, phase cancellation, and mixing effects….This internship experience has solidified even more why I am majoring in entrepreneurship and studying recording on the side.
Fashion Industry	New York headquarters of major clothing designer label.	Runway show productions.	"I really get tickled when I see the show "Project Runway" or the movie "The Devil Wears Prada" because I went through most of what happened on that show and in that movie.

Instructor

The instructor was one of the authors. He had recently completed a Ph.D. His skills included both corporate managerial experience as well as entrepreneurial experience (including the prior ownership of a marketing firm, and extensive experience servicing small businesses as clients).

Developmental Component I

This component can best be described as Program Evaluation. The duties of the Program Coordinator of the Entrepreneurship Intern Program were begun in the fall semester 2004.

The entrepreneurship internship was a formal program of study that was required for entrepreneurship majors. The Program Coordinator was given a one course release (from a 4/4 normal teaching load) in the first semester of employment, during which the coordinator completed developmental component I, and began component II. Course requirements, student and employer enrollment forms, internship performance evaluations (completed by employers), and additional guidelines were already firmly established and approved by the University's administration.

As part of this effort, academic records were reviewed which showed that students had sought to circumvent the internship course requirement by requesting a course substitution (and that they were often allowed to do so). In addition to this operating issue, the college expressed a need to initiate and maintain relationships within the business community to ensure the growth of the Entrepreneurship Internship Program.

As it turns out, these two issues were interdependent. One of the reasons that students had attempted to substitute courses was that the process of determining a possible internship site depended on individual contacts with various faculty who had cultivated contacts with members in the business community; however, a list had not been formally developed and housed in a centralized location. Thus, it was clear that developing a relationship with the entrepreneurial community would not only identify prospective internships, but also facilitate the process of ensuring students had a company with which to work before the semester began. Failing to do so would limit the potential of the program.

Developmental Component II

This component involved "getting started," including prioritizing what to do first given the size and complexity of the situation at hand. For example, although the Entrepreneurship Intern Program Coordinator was experienced in building relationships with businesses and community organizations, he was new to a faculty post, new to the geographic area, and new to the responsibilities of the assigned position. While the Entrepreneurial Studies Program maintained a Web presence, the Entrepreneurship Internship Program had no such presence, and it was determined that a Web site should be developed.

The creation of Website was not deemed to be just about technology "bells and whistles" (although it was held implicit that the program should look like it belonged in the modern world). It was agreed that in order to leverage public relations and press relations opportunities, a "place" on the Internet needed to be created such that any interest on the part of constituencies could be appropriately directed. In other words, it would require more than a phone number and sign-up forms to begin creating a public image among entrepreneurial firms and the business community at large.

Although the creation of a dynamic (database driven) site was an objective of the Program Coordinator, a static site, otherwise known as a "brochure or catalog site" (Lahm, 2006a) was developed to serve immediate needs. In the former case, employers could eventually register online and indicate an interest in program participation. Discussions about the possibility of reciprocity were also held, but given a state-owned and operated computer system, this notion was recognized as problematic. In particular, a more sophisticated website without the constraints of state ownership would have been geared to feature business community sponsors and program participants.

To translate the implications of this line of reasoning into a graphical presentation perspective, the site would be designed to acknowledge supporters and participants by incorporating logos and other art as well as content, to be supplied by the sponsors themselves. Unfortunately, this could be interpreted to constitute private advertising on a taxpayer supported system, so it was not pursued. It did not seem like a good use of time to wade through the legal and administrative process of answering these questions in light of more immediate goals at hand. While other solutions may have been identified, it was decided at a departmental level to table the idea, for the time being at least, in order to focus on identifying internship opportunities and placing students (this would also serve to stem the flow of substitutions). However, it should be added that given an instance where no such state control issues override decision making, such as might be the case with private institutions, enhanced visibility and relationship-building could occur.

One practical advantage of the static design was that the Program Coordinator was able to immediately begin work and implement the creation of the site using personally owned software and existing skills. Database-driven sites typically require the skills of advanced programming specialists, although this has changed dramatically over the years and there are now numerous content management systems such as WordPress that are accessible even to novice users (Peterson, 2009; Podcasting Glossary, 2010). Reliance on external university resources or those of commercial vendors that may have submitted bids would have in all likelihood, slowed website development and deployment time considerably. Hence, the Entrepreneurship Intern Program site was deployed relatively quickly, during the fall semester of 2004. A departmental level review of the site deemed the work product acceptable for the stated purpose of establishing a "respectable presence."

Another purpose of the Web site was to service basic needs for information on the part of employers (both those with a possible interest and active participants) as well as students. The site incorporated all necessary forms (see Appendix) and stated guidelines for participation. Links for "Student" and "Employer" sections were provided to provide explanations and guidelines to those two separate audiences. Advisors and entrepreneurship faculty were then able to refer students and businesses to the site as a point of reference for questions about background information, participation guidelines, and administrative forms.

Developmental Component III

This component entailed establishing local contacts. Many entrepreneurial businesses are operated by extremely busy founders. Thus, it was important to establish contacts in an indirect manner rather than through cold call attempts to meet them individually. The local county had a very proactive Chamber of Commerce, which in turn sponsored a strong economic development platform. Chamber and Small Business Development Center Directors, and other business community leaders were contacted directly (e.g., for discussions over lunch and through

established Advisory Board meetings). These initial contacts yielded a very supportive climate for the promotion of the program via referrals to entrepreneurial businesses. However, cold calls might be necessary, meeting directly with employers, in the event that working through existing organizations is not feasible or productive in another community. The one caveat to this would be that it is very time consuming to call on individual businesses.

With the Website in place, it became a much easier matter to refer members of the business community and community leaders to it to provide additional information about of the program. Thus, the online presence was regarded as essential as a means for distributing information and forms, which would otherwise have to be done in a manner that entailed time and effort on the part of the Program Coordinator (or departmental support staff). It had been anticipated all along that the Website would be an important part of the overall effort, and used to support this developmental component (establishing ties to the local business community, and having the capacity to be responsive).

Developmental Component IV

Almost any new program would benefit from publicity, especially one that replaces a previous process whereby internships are fulfilled by matching students and employers on an ad hoc basis (as was the case here). While the Website was regarded to be an essential part of the steps taken to promote the program, it was at first not visible to search engines (which do take some time to index sites—but even then any given site may compete with many others). Accordingly, at least in the beginning, it required that a person know about the Website to be of any use.

Clearly, establishing local contacts under Developmental Component III supported the promotional efforts which created awareness about the Website, and at the same time, the Website was capable of answering most questions that passersby on the Internet might typically have (either students or businesses). The local contacts were a means of using word-of-mouth to promote the program.

However, press releases were not used to promote this particular internship program. The primary reason for this is that community response was strong. Therefore, it was possible in this case that demand may have exceeded supply relative to resources: the ability of the Program Coordinator to respond to inquiries, the number of available students, and so forth. Nonetheless, the notion of publicizing an entrepreneurship intern program should be incorporated in a planned approach as it may be necessary (or it may not—yet it is important to be prepared either way).

Developmental Component V

The emphasis here was on providing ongoing supervision and support for the first group of interns assigned to their respective entrepreneurship internship site, along with serving as the

primary point of contact for both present and prospective entrepreneurship internship work sites. The first group began their internships in the spring of 2005. This step was critical because it was very time-consuming. Supervising the interns was done concurrently to the other duties of the Program Coordinator, such as promotion and planning, as well as his duties as a teacher and scholar in an AACSB-accredited college of business.

Developmental Component VI

Operating policies were emphasized under this developmental component. As discussed above, the program was in an undeveloped condition when the new Program Coordinator took over. Thus, there were few if any reliable procedures in place. This phase emphasized administrative issues, such as, but not limited to, monitoring the relationship between the student and the entrepreneur, the forms that needed to be completed, the academic component of the internship, establishing milestones for the students' performance, obtaining feedback from the entrepreneur about the student and their experience with the program, and dealing with problems, such as poor student performance. The goal was to develop consistency within the program and to be direct in acknowledging a key organizational concern, protect the university's (department's, et al) brand image.

Developmental Component VII.

The Entrepreneurship Intern Program expanded into full-scale operation during the fall semester of 2005. Table 3 shows the number of internships that were supervised from Fall 2004 through Spring 2008. This developmental component can be distinguished from the previous one (VI) in that it was far more intense as the number of internships were greater than they had been in previous years. Collectively and individually, student internships required considerable oversight.

While the students worked for the entrepreneur, it was not simply a "job." It was part of an AACSB accredited academic program in business. Thus, each student had to be supervised and evaluated to ensure they were fulfilling their obligations. From a community relations perspective, it was also prudent to ensure that the respective entrepreneurs were pleased with students' work. As such, students were required to produce reflective papers and otherwise document their insights and experiences through daily journals (Alm, 1996). Employers were invited to provide feedback on an ongoing basis, and summative employer evaluations were required at the end (employers were informed in writing of this requirement of them, and agreed to do this at the point in time when a given internship relationship was established). Students' performances were evaluated as excellent, good, average, marginal, or poor, based upon dimensions of performance shown in Table 5.

Table 5: Summative Evaluations Required of Entrepreneurship Internship Providers					
	Rating Scale				
Performance Dimension	*Excellent*	*Good*	*Average*	*Marginal*	*Poor*
Interpersonal skills					
Judgment					
Punctuality					
Dependability					
Attitude					
Professional appearance					
Oral communication skills					
Written communication skills					
Problem solving skills					
Knowledge of technology					
Quality of work					
Responsibility					
Initiative					
Overall performance					

Table 6: Evaluation Data During the Period Spring 2005 to Summer 2006						
Spring 2005	**Summer 2005**	**Fall 2005**	**Spring 2006**	**Summer 2006**	***TOTAL***	
9	***7***	***12***	***17***	***8***	***53***	***Number of Students***
4.8000	4.8000	4.6364	4.7500	4.5000	4.6973	Interpersonal Skills
4.5000	5.0000	4.5455	4.2500	4.5000	4.5591	Judgment
4.5000	4.4000	5.0000	4.2500	4.3750	4.5050	Punctuality
4.9000	4.6000	4.7273	4.5625	4.2500	4.6080	Dependability
4.8000	4.8000	5.0000	4.5000	4.7500	4.7700	Attitude
4.7000	4.6000	4.9091	4.0625	4.7500	4.6043	Professional Appearance
4.8000	4.8000	4.6000	4.4375	4.6250	4.6525	Oral Communication Skills
4.6000	5.0000	4.5000	4.4375	4.5000	4.6075	Written Communication Skills
4.6000	5.0000	4.4000	4.4375	4.6250	4.6125	Problem Solving Skills
4.7000	4.6000	4.7000	4.4375	4.8750	4.6625	Knowledge of Technology
4.7000	5.0000	4.8182	4.5625	4.7500	4.7661	Quality of Work
5.0000	4.8000	4.8182	4.4375	4.7500	4.7611	Responsibility
4.8000	4.6000	4.6364	4.4375	4.6250	4.6198	Initiative
4.9000	5.0000	4.8182	4.3125	4.7500	4.7561	Overall Performance

In Table 6, we show summative tabulations of feedback for a representative sample of interns (using data from one-half of the total number of semesters during which entrepreneurship interns were actively engaged; 53 evaluations were utilized). While from one perspective the data show a high level of satisfaction with the overall performance of the entrepreneurship internships that we tabulated, we also detected possible cause for concern that the evaluators may have been in effect, too satisfied. For instance, "Overall Performance" was rated to be an

average of 4.7561 on a 5 point scale for those 53 interns. (In hindsight, questions arose regarding rater reliability which are now beyond the scope of this paper and the case at hand to address for reasons discussed further below.)

In addition, students were encouraged to collect and use any artifacts that would be permissible (from the point of view of the employer) in a portfolio. It was made clear that internal documents and proprietary information was not permissible, but items such as brochures and other collaterals that were already publicly distributed would be in keeping with the general idea.

Developmental Component VIII.

This component is best described as strategic planning. This activity was (i.e., should be) on-going. The administration and faculty will need to ensure that it actively plans and evaluates the results of the Entrepreneurship Intern Program, making corrections as may be necessary to ensure continuity and effectiveness.

Lessons Learned

As with the creation of any new program, there were lessons learned that are worthy of consideration, especially by anyone that is considering starting their own new Entrepreneurship Internship Program or renewing an existing program.

Geographic Location

Some of the original documentation and guidelines have required alterations in order to respond to situations that have arisen in the course of administering the Program. As an example, the previously published guidelines dictated that students would complete their internships locally, in a specific county. Generally, it is the case that students will do just that as most who attend the university are locals. However, in a few instances (early into the period during which the Program Coordinator position was held) students proposed internships that made excellent sense in the context of their entrepreneurial goals, but did not meet the specified geographical criteria. In one particular case, an Asian student was interested in an import/export business, and by leveraging family and personal connections in Singapore, the student had identified an outstanding opportunity. Hence, the notion of a geographic restriction was challenged, and subsequent internships were proposed to reflect the possibility that a viable internship might arise anywhere, globally.

Indeed, as the Program Coordinator related this possibility of a global placement to subsequent prospective interns, they were influenced to think more broad-mindedly about their own future endeavors.

Recruiting

Finding firms that were willing to participate or that had existing internship hiring processes was one part of the process. However, many firms needed guidance (as did students) to articulate that there were significant differences in expectations that the program had of them. In other words, it was not only necessary to find firms, it was also necessary to find firms that were run by entrepreneurs who were willing to provide an experience in which the intern shadowed and participated in the entrepreneur's day-to-day experience. From the point of view of the coordinator, this was very time consuming (but not necessarily well recognized as such by colleagues).

Students were also counseled to seek particular types of assignments: those that would be associated with high-level tasks such as writing or improving upon a business plan, marketing (publicity, et cetera) plan, developing an employee manual, seeking funding, and other activities that were significant. They were instructed to inform the prospective entrepreneur that assignments such as these were absolutely necessary, as compared to what some entrepreneurs may have conjectured that they would be provided, which was at worst case was free labor and a "gopher" (Ripka). It was also relevant in submitting such a proposition to entrepreneurs that the student did not have to present her- or himself as a lone wolf with no experience or support. Students in the Entrepreneurship Major who had progressed to this point had already been introduced to the local Small Business Development Center executives and support staff, and as a consequence were able to suggest that their work on such high-level activities would not be the first time, nor would they be acting without support from multiple sources (including the SBDC and professors).

Physical Environment

In another instance which challenged existing assumptions and practices, a quadriplegic student was allowed to work across multiple placements, often conducting research and fulfilling obligations via the Internet. One of these assignments allowed him to conduct a feasibility analysis on behalf of a venture capital firm. Another assignment paired the student with a physics professor who had developed a new type of sensor with possible commercial applications; the professor and university collaborated with the student to develop a business and marketing plan to exploit the intellectual property opportunities associated with the sensor. In both cases, the student's performance was highly praised, and the both internship clients were very satisfied.

The takeaway for future students after this was the fact that some entrepreneurship internships (or a part of the responsibilities assigned) might be fulfilled at a distance using VoIP, meeting management, and other technologies. This possibility expands the prospective

entrepreneurship intern work-site pool substantially, and this may be particularly relevant to institutions that are located in less populous areas. It also has implications for entrepreneurs who have limited space or restrictions on the use of space (e.g., resulting from zoning laws), such as those working from a home based-business.

Supervision

An occasional (usually mature, non-traditional) student with an already established entrepreneurial business would (logically, we think) inquire about working within his or her own business. Initially, this appeared to be an intractable problem associated with conflict of interest, in that no student could be allowed to evaluate his or her own performance in a manner that would significantly influence the determination of a final grade (reflecting on one's own performance, on the other hand, is probably a very good idea for professional development in any field of endeavor, and was expected in written assignments that were part of the internship course requirements).

Eventually, after considerable angst and thought, workarounds were developed that may be helpful to share here. One such workaround, in an instance where the business model was such that it serviced a client base, involved allowing multiple members of the businesses' clientele to serve as the evaluators; the use of multiple raters was deemed appropriate (as compared to typically just one—a single entrepreneur-mentor). In another case, a student had purchased an established business. Part of the buyout arrangement included the retention of the former owner on a consulting basis during a transition period; we concluded that the former owner was as qualified as anyone (in a typical scenario) to provide the evaluative feedback.

Alternative Experiences

In some instances, where no workaround such as discussed above seemed attainable, students were guided to pursue a "view from the other side of the table" approach. A good illustrative example of this would be, for a graphic designer to work on the client-side of the business or for a media concern (e.g., one that ran print advertisements). Other examples might include working with a primary supplier of an existing business, again, to gain insights as to what the view is like from that perspective.

At this point, one might suggest that the entrepreneurship internship would not really be the same as working for someone else's entrepreneurial firm. On the other hand, the inherent nature of most entrepreneurship internships, at their best, is such that they can be likened to a simulation, whereas these special cases involved students who were already engaged in running "the real thing." Thus, the objective became to advance their professional development and the growth of their existing entrepreneurial businesses (and perspectives) from a starting point that

was already further along than that of a vast majority of students who were seeking a first-time experience in the entrepreneurial world.

Students Learned From Experiences, Both Good and Not So Good

In our observances of students' summative reports and journals we found that they overwhelmingly suggested satisfaction with their internship experiences through the particular Entrepreneurship Intern Program portrayed herein. This should not be interpreted to suggest that there were not instances wherein students were not candid or robust in their critiques of the entrepreneurs with whom they worked. Indeed, many reports related instances where the student reflected that to the effect that "if this was my business, I would not do this" (or I would do that, and so forth).

Observations Following a Transition Back to an "Ad Hoc" Scenario

As the program coordinator accepted a faculty position elsewhere (with another entrepreneurship program), this created an issue of continuity from the point-of-view of the former employer. This issue is not unique to entrepreneurship internships; Heriot and Campbell (2004) identified program continuity as an a problem when a faculty member left one university after having created a student consulting program. With the departure of the program's coordinator, the university was back to square one to some extent.

Although the Program Coordinator offered to service the internships during the summer in which he was transitioning to another university, the department under which the Program resided assigned that servicing to another faculty member. It was later observed that the Entrepreneurship Intern Program Website had been subsumed by the department's site (with the consequence of eradicating the stand-alone entity on the Internet that had been created).

Load Implications

In the new role and environment, the former Program Coordinator experienced both a sense of lament and one of relief. The "relief" was a result of no longer being assigned responsibilities which he felt constituted more than a full load, given competing responsibilities for service and publishing. The one-course release had never been enough, and it was unfortunate that the relationship-building efforts in the community were not supported to the extent that they were deemed worthy of more course release time (especially when he noted that many faculty in competing AACSB institutions already taught 3/3 course loads, which was also the case in the new faculty appointment).

Criticality of IT Support

In connection with the aforementioned (and conflicting) sense of "lament," several observations became apparent. The first of which is that in the new environment, website creation is not so easy as it was before. Indeed, the university budgeting process was different such that previous IT infrastructure investments were recorded as one-time expenses (although a new Chancellor has observed that an ongoing acknowledgement of IT as a line item in the budget should be made). Even when sites are created, the approval of the sites and their associated content is subject to an approval process that goes well beyond the departmental level. In some ways the process is contradictory because faculty are allowed to have sites of their own (both static sites and blogs) and with the exception of file-size limits, they seem to be able to exercise relatively unfettered expression.

Conflicting Demands

Faculty resources (often expressed internally in the organization as a lack of "bandwidth") are also significantly more constrained. In the new environment, both a master's degree and undergraduate degree program in entrepreneurship are offered, with online course offerings that take far more time to develop and deliver (a situation that many institutions do not seem to appreciate). Thus, no one has the time (and the former Program Coordinator also regards the scenario as intractable, given resource restraints, IT constraints, and an external environment of economic turmoil that has since ensued).

Small Business-Local Environment

The new university is in a very small, rural environment. Many of the local businesses are concentrated in retail, food, and other low-growth, high-volatility, easy-to-enter (and easy-to-depart) industries which may not be viewed by students as attractive. This is especially the case if they are encouraged, as they should be, to follow their dreams and keep an open mind about the future, stay involved with environmental scanning, and even consider industries that are yet-to-be-created. While the case of the other university above suggests that there are indeed workarounds, the local small business environment does seem to create some myopia about the limitations and feasibility of a full-fledged "entrepreneurship intern program" among students, local entrepreneurs, and colleagues.

The notion that there are not or could not be adequate opportunities for entrepreneurship internship worksites or projects is deemed to be the lesser of any issues presented in this discussion.

Organizational Culture and Change

Colloquially, organizational culture is often described as the way we do things (and/or the way we've always done them) around here. In the new environment, the potential value in having a formally established entrepreneurship intern program has not been established (or at least other challenges such as budget constraints during a period of economic recession that has since taken place in the macro environment have served to distract colleagues and administrators from such recognition). Entrepreneurship internships have heretofore been created and serviced on an ad hoc basis, and it appears that this practice is deemed to be one that should continue.

Put another way, there is no one who has been assigned as a "point person" to develop such a program; and the former Program Coordinator would be reluctant (due to the aforementioned conflicting views of "relief" and "lament") would view yet another assignment to do so as one that would be very unlikely to enjoy comparable rewards such as those that would be gained through scholarly publishing in most AACSB institutions.

Failure of Institutions to Capitalize on PR

In both instances (i.e., as observed while serving as an Entrepreneurship Intern Program Coordinator, and afterwards at a different institution without such a formally established program), institutions have failed to adequately support a situation in which public relations success stories could be regularly created and leveraged for the benefit of the respective interns, entrepreneurial businesses, and the universities that offer entrepreneurship internships (either ad hoc or through established programs). In good times or bad, the media love human interest stories (because audiences are attracted to and voraciously consume such stories), and it is relatively easy for even novice PR practitioners to pitch such stories to journalists.

The problems are as follows: someone must create (or document the stories); present these to the media; and then be available to the media to answer inquiries. Subsequently, recognition in the media often generates attention (i.e., contacts) from the public at large that must be serviced. In the case of internships, these inquiries could likely be from a larger number of entrepreneurs (and other businesses) seeking to engage a limited pool of internship candidates.

Students' Orientation in Identifying Possible Internships

In numerous instances, and with some irony, entrepreneurship students in both environments seem to approach possible entrepreneurship intern positions with the same orientation as job-seekers. In other words, instead of being engaged in finding out about entrepreneurs' problems and seeking to insert themselves into situations as a *solution* (in whole or in part) to those problems, their first instinct typically appears to be that of inquiring about

internship (i.e., job) openings. Faculty are approached as though they are living repositories of information about openings (granted, many are aware of needs and have relationships with businesses), but the point is that students have not been observed to be particularly "entrepreneurial" in their approach to identifying possible entrepreneurship internship work sites.

In the prior role of Program Coordinator, significant time was spent, both one-on-one and in group sessions, teaching students to be proactive and arming them with specific techniques. As a specific example, instead of asking "Do you have any openings?" students were taught to ask, "Do you have an up-to-date business plan?" Overall, if the above observations are transferable to entrepreneurship students as a whole, then this suggests more assignment involving direct contact with entrepreneurs, e.g., through information interviewing, should perhaps be integrated into curriculum within the entrepreneurship discipline at large.

IMPLICATIONS FOR RESEARCH AND PRACTICE

Clearly, the size of the business and its stage of development have a bearing on the work climate (Bowen, Ledford, & Nathan, 1991) and the expectations that the supervisor may have of the student as well as the assignments with which a student may be associated. Students with small firms have a greater opportunity to be involved with projects that may be associated with establishing core business processes (e.g., strategy, marketing, funding, HRM).

For example, Weisul (2000) related the following account of an internship experience with a small firm in a *Business Week* article entitled "The All-Around Intern: The new breed: not just for filing, not just for summer":

> When he did a summer internship at e-Netigrations, a 12-employee software company in Boise, Idaho. First, he wrote a marketing plan. It turned out so well that the company offered Johnson [the intern] a part-time job in his junior year, during which he finished writing a private-placement memorandum he'd started during the summer—a prospectus-like document that will be given to potential investors. 'We put this document in front of people who want to give us $6 million.' (p. 38)

Indeed, even when seasoned professionals transition from large organizations and start, or attempt to start (sometimes reluctantly, as a result of downsizing) a small entrepreneurial firm, they may flounder; at best, they report vast differences in the nature of big corporate life, as compared to entrepreneurial life (Cheuvront, 2011; Gardella, 2011; Loayza, 2009; Zlomek, 2011).

Institutions that are considering an entrepreneurially oriented internship program should be encouraged by the range of benefits that they might enjoy, but should also be advised that operating an effective program is a significant undertaking, not to be taken lightly on the part of community leaders, program participants (i.e., employers), or administrators. Small businesses may benefit directly by gaining fresh insights (Crumbley & Sumners, 1998; Prassas, 2006) and

access to assistance that they would otherwise not be able to afford or would not have considered. Whole communities benefit by creating entrepreneurial cultures, through which personal and small business growth contributes to economic growth and development (Katz, 2003; Lahm Jr., 2006a). Students benefit by gaining hands-on experience (Jennings-Rentenaar, Buckland, Leslie, & Mulne, 2008; McCarthy, Morris, & Winn, 1997; Yongmei, Jun, & Weitz, 2011) and accelerating their personal learning curves whether they find themselves in a traditional employment relationship, or starting a business of their own.

In offering the above, we also feel we should contrast an entrepreneurship internship course, versus a fully implemented Entrepreneurship Intern Program. In the former case, it is typical for qualified faculty members to service a small number of students and employers (whether "in load," or for additional modest compensation) on an ad hoc basis.

In the case of a program, its attributes include, but are not limited to the following characteristics: it becomes a campus entity unto itself, with a defined market image; it can play an advocacy role in terms of encouraging an entrepreneurial culture community-wide, e.g., through formal presentations which can be delivered to address members of business, community, civic and professional organizations (or one-on-one, with individual entrepreneurs); the entity can participate in recruitment fairs, and develop formal relationships between community leaders and their organizations (e.g., Chamber of Commerce executives, et cetera); as an entity, the Program may even have its own Advisory Board. Importantly, eventually all of the above generate the ability to garner PR in association with specific "success stories" (used only with permission of the parties thereto, of course), the Program's achievements as a whole, or events in which the entity participates or initiates on its own. All of the above may also serve to attract students (Kurz & Vazquez, 2010).

Opportunities to engage in organized research efforts are also facilitated by virtue of the probable increased volume of internships through such an entity (with its outreach capability and efforts) as well as the centralization of data collection processes within an office specifically charged with administering such practices. As introduced earlier, leveraging the benefits of such a Program requires a "point person" who will assure that operations are executed and opportunities are realized and become a reality.

CONCLUSION

Using a case research methodology, we address the issues associated with renewing and operating an Entrepreneurship Internship Program. This research addressed a unique situation in which a program was renewed to exclusively assign students to work with entrepreneurs. Between 2004 and 2008, 127 students participated as interns with local entrepreneurs. This process was very dynamic. Several issues had to be addressed to renew this program and increase its operational effectiveness.

As needs in the business community are in a constant state of flux, it is necessary for the university and similarly involved institutions to adapt. Administered properly, there are numerous opportunities to support a strong business community-university partnership (Neumann & Banghart, 2001) through an Entrepreneurship Intern Program. However, adequate time and a commitment of resources, planning, administering and reporting must be incorporated into the design of a viable program in order to ensure its growth and development.

More importantly, given the evidence that exists about the growth of programs in entrepreneurship and small business in the U.S. (Katz, 2003; G. T. Solomon, et al., 2002), the high stakes involved relative to the potential impact on students' careers and possibly the companies with which they are associated, (referring back to the instance we cited in our literature review section concerning a marketing plan and $6 million private-placement memorandum to illustrate this point), we submit researchers in the entrepreneurship discipline should address this gap in the literature.

While our objective in this paper has been to depict the issues and processes involved in creating an internship program dedicated to entrepreneurial internships focusing on one particular case, we advocate that numerous future studies from the point of view of students, entrepreneurial firms, community colleges (Maidment, 2007) and university program faculty and administrators should follow.

ENDNOTES

[1] The Office of Advocacy of the SBA is charged with conducting scholarly research on a variety of issues related to small businesses. The reader may want to refer to their website (http://www.sba.gov/advo).

[2] Described as such for purposes of convenience in organization; in reality, "components" or steps were overlapping and were by no means mutually exclusive

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APPENDIX

Additional Program Requirements

Content for this section is taken from the Entrepreneurship Intern Program Web site.

Internship Objectives

The purpose of the entrepreneurship intern program is to provide student interns with an opportunity to: develop professionally, acquire real-world entrepreneurial experiences, and apply classroom learning to the workplace.

Intern Qualifications

- Entrepreneurship Major
- Senior Standing (80+ semester hours)
- Completion of Required Courses:
  - Entrepreneurship
  - Introduction to Business

Academic Requirements

The student intern agrees to:

- Complete an internship application
- Meet with Internship Coordinator as requested
- Work a minimum of 225 hours for 3 hours of college credit
- Work in a company approved by the Internship Coordinator
- Perform in a professional manner and comply with employing company's regulations and policies
- Maintain employing company's confidentialities
- Ask employer to complete the employer evaluation form provided by the Internship Coordinator
- Submit an Internship Portfolio by designated due date
- Entrepreneur Interview—A typewritten summary of an interview with the employer. Interview questions will be provided by the Internship Coordinator.
- Reflective Paper—A final paper, minimum of two typewritten, double-spaced pages, written as a retrospective of the internship experience.
- Company Literature—Promotional/information brochures, etc. from the employing company.
- Daily Journal—Daily journal entries of internship activities and hours worked. Journal entries should be approximately five to ten sentences and can be used to compose the reflective paper.

DILEMMAS IN ENTREPRENEURSHIP PEDAGOGY

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ABSTRACT

The term "dilemma" has been loosely used to describe many challenges in entrepreneurship pedagogy, but "dilemma" actually has a more specific meaning. A dilemma is a situation requiring a choice among problematic alternatives. The distinction between dilemmas and other types of challenges is important because dilemmas cannot be solved – only mitigated. This exposition identifies and explains dilemmas in entrepreneurship pedagogy related to pedagogical structure, entrepreneurial self-efficacy, knowledge specificity, imitative learning, and latent career preferences. An explicit understanding of these dilemmas is valuable because it can assist entrepreneurship educators in recognizing and balancing the abiding tradeoffs inherent in entrepreneurship pedagogy.

Key words: pedagogy, learning, dilemmas, tradeoffs

INTRODUCTION

The work of entrepreneurship educators is anything but straightforward. Teaching methods and practices are continually evolving, and even the purpose of entrepreneurship education seems to be unresolved (Pittaway & Cope, 2007). While the discipline of entrepreneurship may be mature (Katz, 2003, 2008), the pedagogy of entrepreneurship is not. Some prominent entrepreneurs even question whether entrepreneurship can be taught (Gray & Field, 2006). If entrepreneurship cannot be taught, what then is the purpose of entrepreneurship education? While educators within the field seem to be coalescing around the belief that core entrepreneurial skills can be taught (Kuratko, 2005), debate regarding the 'teachability' of entrepreneurship persists (Haase & Lautenschlaeger, 2011). As a result, consensus as to the fundamental goals of entrepreneurship education, such as whether entrepreneurship education can or should positively influence students' propensity to become entrepreneurs (von Graevenitz, Harhoff, & Weber, 2010), has not been reached.

This lack of resolution regarding the purpose of entrepreneurship education complicates decisions regarding how entrepreneurship should be taught, but like entrepreneurs (Bhave, 1994; Sull, 2004), entrepreneurship educators have taken an iterative approach to their work. Rather than perfecting goals before developing methods, they have started with preliminary goals and have refined them as they have developed and implemented means for achieving their goals. Entrepreneurship pedagogy may be denigrated for its diffuse focus, but it cannot be criticized for

a lack of activity. Entrepreneurship educators are among the most innovative in business schools and are aggressively learning by doing. Although the process may be awkward, entrepreneurship pedagogy is progressing steadily.

Impeding this progress have been challenges or problems inherent in the nature of entrepreneurship pedagogy. These problems have occasionally been referred to as dilemmas, but the term "dilemma" has been used loosely. There are many problems or challenges inherent in entrepreneurship pedagogy, but only some of these problems are true dilemmas. By definition, a dilemma is a situation requiring a choice among alternatives, especially among alternatives with abiding tradeoffs. In deciding how to teach entrepreneurship, entrepreneurship educators find that pursuing one benefit to students comes at the cost of another benefit or other benefits. They often find means for eliminating these tradeoffs, thus solving a problem or overcoming a challenge. But some tradeoffs cannot be eliminated, creating dilemmas for entrepreneurship educators. When abiding tradeoffs cause dilemmas, it is simply not possible to achieve the "best of both worlds." A choice must be made, and sacrifices have to be accepted. The distinction between problems and dilemmas is important because problems have solutions but dilemmas do not. The solutions to problems may be costly or difficult to find and implement, but they exist. Dilemmas do not have solutions. They can be mitigated, but they cannot be solved. It is the dilemmas – rather than challenges or problems - of entrepreneurship pedagogy that are the focus of this exposition.

In older, more developed fields, instructors can apply accepted educational techniques without fully understanding them. But in an evolving field such as entrepreneurship, instructors must proactively refine their techniques, and this requires a deeper understanding of their teaching methods. The purpose of this exposition is to contribute to that deeper understanding by explicating the dilemmas of entrepreneurship education. In the following section, I explain the dilemmas that most frequently arise in entrepreneurship pedagogy. Other instructors may have encountered additional dilemmas, but the dilemmas presented in this exposition should be all too familiar to any entrepreneurship educator. After presenting each dilemma, I discuss some common means for mitigating it. My discussion of mitigating means is provided in order to illustrate the process of mitigating dilemmas in entrepreneurship pedagogy. It is suggestive rather than definitive. My reason for emphasizing dilemmas rather than the means for mitigating them parallels that of Gruner and Neuberger (2006) in spending more time on quandaries rather than solutions. At this point in the development of entrepreneurship education, an understanding of dilemmas is more useful to an entrepreneurship educator than a list of means for mitigating dilemmas because such a list would be rapidly outdated.

DILEMMAS

A dilemma is a situation requiring a choice among alternatives or options, none of which is ideal or perhaps even desirable. No matter which option is selected, there will be undesirable

consequences. A dilemma is like zugzwang, which occurs in chess and other games when a player is forced to make a move that loses a piece or otherwise weakens his position. In *The Odyssey*, Odysseus faced a dilemma when his ship had to pass between Scylla, a six-head monster, and Charybdis, a whirlpool. Odysseus chose to navigate nearer Scylla, losing a few sailors to the monster rather than his entire crew and ship to the whirlpool. Facing a dilemma is colloquially described as being "caught between a rock and a hard place." Dilemmas occur in a variety of contexts, including all dimensions of entrepreneurship – in teaching, research, service, and even in the legitimization of the field of entrepreneurship (Shane & Venkataraman, 2000). Dilemmas in research are all too familiar. As McGrath (1982: 69) explained, "the research process is to be regarded not as a set of problems to be 'solved,' but rather as a set of dilemmas to be 'lived with'; and the series of interlocking choices to be regarded not as an attempt to find the 'right' choices but as an effort to keep from becoming impaled on one or another horn of one or more of these dilemmas."

Similar dilemmas exist in entrepreneurship pedagogy, and the purpose of this exposition is to help entrepreneurship educators avoid impalement in the classroom. My goal is to help the individual entrepreneurship educator understand and deal with the fundamental dilemmas in his or her teaching activities. In the following subsections, I present and explain fundamental dilemmas in entrepreneurship pedagogy related to pedagogical structure, entrepreneurial self-efficacy, knowledge specificity, imitative learning, and latent career preferences. Figure 1 lists these dilemmas and the abiding tradeoffs they impose upon entrepreneurship educators and students.

Figure 1: Dilemmas in Entrepreneurship Pedagogy

Pedagogical Structure < ---------- > Experience with Uncertainty and Ambiguity

Entrepreneurial Self-Efficacy < ---------- > Realistic Feedback

Practicality < ---------- > Universality

Imitation Skill < ---------- > Understanding

Fostering Entrepreneurial Preferences < ---------- > Finding Entrepreneurial Preferences

PEDAGOGICAL STRUCTURE

Business courses tend to be highly structured (Sexton & Bowman, 1984) because structured environments are generally the best for teaching. Tell students what you want them to know, have them apply that knowledge, and remind them what you told them by correcting their performance. But uncertainty and ambiguity are an inherent part of the entrepreneurial experience. In structuring their educational experience, the instructor eliminates the uncertainty

and ambiguity that inhibit the educational process and that students generally dislike, but in doing so, the instructor creates an artificial, academic environment that bears little resemblance to the uncertain and even chaotic environment within which entrepreneurs must operate.

Creating structure is work for the instructor, but most of this work precedes the start of the course – with the design of the course, the codification of this design in the course syllabus, and the preparation of teaching materials. Over time, the work done in structuring the course reduces the overall amount of work that the instructor must put into the course. In the long run, structured course is easier for the instructor. It is also easier for the students. It lets students know what they need to do and how to allocate their time. Less time is wasted on wrong turns or fruitless searches for information.

A structured environment is self-perpetuating. Instructors maintain structure in order to manage their workload. Students, especially those with high grades, have adapted to structured educational environments. Where structure is weak, students will push the instructor for more structure, for example, to provide lecture slides in advance, to set due dates for assignments and exams at the start of the course, or to provide detailed, step-by-step instructions for assignments. Administrators like structure because it facilitates supervision; they may intervene if an instructor is seen as not providing sufficient structure. There is institutional pressure toward structure such as the common requirement to provide syllabi to the department office before or at the start of a new semester, institutional requirements regarding the number of contact hours a course must have, or fixed classroom schedules. Structure is the norm in higher education classrooms.

But does a structured environment best prepare students for an entrepreneurial career? Sexton and Bowman (1984) argued that entrepreneurship courses should be relatively unstructured. Many of those currently teaching entrepreneurship were trained in related fields where highly structured approaches can be effective; they initially used a highly structured approach when they first started teaching entrepreneurship only to become disillusioned with this approach because of doubts about its effectiveness. This disillusionment may come from seeing a lack of creativity in assignments for which the instructor provided detailed instructions. It can also come from watching students flounder when given more ambiguous assignments in the context of a practicum project or an internship with an entrepreneur. One of the most powerful sources of disillusionment of a structured approach comes from seeing former students, whom the instructor felt had developed very strong entrepreneurial skills, avoid entrepreneurial careers because of apparent discomfort with the uncertainty involved. While instructors may come to this realization through different paths, their destination – disillusionment with a highly structured approach to entrepreneurship pedagogy – is the same.

A logical response to this situation is to decrease the structure in entrepreneurial courses, but teaching in a less structured environment is more challenging for the instructor, the students, and for the institution in which the teaching occurs. Ironically, less structured approaches are often resisted by the students with the highest grades because these students have adapted well to

the typical structured environment in higher education classrooms and tend not to perform as well in less structured environments. Less structured approaches tend to garner less respect from administrators and colleagues in other business disciplines. Applying a less structured approach simply goes against the grain in most institutions of higher education.

Entrepreneurship educators thus face a dilemma in determining the amount of pedagogical structure to apply in their classrooms. More structure greases the educational process and is generally preferred by everyone involved. But increasing structure also undermines the effectiveness of the instructor and the course in preparing students for entrepreneurial careers. When instructors eliminate or reduce uncertainty and ambiguity for their students, they deny these students valuable experience in handling uncertainty and ambiguity – conditions which are paramount in the entrepreneurial process (Jeffrey & Dean, 2006).

The common means for mitigating the dilemma of pedagogical structure is to employ a combination of structured and unstructured activities - by structuring courses and most course activities but also including activities that require students to create their own structure. Entrepreneurship programs address this dilemma by structuring introductory entrepreneurship course and by requiring students to show more initiative and to create more of their own structure in advanced entrepreneurship courses. In both courses and programs, there is a sequence from more structured to less structured as the students advance through the courses or program. Courses requiring a very high tolerance for uncertainty and ambiguity are often elective rather than required course, allowing students who are not comfortable with uncertainty and ambiguity to avoid courses that would be unpleasant for them. But allowing students to avoid experience with uncertainty and ambiguity undermines their entrepreneurial training and can lead to inaccurate perceptions of entrepreneurial careers.

As students progress to less structured educational environments, the entrepreneurship educator's role changes from instructor to mentor or advisor. Because it is difficult to excel at both of these roles, instructors tend to specialize. Those with a primarily academic background tend to be more involved in the structured, introductory courses. Instructors with more practical experience or with extensive teaching experience tend to teach the less structured, more applied entrepreneurship courses. Just as some students are more comfortable with uncertainty and ambiguity, so too are some instructors. The nature of the instructor's background helps to explain this difference, but it is also likely that underlying personality traits affect both instructors' career paths and their tolerance for uncertainty and ambiguity.

Structure is essential to entrepreneurship and entrepreneurship pedagogy. Entrepreneurship educators need to provide the structure for their assignments, courses, and programs, but entrepreneurship students need experience creating structure, especially in contexts of high uncertainty and ambiguity. Entrepreneurship educators need the benefit of structure, but they also need to selectively refrain from providing structure and to push their students to develop their own structure.

Entrepreneurial Self-Efficacy

Entrepreneurship is a challenging endeavor. Most new businesses fail. The students who take entrepreneurship courses lack the experience of seasoned entrepreneurs and are even more likely to fail. But all things equal, the more confident entrepreneurship students are in their abilities, the more likely they are to attempt to start a business and the more likely they are to be successful. Peterman and Kennedy (2003) found that an entrepreneurship program can increase students' perceptions of the desirability and feasibility of starting a business. Taking a course in entrepreneurship may increase students' entrepreneurial self-efficacy (Zhao, Seibert, & Hills, 2005) - their beliefs in their abilities to start businesses. Instructors can seek to enhance this effect by providing encouraging feedback to students. But should instructors build the entrepreneurial self-efficacy of students when they know that the students lack the experience and hence much of the knowledge that they will need to succeed?

Some educators may choose not to give their opinions in order to avoid influencing students; others may believe it is their responsibility to give students honest feedback (Barbosa, Kickul, & Smith, 2008). The typical approach in entrepreneurship pedagogy is the "boot camp" technique – to tear students down and then build them up by the end of the course or program. Instructors first identify weaknesses in students' skills and then they help students to see these weaknesses and to address them. As weakness after weakness is addressed, the students' abilities and their self-efficacy increases. But no one can ever be fully prepared for the challenges of entrepreneurship; this is in part why the failure rate for new businesses remains high. Should entrepreneurship instructors then strive to build the confidence of their students or should the instructors teach students to be skeptical of their abilities?

In deciding whether to intentionally build students' entrepreneurial self-efficacy, instructors face a dilemma. Enhancing entrepreneurial self-efficacy may lead more students to become entrepreneurs, but its effect on students' success is not clear. If all variables could be controlled, then an increase in entrepreneurial self-efficacy should lead to higher odds of entrepreneurial success; more confident entrepreneurs are more likely to succeed. But there is interdependency among the variables affecting entrepreneurial success. Higher entrepreneurial self-efficacy could cause students to become overconfident and to overlook key weaknesses in their abilities. Entrepreneurial self-efficacy could then lead to higher failure rates.

Whether to build up or tear down the confidence of their students is a critical judgment call for educators. Most will try to build the confidence of students who seem to underestimate their abilities and to help students who appear overconfident to see and address their weaknesses. Determining whether and how much to increase the entrepreneurial self-efficacy of their students represents a dilemma for entrepreneurship educators. Intentionally enhancing students' beliefs in their abilities has both benefits and costs that instructors must balance as best as they can. This approach to handling the dilemma of entrepreneurial self-efficacy requires that the instructor observe each student's entrepreneurial self-efficacy and skill level and that the instructor develop

and provide appropriate feedback to each student. Such an approach is clearly not possible in large classes. Outliers – highly vocal students who are overconfident or very meek students – can be identified and helped. Some individualized feedback can be provided through the grading of assignments. But fine-tuning the entrepreneurial self-efficacy of students in a large class is not feasible. Such fine-tuning can and should occur in advanced entrepreneurship courses, which generally have smaller enrollments. A likely consequence of the entrepreneurial self-efficacy dilemma is that students who take only introductory courses in entrepreneurship may develop inaccurate assessments of their entrepreneurial abilities. The key to mitigating this consequence is to provide as much individualized feedback as possible in introductory entrepreneurship courses. This increases the workload of the instructor, but new instructional technologies – such as Moodle - are making it somewhat easier and more convenient for instructors to provide individualized feedback.

Knowledge Specificity

A frequently discussed issue among entrepreneurship educators at the university-level is the degree to which they should apply a liberal orientation versus vocational orientation in their courses (Myrah & Currie, 2006). Entrepreneurship education needs to be anchored in real world environments (Edelman, Manolova, & Brush, 2008), but university-level education is generally less vocational. This issue is not unique to entrepreneurship. It is relevant in the teaching of all business disciplines. But historically and by its nature, entrepreneurship pedagogy tends to be more vocational than other business disciplines. How vocational it should be is a matter of debate.

The vocational or applied nature of entrepreneurship education leads to a dilemma for instructors. One of the advantages of a liberal education is that it is more universal, that is, applicable in a wide variety of contexts. The more practical training becomes, the less universal it tends to be. There are certainly some practical topics in entrepreneurship that are relevant for most or all entrepreneurs. For example, all entrepreneurs need a basic understanding of the legal forms of organization available to them in their institutional context. But in general, more practical topics tend to have high knowledge specificity (Powell, 2010), that is, to be application-specific. Knowing how to get a liquor license is critical for entrepreneurs starting bars and restaurants that will serve liquor, but it is irrelevant to entrepreneurs pursuing opportunities that do not involve the sale of liquor. While a general understanding of intellectual property rights might be useful to all entrepreneurs, detailed knowledge of the patenting process is not.

By covering practical topics, entrepreneurship educators can better prepare students for an entrepreneurial career and lower the threshold for starting their first business. If the instructor can tutor students individually or teach them in groups of students with similar interests, then the knowledge specificity issue of practical education can be mitigated. But it is difficult for an instructor to be well-versed in all of domains of practical entrepreneurship knowledge. This

difficulty is greatly magnified if the instructor is working with students who are developing their own business ideas. A common means for addressing this dilemma is to use practitioners as guest speakers and even as entrepreneurs-in-residence or executives-in-residence. But as with entrepreneurial self-efficacy, tailoring instruction is difficult in large classes. Most instructors have to teach classes of fifteen, thirty, or more students with varied interests and entrepreneurial ambitions. Technology facilitates the customization of content for students, but there are limits to educational technology, especially in teaching practical knowledge.

Perhaps the most common means for handling the dilemma of knowledge specificity is self-guided study. Through practicums, internships, mentorships, and independent studies or projects, students acquire much of the applied knowledge that they will need in the particular direction of their entrepreneurial career. The instructor advises students during their self-guided study, but she does not attempt to provide the practical knowledge the students need. She assists the students in the identification and acquisition of such knowledge. The less structured activities that help to prepare students for the uncertainty and ambiguity of an entrepreneurial career are thus good context for helping students acquire practical knowledge specific to their particular entrepreneurial interests.

Imitative Learning

Entrepreneurs often copy the success of others. They see business ideas that work well in one market and replicate those ideas in their own communities. They copy products and services that seem to sell well. They copy marketing strategies that seem effective. Imitation is an important, valid, and (usually) ethical technique employed by entrepreneurs. The risk for entrepreneurs in imitating the success of others is that they may not fully understand how that success was achieved. As they imitate the success, they may have to derive the means through trial and error learning. But the feedback that they receive during implementation provides guidance in developing the means for achieving the success that they are imitating.

While imitation often works well for entrepreneurs, it is problematic for entrepreneurship students. What is important in the classroom is not the outcome of the entrepreneurial assignment, but the learning achieved through the completion of the assignment. Imitation can deprive students of essential learning. Students generally do not have a full understanding of that which they are copying. Unlike entrepreneurs, they do not have access to "real world" feedback to guide trial and error learning. The instructor can try to substitute his or her personal feedback for the feedback that would come with implementation, but this personal feedback is a poor substitute for rich, dynamic, "real world" feedback.

Entrepreneurship educators face a dilemma in deciding how much to encourage and facilitate imitation. Encouraging imitation teaches students a more real approach to entrepreneurship, but it also deprives students of experiential learning that would make them better entrepreneurs. For example, it is always difficult to decide whether to share sample

business plans with students who have been assigned to write their own business plans. When sample plans are shared, the structure and content of the students' business plans are inevitably too similar to those of the sample plans. When asked to explain their decisions regarding structure and content, students provide inadequate explanations. If they are not given sample plans or templates, students struggle with the business planning process and seek a substitute by asking the instructor detailed questions, but they are usually able to provide much better explanations of the decisions in their business plan.

Should entrepreneurship educators apply a realistic approach to entrepreneurship that includes imitation and examples, or should they force students to find their own way so that they develop a more complete understanding? Again, a balance approach is generally more effective, but a balance approach can only acknowledge and cope with this inherent dilemma. It does not and cannot eliminate the dilemma. To the extent that the instructor can incorporate "real world" feedback in the educational process, the effects of the imitation dilemma can be mitigated. For example, allowing students to start real businesses in a practicum course enables them to get real feedback on their decisions, including those that are based on the imitation of other businesses. But as anyone who has incorporated 'real' feedback into entrepreneurship courses knows, such an approach is difficult in an educational setting and can generally be supported in only advanced, project-based entrepreneurship courses.

A useful technique that works in any entrepreneurship course is to share several different samples with students. This forces students to compare the samples and to select the best one – or best parts or aspects from many samples – to imitate. When only one sample is provide, the propensity for students' work to resemble this sample is greatly exacerbated. Another useful technique is to have students make a first attempt at the assignment before sharing samples with them and then letting them use the samples to improve their work. To encourage students to think carefully about their decisions regarding imitation, the instructor can require students to maintain a log or journal describing their work on the assignment. For example, as students write their business plans, they can document their business planning process in an activity report. Unfortunately, higher education students all too often use imitation as a crutch throughout their education. Instructors typically respond to this practice by attempting to block all imitation. But imitation is an important entrepreneurial skill that is learned by doing. Entrepreneurship educators thus need to manage their students' use of imitation such that students are forced to "think for themselves" but also learn how to imitate effectively.

Latent Career Preferences

To what extent should entrepreneurship educators encourage students to become entrepreneurs? While some entrepreneurship educators advocate broader objectives (Klandt, 2004), others seek to make their students into entrepreneurs and measure success in terms of the number of their students who start businesses. In fact, the number of students and alumni who

have started business is an important metric in some rankings of entrepreneurship programs. A recent study suggests that entrepreneurship courses tend to help students determine their entrepreneurial preferences rather than to mold those preferences (von Graevenitz, et al., 2010). In that study, students who wanted to be entrepreneurs before taking an entrepreneurship course retained their preferences – as did students who did not intend to become entrepreneurs. The only change occurred among the students who started the course with no preference. A significant number of those students decided they did or did not want to become entrepreneurs. The study found no overall increase in preferences for an entrepreneurial career. The authors interpreted this result as evidence that entrepreneurship courses should encourage students to resolve their preferences rather than encourage students to pursue entrepreneurial careers. Should this then be the role of entrepreneurship educators – to help students find their preferences rather than foster entrepreneurial preferences?

The decision as to whether or not to encourage students to become entrepreneurs is a dilemma for entrepreneurship educators because entrepreneurship may "grow on" individuals. Some students may learn that they enjoy entrepreneurship only after they experience the real thing rather than the academic version. A course in entrepreneurship may not provide the same experience as actually starting a business that the student cares deeply about. But if the instructor does not encourage students to become entrepreneurs, students may never discover their latent preference for an entrepreneurial career.

Alternatively, if entrepreneurship educators encourage all students to become entrepreneurs, then they may direct some students to careers that are not right for them. If the instructors could accurately distinguish latent entrepreneurs from non-entrepreneurs, they could encourage only the latent entrepreneurs to select an entrepreneurial career, but consistently discriminating between these two types is impossible. A latent entrepreneur may have no interest in entrepreneurship or even business, but when that person discovers an entrepreneurial opportunity that he or she is very passionate about, that opportunity may make possible a very rewarding entrepreneurial career that the latent entrepreneur would have never thought possible.

So what is an entrepreneurship educator to do? Research suggests that educators' perceptions of students' entrepreneurial aspirations may be quite inaccurate (Shinnar, Pruett, & Toney, 2009). Encouraging students to become entrepreneurs may cause some students to make inappropriate and even costly career decisions. In fostering entrepreneurial preferences, it is all too easy to cross the line into imposing preferences. But not encouraging entrepreneurial careers may result in some students missing opportunities to pursue their passions and rewarding careers. Helping students find opportunities that they are passionate about and letting them develop these opportunities in entrepreneurship courses may help to awaken latent entrepreneurs, but finding one's passion can take longer than a few weeks at the start of a course or even longer than a higher education.

The best way approach for handling the dilemma of latent career preferences is to be honest and open with students. Most new businesses fail, and entrepreneurship educators need to

let students know that the overall odds of success are not good. They also need to share with students the time, effort, and commitment required to start a new business. Guest speakers who are currently or have recently started a business can help to bring the challenge to life for students. But instructors should be equally honest and open about the benefits of being an entrepreneur. Entrepreneurship educators should design their courses in ways that allow students to hear and – to the extent possible - experience both the difficulties and benefits of an entrepreneurial career. For example, entrepreneurs have greater autonomy than people in most other careers, and instructors can try to provide students greater autonomy in their courses, especially in advance entrepreneurship courses. Some instructors even involve their students in the design of the course syllabus. To help students find their passion, it can be effective to require students to develop a long list of opportunities and to narrow that list through course assignments, cumulating in a business plan focused on one of the opportunities. To foster passion, it is also better to allow students to work on opportunities that excite them rather than directing them toward opportunities that are more financially lucrative. But in hindsight, it is hard for entrepreneurship educators to avoid feelings of guilt about not encouraging some students more and other students less in their pursuit of an entrepreneurial career.

CONCLUSION

No matter how dedicated, industrious, intelligent, innovative, and experienced entrepreneurship educators are, they cannot do everything they would like to do for their students because helping entrepreneurship students in one way often hurts them in another way. For example, providing more pedagogical structure facilitates learning but fails to prepare students for the uncertainty that will face as entrepreneurs. Building students' confidence makes them stronger entrepreneurs but also makes them less careful. Teaching students practical knowledge eases their transition to entrepreneurial careers but also narrows their knowledge base. Encouraging students to imitate others helps them develop a practical skill but undermines their learning. Fostering entrepreneurship preferences directs some students to rewarding careers but leads others to inappropriate careers. There is nothing that entrepreneurship educators can do to eliminate these abiding tradeoffs. Entrepreneurship educators are caught between a rock and a hard place.

However, entrepreneurship educators are not helpless in these situations. They have ways of mitigating the consequences of dilemmas in entrepreneurship pedagogy. Kuratko (2005) called on entrepreneurship educators to innovate – to show the same innovative drive that they expect from their students. Entrepreneurship educators have innovated and have developed many means for mitigating the consequences of the dilemmas they face. For example, self-selected, self-directed, experiential activities applied in the context of a structured course – such as having students find business opportunities that interest them and develop plans for exploiting these opportunities –is a commonly employed technique that mitigates several of the dilemmas

in entrepreneurship pedagogy. These activities give students experience dealing with uncertainty and creating their own structure. They enable students to develop opportunity-specific applied knowledge that will be useful to them but might not be useful to their classmates. They allow students to experience an important benefit of an entrepreneurial career – pursuing a passion – while also exposing them to the challenges and frustrations of entrepreneurship; this experience helps students discern latent career interests without pushing them into inappropriate career paths.

The role of the entrepreneurship educator is a second commonly applied factor in mitigating the dilemmas of entrepreneurship pedagogy. In implementing self-directed experiential activities, the educator's role takes on the characteristics of a guide or coach, helping students find their way rather than telling them the way. If their instructor is a guide rather than a supervisor, students are more involved in structuring their activities, develop more realistic understandings of their abilities, pursue the applied knowledge particularly useful to them, and learn to adapt rather then blindly imitate examples. The role of guide or coach comes naturally to some instructors; others need more experience and perhaps training to adapt to this role.

A third common technique for mitigating the dilemmas of entrepreneurship education is the integration of multiple, seasoned entrepreneurs and other experts – such as bankers or lawyers – intp the educational process. These entrepreneurs may interact with students as guest speakers in classes, mentors in internships or practicum projects, or less formally in entrepreneurship clubs. These interactions provide students access to applied knowledge that fits their interests. If students are exposed to many unique entrepreneurs, these interactions provide examples than can inform students' career choices while forcing students to select from among several different entrepreneurial career directions. Seasoned entrepreneurs can also provide students with realistic feedback regarding their business ideas and skills, thereby helping students develop more accurate understandings of their abilities. Entrepreneurial simulations (Honig, 2004; Neck & Greene, 2011; Thavikulwat, 1995) can play a parallel role in entrepreneurship pedagogy by providing richer and quicker feedback that more closely resembles 'real world' feedback and can potentially support learning through imitation. Simulations may also enable students to experience uncertainty within the context of a structured exercise, but simulations are limited in their ability to capture reality and can easily be distorted or biased.

The most important factor in mitigating the dilemmas of entrepreneurship education and the factor that integrates all others is leadership. Just as Odysseus chose between Scylla and Charybdis, an entrepreneurship educator who knows the dilemmas inherent in entrepreneurship pedagogy can make informed decisions and lead his students accordingly. Experienced entrepreneurship educators have at least a tacit understanding of these dilemmas, and this is reflected in their application of the mitigating techniques reviewed in this exposition. However, with a more explicit understanding of the dilemmas inherent in entrepreneurship pedagogy, educators can refine their techniques and develop new techniques for mitigating these dilemmas. The intended contribution of this exposition has been to describe the monsters, i.e., the

dilemmas, and to map them so that entrepreneurship educators can more successfully lead their students through the process of entrepreneurship pedagogy.

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THE HOGAN ENTREPRENEURIAL LEADERSHIP PROGRAM: AN INNOVATIVE MODEL OF ENTREPRENEURSHIP EDUCATION

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ABSTRACT

This paper presents the Hogan Entrepreneurial Leadership Program, a four-year, university-wide undergraduate program, as a proven, innovative model for undergraduate entrepreneurship education. The paper will discuss the following: (1) context and mission of the program; (2) distinguishing features of the program; (3) structure and funding of the program; (4) student and program outcomes, and (5) lessons learned.

INTRODUCTION

This article describes the Hogan Entrepreneurial Leadership Program, a proven successful, innovative, model of undergraduate entrepreneurship education, founded at Gonzaga University in 2000. Following a brief literature review, the context and mission of the program are presented. We then describe the distinguishing features of the program's curriculum and co-curriculum. The program's structure, funding and other support are then documented. Student outcomes and other program outcomes are then highlighted. The paper concludes with a summary of the lessons we have learned in creating and sustaining a successful undergraduate entrepreneurship program. We believe that our model and the lessons learned can be readily applied to other institutions.

LITERATURE REVIEW

The following scholars have investigated entrepreneurship education on a variety of topics (e.g., programs, curriculum, entrepreneurship centers, faculty, jobs, trends, etc.): Brush, Duhaime, Gartner, Stewart, Katz, Hitt, Alvarez, Meyer & Venkataraman (2003), Dickson, Solomon & Weaver (2008), Finkle (2005; 2006; 2007; 2010; 2012), Finkle & Deeds (2001), Finkle, Kuratko & Goldsby (2006), Finkle, Menzies, Kuratko & Goldsby (2010; 2012), Finkle, Soper, Fox, Reece & Messing (2009), Gartner & Vesper (1994), Kabongo & McCaskey (2011), Katz (2003; 2008), Klapper & Tegtmeier (2010), Kuratko (2005), Menzies & Tatroff (2006), Neck and Green (2011), and Van Auken, Fry & Stephens (2006).

Despite these studies, sparse research has been done on the in-depth analyses of specific programs. While broad-based studies like Brush et. al., (2003) and Finkle et. al., (2006) and others have made significant contributions to entrepreneurship education, the field needs more in-depth knowledge of the inner workings of specific programs so we can use these findings as benchmarks for others. As the field continues to grow, studies such as these will become ever more imperative.

A few studies have been done in this area. In 2000, Charney and Libecap compared University of Arizona entrepreneurship graduates to graduates of other business **programs** at the school. They concluded that entrepreneurship education helped to produce self-sufficient enterprising individuals, successful business leaders and champions of innovation (Kauffman Foundation, 2001). On average, graduates of their entrepreneurship program were three times more likely to be involved in the creation of a new business venture than non-entrepreneurship business students. Entrepreneurship graduates working for large companies made $23,500 more than other business school graduates. Furthermore, entrepreneurship graduates received an average annual income that was 27% higher than the average income of non-entrepreneurship graduates. Additionally, after graduation, entrepreneurship graduates accumulated 62% more in personal assets than non-entrepreneurship students.

Finkle, Soper, Fox, Reece, and Messing (2009) described the creation of a new non-profit entity called the Entrepreneurship Education Consortium (EEC). The EEC is a coalition of seven universities and colleges whose mission is to teach university-wide students from each school about entrepreneurship. They created a viable model for fruitful inter-university collaboration and cooperation in entrepreneurship programming. Their model (including entrepreneurship centers and programs) was highly successful and can be used by other regions to plant seeds for entrepreneurial ventures.

Papayannakis, Kastelli, Damigos, and Mavrotas (2008) discussed the challenges of introducing entrepreneurship education to engineering students. Wielemaker, Gaudes, Grant, Mitra, and Murdock (2010) examined the challenges and opportunities of setting up a new entrepreneurship program at a university in Atlantic Canada as well as the method of program assessment. They stated that the development of new entrepreneurship programs will only advance the field if it is accompanied with proper assessment of program effectiveness.

Based on the preceding review, it is evident that the field needs more research to evaluate and understand the inner workings of successful entrepreneurship programs. This paper will contribute toward that goal.

CONTEXT AND MISSION

The Hogan Entrepreneurial Leadership Program was founded in 2000 by Father Robert J. Spitzer, S.J., then President of Gonzaga University, and the major benefactors, Ed and Lynn Hogan who founded the Hogan Family Foundation. *The mission of the Hogan Family*

Foundation is to promote the entrepreneurial spirit through the creation and operation of educational, civic-minded and humanitarian programs designed to encourage a more productive and contributory society (Hogan Family Foundation, Inc., 2011). The mission of the Hogan Family Foundation is highly consonant with the mission of Gonzaga University. Gonzaga belongs to a long and distinguished tradition of Jesuit, Catholic, and humanistic education. Jesuit education aims to transform the world by engaging students in the service of the human community (Gonzaga University Mission Statement, 2011). Given this context, and the compatibility of their visions, the founders of the Hogan Program sought to create a cross-campus undergraduate program in entrepreneurial leadership to attract highly capable and independent thinkers who want to make a positive difference in the world. While the focus on Jesuit, Catholic and humanistic values is unique to Jesuit institutions, other value-based traditions could be incorporated into similar entrepreneurship programs.

Mission of the Hogan Program

The mission of the Hogan Entrepreneurial Leadership Program is "to prepare students to create new ventures or initiatives that make a positive difference in society. This student-centered Program is designed for promising individuals who demonstrate academic excellence, leadership, creativity, and a commitment to serve others. The Hogan Program embraces students from all academic majors, tailoring the entrepreneurial curriculum and co-curriculum to compliment the students' major fields of study, and providing them with the concepts, tools, and experiences to responsibly create successful new commercial and social enterprises".

While the Hogan Program immerses students in the fundamental concepts and practices of entrepreneurship, its aim is much broader than creating new ventures. The goal is to provide students with the ability to seek, find, and take exploit opportunities that result in the creation of new commercial or social enterprises and/or other corporate or community initiatives. Thus, graduates of the Program will become entrepreneurial leaders in their chosen career fields, creating new enterprises or initiatives that contribute to the common good. The program has four distinguishing features that, in combination, make it highly unique:

1. Honors Program Model

Admission to the program is competitive and students enter as a cohort in the freshman year. About twenty-five students are admitted to each entering class; the ratio of the students enrolled to applications for the past three entering classes was: 2011 - 14.7%; 2010- 17.8%; 2009-20.8%. Students are selected based on their academic achievement and potential, as well as their demonstrated leadership, service, and creativity. By enrolling bright, creative, action-oriented students, and providing them with a rigorous curriculum and co-curricular experience, we prepare graduates who will be exemplary entrepreneurial leaders.

2. Concentration with Any Major

The four-year curriculum is designed to accommodate any academic major and still allow the student to graduate in four years. The Entrepreneurial Leadership curriculum was tailored from its inception to meet the needs of non-business students, which comprise about 60% of the program's enrollment.

3. Immersion in Entrepreneurial Contexts

An extensive co-curriculum is integrated with the curriculum and provides opportunities throughout the four-year program for students to experience entrepreneurial leaders, organizations and practices. These experiences include: required participation in the New Venture Lab; required internship in an entrepreneurial context; participation in idea and business plan competitions, visitation to incubators and companies; speaker series with entrepreneurs and business leaders; community service projects; and networking events.

4. Jesuit Educational Values

The Hogan Program is founded on the Jesuit philosophy of educating the whole person. Students are taught principles of ethical leadership and encouraged to develop moral values and a commitment to the common good. The primary goal is to graduate students who use their education, knowledge, and other unique gifts to make a positive difference in their careers and communities by creating new commercial and social enterprises, and/or by creating new initiatives (intrapreneurship or community initiatives) that produce positive change.

Admission

Admission to the Hogan Entrepreneurial Leadership Program is very competitive. Students are admitted as freshman and admission is limited to a select cohort of 25 students per year. Entry into the program is based on a separate application and interview process that includes the following criteria: SAT and ACT scores, grade point average, demonstrated leadership, creativity, and service to others. The program seeks students who are high achievers, academically strong, creative, independent, risk-takers who want to make a positive difference in the world. An applicant can have career interests in virtually any field or industry, for-profit or not-for-profit. Students in the program complete the requirements for a bachelor's degree in business, engineering, the arts and sciences, or education, along with a Concentration in Entrepreneurial Leadership. Students must satisfy the University and college core curricula relevant to their specific major.

There are about 100 students (In 2011, approximately 48% female and 52% male) in the program at any one time. The average entering class statistics for the current Hogan Program (all four classes) include an SAT score of approximately 1330 and a GPA of 3.84. In addition, virtually all of the entering students have held leadership positions and have been involved in community service in their high schools and/or communities; many students have also had entrepreneurial experience creating a new venture or initiative. The following majors are represented: business (39%), arts and sciences (38%), and engineering (23%). This proportion of majors has remained very stable since the program's inception.

HOGAN PROGRAM COMPONENTS

The curriculum and co-curriculum have evolved over the past ten years of the program's existence due to new initiatives inspired by students, administrators, benefactors and community partners. However, the following components, although modified to some extent over the years, have remained as central features of the program.

Curriculum

The Entrepreneurial Leadership Concentration consists of a four-year sequence of courses (See Exhibits 1 and 2). Students in each class move through the curriculum as a cohort. Thus, class sizes are small and students form a strong, interdisciplinary learning community. Business students major in accounting or business administration and take an additional 18-credit hour Concentration in Entrepreneurial Leadership. Nearly all business students in the program also take an additional Concentration in one of the traditional disciplines like finance, marketing, operations, MIS, or human resource management. For non-business students, the Concentration requires 24 credit hours because these students also take microeconomics (3-credits) and financial/ managerial accounting (3 credits) during their freshman and sophomore years.

Co-Curriculum

The Hogan Program is much more than just course work. Students are also required to participate in a variety of integrated co-curricular activities exposing them to entrepreneurial organizations, leaders, and practices. Among the most prominent of these activities are the following:

a. Internships

The Hogan curriculum requires students to do an internship. The ideal internship is one in which the student applies concepts and analytical tools from her/his curriculum in an

entrepreneurial context. Entrepreneurial contexts could be for-profit or not-for-profit organizations that are start-ups, new ventures, or established companies that are considering or creating new business ventures. **Internships** are designed to provide benefits to both students and businesses or not-for-profit partners. Interns gain valuable practical experience in applying concepts and analytical tools from their curriculum. In addition, they may receive academic credit, wages, and increase their marketability and productivity in the job market. Internship partners receive highly capable and dedicated students and exposure to current academic expertise, fresh ideas and different perspectives.

b. New Venture Lab (NVL).

All students are required to participate in the NVL sometime during their four years at Gonzaga. The NVL is a student-run consulting service that teams students with local entrepreneurs and intrapreneurs to conduct feasibility analyses, market research, business planning, and other services (See Exhibit 3). The NVL is open to all students at Gonzaga. It has grown rapidly since its inception in 2004, averaging 15-20 projects with 80-90 students a year over the past several years. While Hogan students provide most of the NVL leadership, over the past few years, half of the project team members and many of the project managers are non-Hogan students. In addition to a student-led project team, most projects also include a coach from the local entrepreneurship community who provides mentorship to the team. The NVL has established collaborations with Gonzaga's Engineering and Law schools, as well as regional business incubators and angel groups, to provide basic services where needed. An active NVL board of advisors (successful entrepreneurs and program alums) who advise on strategy and operations is certainly one of the most important parts of the NVL learning experience.

c. Regional Business Plan Competition (BPC).

The BPC was launched by the Hogan Program in 2000 for all Gonzaga students. In 2003, the competition was expanded to include three separate categories: 1) Student-Generated (including business ideas originating with students), 2) Community-Based (including projects in which students work on ideas originating with local entrepreneurs), and 3) Social Enterprises (including for-profit or non-profit ideas originating in the community or with students). In 2004, the Program initiated a collaborative effort with two other institutions in the Inland Northwest -- Eastern Washington University and Whitworth University. For each of the past six years, an average of seventy-two students participated and an average of forty business plans were submitted across these participating schools. Due to program and budgetary considerations, the competition will be discontinued after 2011. Instead, an alternative form of idea competition is being developed by the Hogan Program Director and Advisory Board.

d. Other Co-Curricular Activities.

In addition to the primary experiential learning activities outlined above, the Hogan Program has implemented a variety of other co-curricular experiences such as guest speakers by entrepreneurs and business leaders, site visits, service projects, and student clubs. Several examples are highlighted below.

> Three official Gonzaga clubs were created by Hogan Students. Two Hogan students saw a need for learning the basics of investing and formed the Bulldog Investment Group in 2006. They persuaded a group of local investors (members of a 40 year old investment club) to seed a portfolio with $18,000 and mentor them as they started. In spring of 2006, two Hogan Program students established a Collegiate Entrepreneurs Organization (C.E.O.) chapter at Gonzaga University. This student-run club sought to extend entrepreneurship education and experience to all students at the University. The CEO Club held a successful "Business Battle" sponsored by a local entrepreneur in spring 2007. Teams of students competed to generate the most profits by selling coffee on campus in an eight hour period. All profits from the competition were donated to a local charity. In 2008, at the invitation of the University of Miami, Ohio, the Hogan Program became a franchise operator of *Edun Live on Campus*, a social enterprise whose mission is to sell T-shirts that are made in sub-Saharan African countries. This social venture is operated by a team of Hogan Program students.
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> From 2007-09, during the summer between their junior and senior years, all Hogan students made a three-day field trip, called the Seattle Sojourn, to Seattle, Washington. Each student was matched up with an entrepreneur in the student's chosen field of interest for an afternoon at the entrepreneur's place of business (including non-profit organizations). There were two scheduled social networking events where students met other entrepreneurs in the Seattle community. The Sojourn ended with a class visit to a major Seattle company; site visits have included Microsoft, Amazon, and Accenture. This initiative was discontinued in 2010 due to budgetary constraints.
>
> In 2007, a team of senior student leaders in the Hogan Program initiated a Legacy Project to start a business and donate the proceeds to a local charity. Students working on the Legacy Project solicited a number of local businesses and advertisers to underwrite a board game called "Zagopoly". This game, a variation on *Monopoly*, was sold to students, alums, parents, and friends during the current academic year. The profits of $7,000 from this venture were presented to a local charity selected by the students.

STRUCTURE AND FUNDING OF THE PROGRAM

The Hogan Program was designed initially by a team that included the President and Academic Vice President of the University, as well as the Deans of the schools of Business, Engineering, and Arts and Sciences and several faculty members. The intention of this team was to implement the vision of the founders by creating a unique, student-centered program that would attract and educate a select group of students representing a wide variety of majors on campus.

Since its inception, the Hogan Entrepreneurial Leadership Program has evolved to become an established Center of Excellence in the University. The program is featured by the Admissions Department as one of the most attractive and successful academic programs on campus. Although housed in the School of Business Administration building, the Hogan Program is structured as a campus-wide program with its own budget. The Program is staffed with a full-time Director, a full-time Entrepreneur-in-Residence, and a full-time Program Coordinator. Three tenure-track faculty members and one or two non-tenure track faculty members teach courses in the Entrepreneurial Leadership Concentration. A Hogan Student Leadership Team of twelve students provides leadership and direction on Program initiatives.

An Advisory Board of about twenty-five entrepreneurs, university administrators, faculty, and students provides additional guidance and support. Key faculty liaisons in engineering, computer science, and law collaborate with the Hogan Program staff and students to develop cross-disciplinary senior design projects and NVL projects. For example, a former NVL project for a start-up company that planned to make carbon fiber wheel chairs included an engineering student to design a prototype for the product. Business students worked on the market and financial feasibility of the product. The Dean of the School of Business Administration (SBA) provides some administrative guidance and support for the Hogan Program and several faculty of the SBA serve as student advisors. Additionally, the Associate Dean of the MBA and Masters of Accountancy Programs collaborates with the Hogan Program to offer entrepreneurship courses in the MBA program.

The Hogan Program enjoys strong and sustainable financial support from benefactors and the University. Initial funding came from the founding benefactors, who continue to be the primary funders with a perpetual annual gift. The Hogan Program has also received grants for various initiatives over the years, including funding from: 1) the Herbert B. Jones Foundation, for the Business Plan Competition and enhancements to the curriculum and co-curriculum; 2) the Coleman Foundation, for enhancements to the New Venture Lab and the creation of new courses; 3) “Hogan Angels”, entrepreneur benefactors who pledge annual support and/or who provide student scholarships for the program; and (4) Gonzaga University, for continuing financial support to augment the funds raised from these outside sources.

In addition, a substantial gift was contributed by the Hogan Family Foundation for the building of the Hogan Entrepreneur Center, which opened in December 2004. This facility,

included as part of an extensive renovation of the School of Business Administration, provides classroom space, New Venture Lab space, offices, and a board room dedicated to support Hogan Program coursework and co-curricular activities. In 2008, through the initiative of the Hogan Program Director, the University also approved funding for an additional tenure-track faculty member in entrepreneurship, whose role is to teach courses in the Hogan Program, and also to offer entrepreneurship courses open to non-Hogan students in the School of Business Administration and across the university.

STUDENT AND PROGRAM OUTCOMES

The Hogan Entrepreneurial Leadership Program offers several benefits to students and other stakeholders. The students gain entry into a highly selective and prestigious program. The Hogan Program is considered as one of Gonzaga's Centers of Excellence and it enjoys a strong positive reputation in the University and community. Students are exposed to a rigorous four-year curriculum and co-curriculum that prepares them to identify and seize opportunities for creating new ventures and other initiatives. The program emphasizes values-based entrepreneurial leadership, differentiating it from many other entrepreneurship programs. Graduates of the program have gained employment at large companies, new ventures, and non-profits; many have continued their education in graduate schools.

The Gonzaga University community benefits through: a) cross-campus emphasis that stimulates innovative, entrepreneurial thinking and activity among students, faculty, and administrators; b) specific collaborations with Schools of Business Administration, Engineering and Applied Science, and Law; c) a high-profile program that has become one of the University's centerpieces for recruiting high-caliber students; and d) success in attracting new resources from benefactors and foundations to the University.

The local/regional community benefits through: a) engaging entrepreneurs and entrepreneurial companies through a variety of co-curricular activities both on campus and in the community; b) offering assistance to entrepreneurs through the New Venture Lab and business plan competitions; c) connecting talented students to the business and non-profit communities through internships, mentorships, and networking events; and d) stimulating entrepreneurial activity in the region by leading a cross-institutional business plan competition and through the New Venture Lab.

Student Outcomes

Student and alumni accomplishments have been outstanding to date. Students have consistently reported high satisfaction with the curriculum and co-curricular activities and the program continues to be refined in part based on the results of annual program evaluations. Within one year of graduation, nearly all of the graduates have gained employment in major

companies, start-up ventures, or non-profit organizations, or have continued their education at top graduate programs around the country (see Exhibit 4). Student and alumni feedback indicates that the Hogan Program education and experience are key differentiators in their employment and acceptance into graduate schools. Many Hogan Program alumni report continued success in their early careers and graduate school work.

Several of the student teams have been finalists in prestigious national, regional, and local competitions (see Exhibit 4). For example, in 2005, *Original Lacrosse*, won first place in the Gonzaga University Business Plan Competition, Student-Generated category, and placed among the eleven semi-finalists in the *Fortune* Small Business Competition. Also in 2005, a Hogan Program team, *Mentor Partnering Resources*, winner of the Gonzaga University Business Plan Competition, Social Enterprise Category, was a semi-finalist in *Microsoft* Imagine Cup Business Plan Competition. In 2012, a team of engineering students won a first place $90,000 grant in the U.S. Environmental Protection Agency's 8th annual *People, Prosperity, Planet* competition. Over the 10 years of its existence, the Gonzaga Business Plan Competition has resulted in the launching of 24 new commercial or social ventures, about half of which had the direct involvement of Hogan Program student teams.

Other Hogan Program Outcomes

In addition to its contribution to successful student outcomes, the Hogan Program has been recognized as a successful model of entrepreneurship education by several organizations and foundations. Moreover, the program has been a catalyst for change at Gonzaga University. Opportunities for entrepreneurship education and experience have been expanded to include programs and students beyond the initial select few who were fortunate to be admitted to the Hogan Program.

Awards and Grants

The Hogan Program was selected as Organization of the Year by the Spokane region's *Technet* Catalyst Awards in October 2005. The program was also one of eleven recipients of the competitive Excellence in Entrepreneurship in Teaching Colleges grants awarded by The Coleman Foundation. This three-year grant of $150,000 provided an opportunity to expand entrepreneurship education and experience to students across the university. In 2008, the Hogan Program was awarded grant of $150,000 from the Herbert B. Jones Foundation to collaborate with the Spokane Community College (SCC) on a project that linked the entrepreneurship programs from both institutions through the New Venture Lab. The Hogan Program provided consultation on curriculum to SCC and the NVL provided student consultation on SCC student business plans. The Hogan Program was also a key collaborator with the School of Engineering and Applied Science in securing a competitive $50,000 grant (one of 22 schools nationally) from

the Kern Family Foundation. This grant is intended to incorporate an entrepreneurial mindset among students and faculty in engineering. The successful implementation of this grant has led to the subsequent awarding of two subsequent grants from the Kern Family Foundation totaling over $250,000.

New Entrepreneurship Courses for Non-Hogan Students

Since its inception, the Hogan Program has attracted increasing attention to entrepreneurship education at Gonzaga. Many students who applied for admission to the program, but were not accepted, were still interested in taking entrepreneurship courses. Moreover, other non-Hogan students who participated in the New Venture Lab, Business Plan Competition and other experiential activities, wanted additional course work in entrepreneurship. To respond to this increasing demand for entrepreneurship education, the Hogan Program successfully attained a three-year (2005-2008), $150,000 competitive grant from the Coleman Family Foundation's Excellence in Entrepreneurship for Teaching Colleges Program for the purpose of expanding course offerings to students not in the Hogan Program.

Beginning in 2006, three courses were developed and opened to all junior–level, non-Hogan students campus-wide. BENT 491 Creating New Ventures is an entry level course focusing on the fundamentals of entrepreneurship, the business planning process, and raising funds. BENT 495 New Venture Lab is an experiential course for students who participate in the New Venture Lab. MBUS/MACC 696 New Venture Lab is an experiential course for students enrolled in the MBA or Master of Accountancy programs. BENT 493 Social Entrepreneurship is a course in social entrepreneurship that focuses on opportunity recognition for social enterprises with an emphasis on feasibility analysis.

Then in 2011, as a sign of continuing momentum, the School of Business Administration approved a new undergraduate Concentration in Entrepreneurship and Innovation. As part of this concentration, a new introductory course was created called Creativity, Innovation, and Entrepreneurship. In 2012, a campus-wide Minor in Entrepreneurship and Innovation was approved by the faculty and will be offered beginning in fall 2013. The minor includes a new course option in Technology Entrepreneurship.

New Entrepreneurship Faculty

As noted earlier, in 2008 the Hogan Program Director secured a line for an additional faculty member in entrepreneurship who would be responsible for teaching courses in the Hogan Program as well as several newly created undergraduate and graduate courses. Also in 2008, the University established the Pigott Professor in Entrepreneurship, an endowed professorship that, in addition to teaching and research, is responsible for faculty and curriculum development in

entrepreneurship across the University. The chair was hired in the Fall 2010 and currently teaches entrepreneurship courses within the Hogan Program and university-wide.

LESSONS LEARNED

In the process of launching and growing the Hogan Program, we have learned some important lessons that other institutions might want to consider:

1. Vision tied to university vision/mission. A major factor in the success of the Hogan Program is its mission of providing rigorous entrepreneurial leadership education and experience in a campus-wide effort steeped in the Jesuit educational tradition. This values-based mission is compelling to University and community leaders, benefactors, faculty, and students.
2. Top management support. The University President, along with Mr. and Mrs. Hogan, were the visionaries for the program and committed financial and other support from the beginning. In addition, the President, the Academic Vice President, the Deans of the Schools of Business Administration, Engineering, and Arts and Sciences, and several key faculty leaders, crafted the initial structure and framework for the program.
3. University-wide structure and support. The program was initially established as a campus-wide effort and reported directly to the President of the University. The President, Academic Vice President, the Deans of the Schools of Business Administration, Engineering, and Arts and Sciences all served on the program's Advisory Board.
4. Strong advisory board. In addition to representation of university leadership noted above, the Advisory Board consists of recognized community entrepreneurs and business leaders. Student leaders and faculty are also integral participants on the Advisory Board. In addition, a cross-campus Faculty Advisory Committee was established to provide additional input and direction for the Program.
5. Focus on students, faculty and community. A successful program is a result of effectively managing the "three-legged stool" of students, faculty and community, including benefactors. Our focus has remained squarely on the education of students. We engage the students, faculty, community leaders and benefactors in a continuous effort to improve our ability to execute the program's mission of education.
6. Invite campus-wide participation. Through the Advisory Board, the Faculty Advisory Committee and the students, there is a concerted effort to establish partnerships across the institution. The New Venture Lab, Business Plan Competition, and new entrepreneurship courses are open to all students, regardless of major.
7. Connect students with community. The Hogan Program actively establishes and maintains relationships with a variety of entrepreneurs and leaders of early stage companies and non-profit organizations. These partnerships open doors to internships, site visits, guest speakers,

advisory board members, BPC judges, networking, and other learning opportunities for students and faculty.

8. Connect the program with other academic and administrative support groups on campus. Since the curriculum of the Hogan Program is unique and requires careful coordination with other departments, we have established close working relationships with Deans, department heads, and faculty advisors. In addition, we have forged mutually beneficial partnerships with University Admissions, Financial Aid, and University Relations departments. We look for projects that can add value to others. For example, the Hogan Program's network of relationships with entrepreneurs has introduced a new group of potential benefactors to the University.
9. Strong balance of academic and practitioner leadership. The program's first director was an academic, the assistant director was an entrepreneur, and many of the advisory board members were entrepreneurs. The first Director's successor was an entrepreneur and business leader in the community; at that time an academic director was retained to assist with curriculum and faculty matters. Today, the program is led by an academic with significant business experience and the program has appointed an entrepreneur-in-residence as assistant director. Maintaining this dual emphasis on both academics and practice is important to the integrity and credibility of the program both on and off campus.
10. Stay focused. In the start-up stage of the program, there were many distractions and bumps in the road (note, we started in 2000 during the dot.com bust). Because we engaged a wide variety of constituents and stakeholders (as described above) there were many different opinions about the structure, direction and operations of the program. It is absolutely critical during these times to stay focused on the program's essential mission – the education of outstanding entrepreneurial leaders. As the program has evolved, there are also many opportunities to expand through grants and benefactor gifts. Here again, it is essential stay focused and avoid "mission creep" -- be selective in accepting only new resources that add sustainable value to the primary mission.

CONCLUSION

Over the ten years since its inception, the Hogan Program has become a viable model for innovative, undergraduate entrepreneurship education. Based on the outcomes cited above, we believe that the mission and goals of the program are being achieved. The students are immersed in a curriculum and co-curriculum with a rigorous foundation in the content and practice of entrepreneurial leadership. In addition, they are challenged to exercise leadership skills in recognizing and pursuing opportunities to contribute to society, whether by starting new commercial or social ventures, engaging in corporate intrapreneurship, or by creating initiatives to address societal needs. Many Hogan Program students have been recognized in national competitions for their business plans or other accomplishments. Program graduates have been

successful in gaining employment in large firms, start-ups, new ventures, not-for-profit organizations, and volunteer organizations around the world. Many graduates have continued their education in medicine, law, engineering, the sciences and other graduate programs. Beyond the students' and graduates' accomplishments, the Hogan Program has been a catalyst for growth in entrepreneurial activity at Gonzaga University and in the greater Spokane community.

As noted earlier, even though the core elements of the Hogan Program have remained stable over the past ten years, we have operated under a philosophy of continuous improvement. Currently, we are considering several changes to the Program's structure and content. First, we anticipate moving to a three-year model. Under the current four-year model, students do not take any classes in the spring semester of their freshman and sophomore years. We have found that some students become less engaged in the program due to the lack of meaningful contact during these gaps in the curriculum. In the three-year model, students would enter the program in their sophomore year, and would take courses in every semester throughout the Program. In addition, the selection of new students would be conducted in the freshman year and would incorporate more face-to-face contact, including personal interviews, between the Program administrators and prospective Hogan Program candidates. This will make the selection process more accurate in selecting students who are most likely to benefit from and thrive in the Program. These changes will help consolidate the curriculum and intensify the experience and, thereby, provide for a more consistently engaged cohort. In addition, we plan to move away somewhat from an emphasis on business planning and place more emphasis on feasibility analysis. Creating a full business plan will still be required in the senior incubation project course, but students will be required to conduct feasibility analyses on a variety of other projects throughout the Program. Finally, we are making a more concerted effort to engage our alumni to continue to participate in the program in meaningful ways. For example, several of our alums serve on the Hogan Program Advisory Board and the New Venture Lab Advisory Board. Some students serve as guest presenters in classes; several graduates are consistent financial contributors. Many alums have served as mentors to existing students and have introduced opportunities for internships and employment. Now with over two hundred Program graduates dispersed around the world, we view the continued engagement of our alumni as an extremely valuable resource, yet to be fully tapped.

No doubt, the Hogan Program will continue to evolve. As it does so, it will remain focused on rigorous, values-based education that provides our students with the ability to recognize and exploit opportunities to create new ventures and initiatives that make a positive difference in their organizations, communities and society. We believe that the core elements of this model and the insights gained from our experience can be readily applied by other universities and colleges.

AUTHORS' NOTE

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EXHIBIT 1: COURSE REQUIREMENTS FOR THE ENTREPRENEURIAL LEADERSHIP CONCENTRATION

First Year

ENTR 101 The World of Entrepreneurship, 2 creditsOne of the following three courses *

ECON 201 Microeconomics (for any major), 3 credits

ECON200 Economic Analysis (for engineering majors)

ECON 270H Honors Economics (for any major, with permission)

*These credits count towards core social science requirements for Arts and Sciences majors. Can be taken in second year if necessary.

Second Year

ENTR 201 Social Entrepreneurship, 2 credits

ACCT 263 Accounting Analysis, 3 credits

* Business students must take ACCT 260 Principles of Accounting I (3 credits) and Principles of Accounting II (3 credits).

Third Year

ENTR 490 New Venture Creation, 5 credits

ENTR 497 Internship, 0-3 credits

Fourth Year

ENTR 494 Incubation Project, 5 credits

ENTR 498 Entrepreneurial Leadership, 3 credits

EXHIBIT 2: COURSE DESCRIPTIONS FOR THE ENTREPRENEURIAL LEADERSHIP CONCENTRATION

ENTR 101 The World of Entrepreneurship 2.00 credits
An introduction and overview of the world of entrepreneurship including an introduction to economics, the role of society and government, legal and ethical issues, fundamentals of entrepreneurship, creating and managing new ventures in the commercial or non-profit sectors, and the various functional areas of business. Fall

ENTR 201 Social Entrepreneurship 2.00 credits
This course provides students with an introduction to social entrepreneurs, the ventures they create, and how these ventures create social value. It provides students with concepts and tools they will need to pursue their own social enterprises. Students will address each of the following key components: opportunity/problem recognition, solution identification (value proposition), concept development, venture creation, value assessment, and the communication of the idea and venture goals. Fall. Prerequisite: ENTR 101

ENTR 490A New Venture Creation 1.00 credit
This segment of the course focuses on marketing research and planning for new ventures. Topics include: idea generation, estimation of demand, segmentation analysis, competitor analysis, using secondary and primary data in marketing research, and marketing strategies for new ventures. Fall. Prerequisite: ENTR 201

ENTR 490B New Venture Creation 2.00 credits
This segment of the course focuses on financial analysis and management of new ventures. Topics include: capital budgeting, time value of money, net present and future value, cash flow, risk/return, valuation, and approaches to financing new ventures. Students will also learn to develop pro forma financial statements for new ventures. Fall. Prerequisite: ENTR 490A

ENTR 490C New Venture Creation 2.00 credits
This course integrates material from previous courses and includes the following topics: organizational life cycle, legal issues, industry analysis, entrepreneurial strategy, creating and sustaining a competitive advantage, attracting and maintaining an effective leadership team and managing growth. Prerequisite: ENTR 490A & B

ENTR 494A Incubation Project 3.00 credits
First semester of an applied incubator experience in which students apply entrepreneurial concepts and analytical tools to the creation of an actual new commercial or social venture. Students can develop their own project or work on projects for local incubators or entrepreneurs. The end result of this project is to produce a fundable business plan. Fall. Senior Standing.

ENTR 494B Incubation Project 2.00 credits
Second semester of an applied incubator experience in which students apply entrepreneurial concepts and analytical tools to the creation of an actual new commercial or social venture. Students can develop their own project or work on projects for local incubators or entrepreneurs. The end result of this project is to produce a fundable business plan. Spring. Senior

ENTR 497 Internship 3.00 credits
An approved internship is required for completion of the concentration in entrepreneurial leadership. The ideal internship allows the student to apply concepts and analytical tools from the curriculum in an entrepreneurial context. Approved internships consist of a minimum work requirement of 180 hours and completion of a written report summarizing the learning experience.

ENTR 498 Entrepreneurial Leadership 3.00 credits
A capstone course that examines the leadership characteristics, including ethical virtues, of successful entrepreneurs. The course emphasizes the understanding that entrepreneurs bear a social responsibility to contribute to the common good through their business endeavors. Spring. Senior Standing.

EXHIBIT 3: NEW VENTURE LAB

The **New Venture Lab** (**NVL**) is a student-run lab that provides initial assessment and evaluation of potential business ideas, development of business plans, research and other activities that prepare new ventures for funding. A student Leadership Team manages the NVL and provides direction and operational support with guidance from a team of advisors from the business community.

The NVL addresses two major needs.

- A "learning laboratory" where students can apply new entrepreneurial skills in real business situations.
- A "hands-on" incubator of early stage business ideas in the region.

The NVL provides added value to entrepreneurs by:

- Applying students' current knowledge of state-of-the-art principles and practices.
- Tapping students' energy, motivation, and persistence.
- Leveraging students' access to expert faculty, advisors, and staff.

The NVL Activities

Three levels of new venture development services are provided. These are performed by Hogan Program students under the guidance of experienced faculty, advisors and staff.

Idea - Initial Assessment and Evaluation

Hogan Program students help identify potential new ventures by screening business ideas and proposals from the community and other students. Students interview pre-qualified individuals who have business ideas and assess and evaluate the potential of the ideas using specified criteria, reviewing these new venture ideas with a board of experienced entrepreneur advisors. Based on this review, a determination is made whether to pursue the idea in the NVL. A response to the entrepreneur explains the decision, outlines the next steps or suggests alternatives the entrepreneur may wish to pursue.

Proof of Concept – Research and Analysis

For those ideas that become NVL projects, students provide appropriate research to validate:

- The need for the solution provided by this idea.
- The "value proposition" for customers of this solution.
- The feasibility and/or practicality of the product.
- The competition and potential for competitive barriers.
- The potential market capable of generating needed revenue.
- The solution's manufacturability and/or profitability.

Business Plan – Preparation for Funding

Upon completion of the "Proof of Concept" level, students provide coaching on how to prepare and present an effective Business Plan. This includes activities such as:

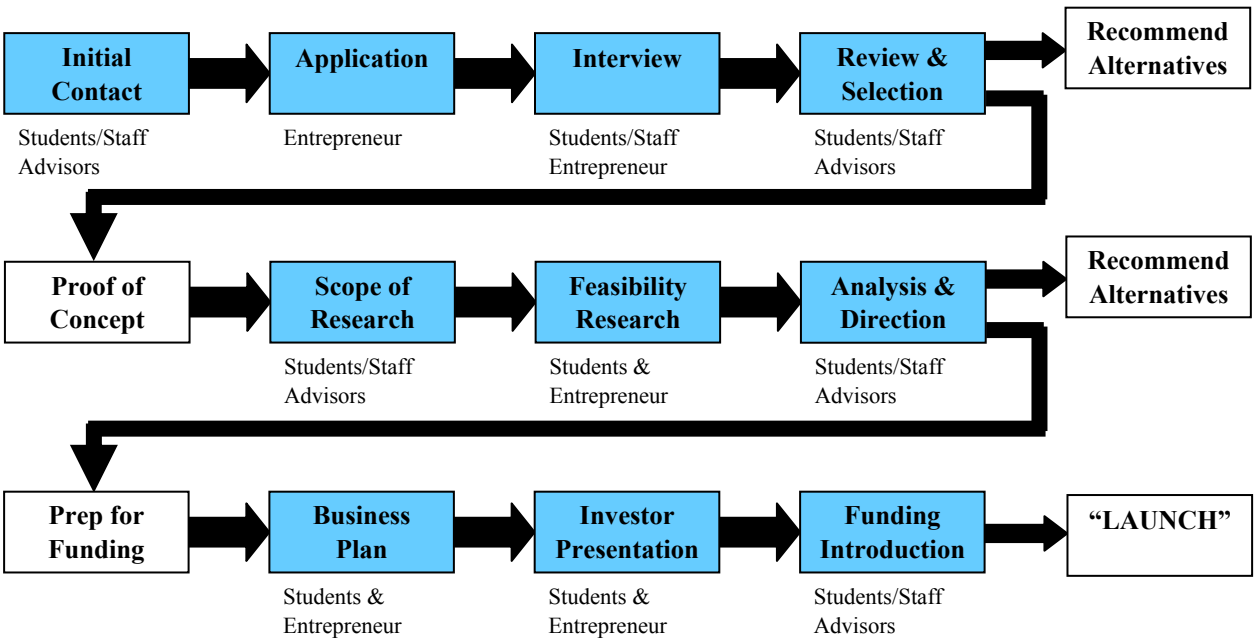
- Preparing an Executive Overview that will capture investor interest.
- Ensuring that claims and forecasts are supported with quality research.
- Completing a financial plan that is realistic and achievable.

- Developing a compelling presentation for potential investors.
- Demonstrating that the proposed management team is capable.

Collaboration

The NVL collaborates with several entities, both on campus and in the business community, to apply the best possible talents and services to each project. Because the Hogan Program includes students from all major fields of study, those students have access to the entire faculty, staff, lab and research resources of the university. The Hogan Program is actively engaged with other entrepreneurial programs in the community including Connect NW, Sirti, Spokane Alliance of Angels, EWU, Whitworth, PNNL and the many trade and economic development associations.

NVL Process Flow



Note: Each New Venture idea will have a unique path through the process.

EXHIBIT 4: SELECTED HOGAN PROGRAM STUDENT ACCOMPLISHMENTS

Note: The highlights below reflect some of the accomplishments of about 200 students that have graduated from the Hogan Program.

Employment: Our graduates are now employed at major companies such as *Medtronic, Intel, CH2M Hill, Nestle, Raytheon, PWC, Ernst & Young, Google, KPMG, NBC, Booze Allen, Boeing, Disney, Ingersoll Rand, and Deloitte.* Some are employed at start-up ventures and small businesses like *GenPrime, Desautel Hege, Manta Ray Consulting, ATX Sports, Fizzy Media, Ivycorp, Next IT and Green Cupboards.* Others are working at non-profit organizations: *Fred Hutchison Institute, Children's Research Institute, Future foundation (London), Salt Lake Aviary, Sarah's Hope (Baltimore), Jesuit Volunteer Corps, Teach for America, Human Rights Guatemala, Colegio Americano Mexico, Institute for Systems Biology, Peace Corps,* and elementary and secondary schools.

Graduate School: Our graduates have continued their education at graduate schools across the world : University of Texas (Civil Engineering), University of Washington (Electrical Engineering, Medicine), Seattle University (Law), Columbia University (Public Policy, Nursing), Emory University (Medicine), Creighton University (Dentistry, Medicine), University of Portland (MBA), Gonzaga University (MBA, Law), WSU (English, Computer Science), Oxford (Entrepreneurship), Trinity Dublin (International Studies), London School of Economics (Micro-Finance), U of Minnesota (PT), USC (Finance), UC Berkeley (MBA), Boston (Law), Penn State (PhD), Indiana (Social Development), OHSU (Medicine), American U (Micro-Fin.), Colorado State (PhD Engineering), and Hastings (Law).

Some Notable Achievements:

- Oxford MBA # 2 in class, # 2 in International VC competition at Stanford.
- Fulbright scholar in Ukraine now teaching at Ukrainian Catholic University.
- Teaching fellowship in Infectious Diseases at UW Med School and ISB.
- Rocket Scientist in R&D lab at Raytheon.
- Project Manager for billion dollar particle accelerator in New York.
- Co-founded Alloken, built lead product, and sold company all while working for Google.
- Peace Corps in Ethiopia, event mgr Spokane, MBA Trinity, Dublin & now in Rwanda.
- Hastings Law, Commissioned in Navy JAG Corp.

Business Plan Competitions: National/International/Regional

- Team of engineering students won a first place $90,000 grant in the U.S. Environmental Protection Agency's 8th annual People, Prosperity, Planet competition, 2012.
- *Original Lacrosse,* semi-finalist in *Fortune* Small Business Competition, 2005; incorporated.
- *Mentor Partnering Resources*, semi-finalist in Microsoft Imagine Cup Business Plan Competition, 2005; incorporated as *mentors4students* in 2006.
- *Flying M Washout*, selected as First Place Winner in the Pacific Northwest Student Entrepreneur Competition, Sponsored by The Entrepreneurship Center, St. Louis University, 2003. This student was one of fifteen finalists in Global Student Entrepreneur Award Competition, Chicago, 2003.
- *Light House Entertainment*, First Place in Gonzaga University Business Plan Competition, 2006.
- *Bounce Free*, Finalist in University of Washington Business Plan Competition, 2005.
- *Experience Art*, Finalist in University of Washington Business Plan Competition, 2005.
- *Original Lacrosse*, First Place in Gonzaga University Business Plan Competition, 2005.
- *Spokane Community Market*, First Place in Gonzaga University Business Plan Competition, 2005.

HOW DO FINANCIAL, INSTITUTIONAL, AND HUMAN CAPITAL FACTORS AFFECT UNIVERSITY START-UPS?

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ABSTRACT

We present a brief review tracking the advancements in academic entrepreneurship. Although the practice of academic entrepreneurship is on the rise, there is very little scholarly work to advance research and practice in the field. We examined variables such as patent filings, patent licensing, equity deals, university start-ups and the factors that could influence them. We suggest that these variables could serve as metrics for tracking the progress in academic entrepreneurship. We also propose that sponsored research expenditure, university entrepreneurial culture, and certain human capital factors can affect the number of university start-ups.

INTRODUCTION

Besides the number of publications and citations, the number and quality of patent filings, as well as the number and viability of university start-ups resulting from research efforts within science and engineering laboratories have become methods of demonstrating research impact. The art of starting new ventures by the academic sector is gaining popularity for a few reasons one might envisage. Starting a company based on academic research: (1) adds to the relevance of the research, especially if the company is sustained in the long haul; (2) appears to complement research publications because start-up companies can also serve as conduits for information dissemination; (3) highlights the tenacity, talent, and entrepreneurial prowess of the academic who spearheads the start-up; and (4) positively impacts the economy of the region where it is located by bolstering employment (Vincett, 2010). Academic entrepreneurship (AE) has been defined as "the involvement of academic scientists and organizations in commercially relevant activities in different forms, including industry-university collaborations, university-based venture funds, university-based incubator firms, start-ups by academics, and double appointments of faculty members in firms and academic departments" (Pilegaard, Moroz, & Neergaard, 2010). Other authors have restricted the definition to new venture creation that only involves the exploitation of intellectual property from the academic sector (Fini, Lacetera, & Shane, 2010). Regardless of how AE is defined, there is an explosive growth in the practice of

AE, and universities are not only attempting to foster the entrepreneurial culture on their campuses but they are also becoming sophisticated in the company spin-off process in order to maximize profits.

PROGRESS IN ACADEMIC ENTREPRENEURSHIP

Until the passage of the University and Small Business Patent Procedures Act (or the Bayh–Dole Act) enacted by the U.S. Congress in 1980, very few universities embraced the idea of faculty members engaging in commercial activities; therefore, entrepreneurship was relegated to non-academic or industrial sectors. The notion was that university should solely focus on pure academic functions (Lee, 1996). Although it is true that the fundamental mission of a university is the creation and dissemination of knowledge, both new venture and new knowledge creation are vital drivers of renewed economic activity. Therefore, it is necessary in this day and age for universities and their faculty members to do both.

Several events could be used to track AE progress, namely invention disclosures, patent disclosures, licensing deals, equity deals, number of start-ups, number of successful start-ups, number of newly public companies to which a university had previously licensed a technology, presence of a research technology park, products introduced into the marketplace by university spin-off companies, and so on.

According to the Association of University Technology Managers (AUTM, 2008), before 1980 the aggregate number of patents per year obtained by U.S. universities was under 250 and discoveries were rarely commercialized for public use. In 2000, the association reported that licensed technologies from U.S. universities led to the introduction of 347 new commercial products to the marketplace (AUTM, 2000). In 2002, AUTM reported that of 26,086 active license agreements, about 23 percent of which were linked with product sales by licensees. Also, 11,089 new patents were filed and a total of 5,329 new licenses (and options) were executed in 2004 (AUTM, 2008). In 2002 and 2008, the number of new commercial products introduced to the marketplace was 569 and 648, respectively. By the end of the 2008 fiscal year, 3,381 university start-up companies were still operating with a total sponsored research expenditure of $51.47 billion. Another interesting piece of the AUTM findings was that 72 percent of newly formed companies operated from their institutions' home state (AUTM, 2008), suggesting that university-based spin-off companies tend to be making important economic contributions in their home-states; however, when a cumulative effect of all these spin-offs is considered, a national economic contribution due to their business activities emerges. Furthermore, universities were financially benefiting from the spin-off companies using instruments such as equities. In an investigation of 124 research universities, Feldman et al. found that 1978 was the earliest date reported for an equity deal negotiated by a university, but by 2000, 70 percent of universities took equity in companies licensing their technologies - a jump from 1992 when university-equity participation was only 40 percent (Feldman, Feller, Bercovitz, & Burton, 2002).

One observer reported a huge impact on national economy in terms of the employment of 1.1 million people and the generation of $232 billion in world-wide annual sales directly linked to spin-off companies from just one university - Massachusetts Institute of Technology (MIT) (BankBoston, 1997). MIT's performance is atypical; its record number of spin-off companies and economic contribution margins can be traced back in the university's long history of academic entrepreneurship since World War II. So, for a more representative U.S. university, Steffensen et al. investigated the nature of spin-off companies from the University of New Mexico (UNM) and found that spin-off companies from UNM that maintained some type of relationship with the university's research centers had employed a total of 108 people in and around Albuquerque, New Mexico, the home of UNM (Steffensen et all, 2000). Whatever the economic impact, global or local, there is evidence that academic entrepreneurship is on the rise.

CONTRIBUTION TO LITERATURE

Despite many inspiring stories of university spin-offs, including the Cisplatin cancer treatment drug company from Michigan State University and Gatorade from the University of Florida, it is surprising that there is little research specifically directed towards AE. With minimal research to guide academic entrepreneurs, it appears that some universities have taken a hit or miss approach as there have been discouraging stories of failed university spin-off companies as well (Sigurdson & Reddy, 1995). For example, Riley reported that some universities have maintained a culture of loading up their licensing portfolios with untested start-ups and small, privately-held companies (Riley, 1998). One obvious reason for this behavior is to reap the financial benefit of issuing technology licenses and selling company stocks. Because AE is gaining traction, it is imperative, now more than ever, to understand how to create new university-based start-ups, identify the "entrepreneurship mix" as well as factors that lead to a successful start-up.

To shed light on this, Powers and McDougall (2005) investigated the effects of particular resource-based factors on the number of start-up companies formed and the number of newly public companies to which a university had previously licensed a technology. The authors examined industry research and development (R&D) funding and venture capital munificence (financial factors), faculty quality (human resource factor), and patent portfolio importance and age of the university's technological transfer office (TTO) as organizational resource factors. While the authors' work clearly advanced the knowledge in the field, it is our belief that there are other influencers of AE.

We are interested in studying the success of universities as a new venture creation vehicle by measuring the number of university start-ups and determining how this number is affected by the level of total sponsored research expenditure, university entrepreneurial culture (institutional factor), and three human capital factors, namely the presence of graduate students, a university research center-type personnel in the startup and an entrepreneurship expert/business manager -

someone other than the founding faculty member with the original idea. The human capital factors we examined here are often excluded in the study of university start-ups because, contrary to popular notion in AE, which mainly emphasizes founding faculty and venture capitalist, we believe that five different categories of people are often involved in the technology transfer process. The five categories are: the venture capitalist who funds the start-up, the faculty whose idea is exploited to start a company, entrepreneurship expert (or business manager) whose duty is to run the business affairs of the start-up, graduate students working with the founding faculty, and the university research center-type personnel functioning as facilitator.

We are certainly not making the case of the "more-the-merrier" sort of approach because, in practice, just throwing more personnel at a problem does not necessarily improve team efficiency. In fact, it could make it worse by turning the whole endeavor into a premature bureaucracy. Rather, we are suggesting that having sufficient level of research and administrative support will ensure more new venture creation, and that if the sufficient level and in the right combination is not there, then the number of start-ups will fall off, maybe even dramatically. We agree that human capital within an organization can be viewed as a diversified portfolio of "stocks" and "bonds", plus idiosyncratic risk (Chen, Ibbotson, Milevsky, & Zhu, 2006). The contribution of faculty members is important, especially since they usually spearhead the start-up. Powers and McDougall (2005) showed a positive correlation between the quality of faculty and the number of university start-ups. Their results indicate that human capital, among other things, has a significant effect on university start-ups, but, again, the authors only considered one human capital category – faculty. Venture capitalists (VCs) are another group of human resources that could impact the new venture entrepreneurial. Even though they primarily fund start-ups, they could make meaningful contributions as core members of the start-up team (Bower, 2003). Their role in the start-up process is well known to be crucial.

THEORY AND PROPOSITIONS

Total Sponsored Research Expenditures

It is common knowledge that obtaining financial capital is vital for conducting academic research. However, because many university spin-offs often rely on university's scientific and engineering research activities, expenditure associated with this type of research may have an impact on the number of spin-offs produced by a university. Powers and McDougall (2005) previously examined how the level of industry research funding received by an institution relates to the number of start-up companies formed. Industry funding is important because it is usually ear-marked for specific projects such as the development of prototypes or preliminary scientific experimentation to verify hypotheses. Industry-backed research activities, aimed at addressing specific tasks, tend to be "applied" in contrast to traditional "academic" research. The ramification is that successful industry-backed research projects can spin off technology that is

readily transferred to market. Unfortunately, the amount of industry research funding that is invested in university research is minuscule compared to funding from government (Powers et al., 2005). This is especially true in public universities. Furthermore, most research active universities require their faculty, especially those in the sciences and engineering, to compete for government grants to fund their research (Etzkowitz, 1998), and so, as R&D became more relevant over the years, the U.S. government, through the National Science Foundation (NSF), has consistently increased university research dollars. For example, for the 1953 fiscal year, NSF reported a funding of $121 million ear-marked as "university-administered, federally funded research and development centers" (NSF). This amount was increased to approximately $ 7.8 billion for the 2006 fiscal year - a 64-fold increase. Therefore, based on the aforementioned evidence, we propose that:

P1 *The level of total sponsored research expenditure by universities will be positively related to the number of university start-up companies formed.*

University Entrepreneurial Culture

Corporate culture refers to those values, beliefs, and behaviors upon which firms form their image. Corporate culture tends to reflect the mission and orientation of the company. Culture evolves, perhaps due to people with different backgrounds working together, or due to the availability of an enabler such as technology. The culture within an organization can vastly affect the organization outcomes. Benitez-Amado, Llorens-Montes and Perez-Arostegui (2010) showed that entrepreneurship culture can predict firm's market performance. They further stated that investment in information technology resources had a positive effect on the development of intrapreneurship culture, which in turn positively influenced firm performance (Benitez-Amado et all, 2010). We considered entrepreneurial culture to be an institutional factor because culture is a feature that must be systemically entrenched within an organization. Srinivas made the case that it is not enough for performance management to be a company objective, but that it must become part of organization's culture in order to manifest real value (Srinivas, 2009). Also, it has been shown that a firm's culture affects its competitive advantage (Barney, 1986; Hult, 2002), further underscoring the importance of organizational culture and how it can affect the expected outcome.

Apparently, universities that have a culture that promotes entrepreneurship would have greater number start-up companies formed compared to their counter-parts that do not share similar values. The question that remains is: "How can entrepreneurship culture at a university be measured?" To answer this, we first referred to Slater and Narver (1995) who stated that "a culture that values entrepreneurship and innovation provides the environment in which learning from exploration and experimentation is most likely to take place." This suggests that a university that values entrepreneurship would provide an entrepreneurship exploratory haven. An

environment for this type of learning and experimentation is the University Research and Technology Park (URTP) because URTPs are typically endowed with incubators. Incubators are usually managed by a technology transfer agent who facilitates the interaction of start-ups with potential Angel investors and outside firms (Wonglimpiyarat, 2010). Activities at URTPs increase the chances of successfully launching a start-up company. Another way to gauge the entrepreneurial culture at university is to investigate university and departmental press releases to determine if entrepreneurship is indeed valued and celebrated. For example, the MIT culture not only permits but strongly encourages faculty members, including those in science and engineering fields, to consult and start new businesses while some other institutions frown at this sort arrangement. This is merely one example of the notion that U.S. universities may differ in their culture, views, and approaches to spinning off companies. Therefore, based on the aforementioned evidence, we propose that:

P2 *The intensity of the entrepreneurial culture in universities will be positively related to the number of start-up companies formed.*

Full-Time Entrepreneur or Business Manager

Faculty members who are interested in starting technologically-based companies are fraught with difficulties because they often lack the necessary business know-how to jump-start a new venture. According to Oakey and Mukhter, many High-Technology Small Firms (HTSFs) performed little marketing because they spent too much of their investment capital on R&D (Oakley and Mukhter, 1999). They further suggested that HTSF entrepreneurs could use some relevant general management training. In contrast, Oakey and Dahlstrand noted that technology entrepreneurs who start companies having worked in the industry often draw from their past business know-how, management experience, contacts, and market knowledge to start a new venture (Dahlstrand, 1997; Oakey, 1995). Expectedly, seasoned technology entrepreneurs tend to approach the markets in a more methodological fashion – tailoring their R&D to match their client needs (Bower, Shaw & Keogh, 1998).

The ability to anticipate customer needs is crucial. Studies have shown that understanding customer needs and close communication with customers led to better performance in the marketplace (Hippel, 1977; Rothwell et al., 1974; von Hippel, 1976). Science and engineering faculty members often lack the necessary business experience required to compete and thrive in the marketplace. To mitigate this, grants, incentives, and other business development programs have been made available to potential entrepreneurs including the academic who wish to start a business (Bower, 2003). But, there is no study showing whether faculty members took advantage of these business development programs prior to starting a university spin-off. There is also no study showing whether or not participation of faculty in business training programs positively correlated with the number of ventures started. Moreover, science and engineering faculty

members may not be able to afford the time to participate in business trainings; therefore, in lieu of that, perhaps, start-up teams are organized such that at least a team member is a well-trained, experienced business person - a full-time entrepreneur or business manager - someone other than the founding faculty member. Therefore, based on the aforementioned evidence, we propose that:

P3 *The number of university start-ups that included the sufficient level of full-time entrepreneurs/business managers in their team will positively relate to the number of successful start-up companies.*

Graduate Students

According to the Bank of Boston (1997), MIT alone spun off 150 new firms per annum since 1990. Based on the report, an economy composed of the 4,000 MIT spin-off companies would be the 24th largest national economy in the world. Interestingly, the credit for that performance was attributed to both faculty and graduate students. The students had not only worked on the research projects that formed the bases for the start-ups but they joined forces with their faculty mentors to start the companies. This is not surprising since innovation and research emanating from scientific research groups usually result from a joint effort between graduate students and their major professors. For this reason, faculty members often acknowledge the contribution by their graduate students to a project and vice versa at various conference proceedings. Furthermore, the number of research publications, also a measure of faculty productivity (Vesper & Gartner, 1997), appears to be proportional to the number of graduate students (Chung & Park, 2009) under the faculty. In science and engineering departments, these publications often bear the names of graduate students as first authors and their major professors as co-authors.

Studies have shown that experienced entrepreneurs were able to identify more innovative opportunities because they were able to process information quicker than less experienced or novice entrepreneurs, thereby devoting more time to pursue more innovative ideas (Roure & Keeley, 1990). Because starting a business based on innovative ideas is paramount to the success of a start-up, compared to their counterparts without graduate students, one would expect entrepreneurial faculty members working with graduate students to have a greater chance of starting a company. The reason for this is that the faculty members would likely devote more time to identifying innovative ideas if their graduate students are focused on the core research in laboratories. Also, it is not uncommon to find student names as co-authors along with their faculty advisors on patent applications, especially if they had contributed to developing the novel product or technique that was being protected. So, one might expect that the probability of starting a company would increase if the same students who may have been working on the core science behind a start-up were part of the start-up process. Despite these basic intimate

relationships, which exist between graduate students and faculty members, the role of graduate students in the start-up process has not been explored. For example, the participation of graduate students in meetings with venture capitalists may have a positive effect in securing seed money. Therefore, based on the aforementioned evidence, we propose that:

P4 *The number of university start-ups that included sufficient level of graduate students in their team will positively relate to the successful number of start-ups.*

University Research Center Personnel

Research centers are unique because they are like departments without the impetus to teach students in a structured format. They typically focus on one area of research that is of interest to several academic departments. The multi-disciplinary nature of research at these centers attract funding from both the government and private firms (Roberts, 1991). How start-up companies are formed differs between universities (Adams, 1993), and university research centers across the nation may account for some of these differences since their respective missions and tasks differ. The Bank of Boston (1997) highlighted the role of university research centers in forming MIT spin-offs, which created unparalleled employment and wealth. Also, research centers have been reported to facilitate the formation of start-ups at universities (Geiger, 1990). University research centers have been described as boundary-spanners between universities and their environments; therefore, they are in a unique position to promote the transfer university technologies (Steffensen et al., 2000).

Steffensen et al. investigated the role of university-based research centers in the formation of new high-technology companies from UNM. They considered 55 research centers, which at the time of their investigation were resident at UNM, as well as 19 spin-off companies from these research centers. The authors collected data from key individuals in each of six new start-up companies that met certain criteria and sought to understand the relationship between each university research center and its spin-off companies. Based on their interviews, they found that the success of a new spin-off company depended, in part, upon the degree to which it was supported during the start-up process by the university research center to which they were affiliated (Steffensen et all, 2000). Even though the authors' findings cannot be generalized since the authors only examined one U.S. research university, and, as they rightly pointed out, the culture at another university may be different their result indicates that association with university centers may lead a successful spin-up process. Therefore, based on the aforementioned evidence, we propose that:

P5 *The number of university start-ups that included sufficient level university research center personnel in their team will positively relate to the number of start-ups.*

FUTURE DIRECTIONS

There is need for scholarly investigation on non-resource factors in AE as most of the work in AE has focused on university start-ups and the resource-based factors that influence them; this paper is no exception: all of the independent variables proposed herein, with the exception of entrepreneurial culture, can be viewed as resources that universities would need to acquire in order to increase their performance in AE. There is also a need to develop an AE framework to provide some guiding principles for technology transfer in academia.

The propositions set forth here can be further tested by obtaining data on university start-ups and sponsored research expenditure data from the annual licensing surveys of the AUTM and NSF, respectively, and then testing the propositions. The former should be treated as a dependent variable and the latter as an independent variable. Data pertaining to the other independent variables; i.e., the presence of full-time entrepreneurs/business managers, graduate students and research center-type personnel as well as entrepreneurial culture, can be obtained using survey instruments. However, some other variables that were not discussed should be controlled. Because of the vast differences in endowment and faculty size across universities, the extraneous effects of these variables on the dependent variable should be eliminated; therefore, they should be treated as control variables. One way to control for endowment and faculty size variables is to consider universities that fall within a narrow range in ranking. Analyzing these data can provide scholars with interesting quantitative information. For instance, performing a regression and examining a correlation between dependent and independent variables using the equation below would allow scholars and practitioners to predict the number of start-ups a university can produce *ceteris paribus,* given a set of independent variables. The equation is a modified Jensen's model, commonly used to estimate return on investment (Ling & Naranjo, 2002). In this case, it could be used to estimate the number start-ups:

$$\#SU = \alpha + \beta 1\ (RE) + \beta 2\ (EC) + \beta 1\ (FE) + \beta 2\ (GS) + \beta 3\ (CP) + e$$

where #SU is the number of start-ups from a university used to measure university start-up performance, α is a constant, RE is the total sponsored research expenditure; EC is entrepreneurship culture; FE is the number of full-time entrepreneurs, GS is the number of graduate students, CP is the number of university research center personnel, $\beta 1$, $\beta 2$, $\beta 3$, $\beta 4$, and $\beta 5$ tells us to what degree #SU is affected by a variation in RE, EC, FE, GS, and CP, respectively, and e is the error term.

CONCLUSION

Escalating interest in academic entrepreneurship from university administration, academic, industry and government, has generated a corresponding increase in the practice of

academic entrepreneurship at institutions of higher learning. However, research in this sub-field of entrepreneurship still lags behind. This paper contributes to the existing body of literature by highlighting the dynamics in the sub-field and expounds on the progress therein. By using multiplexed approach, instead of a single view point such as the resource-based perspective, we explored financial, institutional, and human capital factors that could influence academic entrepreneurship. Lastly, based on literature evidence, we proposed that the level of total sponsored research expenditure, the intensity of entrepreneurial culture, the number of university start-ups that included the sufficient level of full-time entrepreneurs/business managers in their team, that the number of university start-ups that included sufficient level graduate students in their team, and that the number of university start-ups that included sufficient level university research center personnel in their team will be positively linked to the number of university start-up companies formed.

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