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Editor

Tennessee Tech University

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Thank you for your interest in The Journal of Entrepreneurship Education.

Ismet Anitsal
Editor
Tennessee Tech University

STUDENT-OPERATED COMPANIES: ENTREPRENEURIAL FOCUS IN AN INTEGRATED BUSINESS CORE

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ABSTRACT

The purpose of this paper is to offer an alternative method of delivering entrepreneurship education through student-operated companies as part of an integrated business core (IBC). This method has been used successfully in a school of business in the U.S. The entrepreneurship course in schools of business has grown in popularity since the early 1990s and continues to be a very valuable class in preparing students to develop innovative ventures in their business careers. One mainstream teaching method in entrepreneurship has been the development of a business plan for a new venture. Many other methods of delivery have also been developed at a variety of colleges and universities. Finding a set of best practices to use in structuring an entrepreneurship class is a difficult task.

This article examines a unique alternative to teaching entrepreneurship that has been very effective-- benefiting students, faculty, and community. In the process of building a set of best practices, this alternative method may serve to establish a fundamental building block for effectively teaching entrepreneurship courses.

ENTREPRENEURIAL EDUCATION METHODS

Over the last few decades, interest in entrepreneurship as a career path has been growing. Barringer and Ireland (2010) pointed out several indicators of this rapidly increasing interest. The researchers noted, for example, that Amazon.com recently listed over 45,000 books associated with entrepreneurship and some 18,000 books focusing on small business. They also noted that in 1985 there were approximately 250 entrepreneurship courses offered at colleges and universities in the United States. Today, there are over 5,000 entrepreneurship courses available at higher education institutions. In fact, about 80 percent of colleges and universities are now offering entrepreneurial instruction. This accelerated growth in entrepreneurship surpasses the budding growth reported by Solomon and Fernald (1991).

In the past, many entrepreneurship classes focused on building a business plan as the cornerstone of a student's entrepreneurial experience. Business plan-centered classes, however, have limitations. Some researchers have argued, for example, that while a business plan may be necessary for obtaining capital, emerging startups and fast-growing, small companies –like the Inc. 500 firms—do not craft well-formulated business plans because the business environment in which these companies operate is so fluid and changes so rapidly (Bhide 1994; Allred, Addams 2006). Given the business plan usage reality, some educators are rethinking the pedagogy of the entrepreneurship class. Steve Blank (2011) and his colleagues at Stanford, in his recent article, writes, "We were positing that 20 years of teaching, 'how to write a business plan' might be obsolete." Blank indicates that he decided to "toss teaching the business plan" and to start teaching a more innovative approach to starting companies. This new entrepreneurial pedagogy included getting out of the classroom to get hands-on experience talking to customers and other business partners. Each week student teams took the first 10 minutes of class to present "lessons learned" from their hands-on experience.

Blank and his colleagues are not alone. Many entrepreneurship educators are rethinking their teaching methods, searching for and experimenting with innovative ways to increase student learning and entrepreneurial success. Huebscher and Lendner (2010), for example, assert that entrepreneurship simulation games and seminars create a viable method for teaching complicated business interrelationships to both students and entrepreneurs. Neck and Greene (2011) contend entrepreneurship courses should be taught differently from traditional courses. They assert that courses should go beyond understanding, knowing, and talking. Entrepreneurship concepts require using, applying, and acting. Their innovative methods for teaching entrepreneurship include a portfolio of techniques from starting a business to incorporating games and simulations, design-based thinking, and reflective practice.

Inc. Magazine (2011) lists the best entrepreneurship courses in America and summarizes some of the innovative entrepreneurial pedagogy. Stanford's new entrepreneurship class is designed around a series of hurdles, such as designing a prototype and being critiqued by venture capitalists in the classroom. At Indiana University, the students receive a lesson in risk-reward. At the end of the semester, students pitch their ideas to a panel of judges (angel investors and venture capitalists) who determine the student's final grade. Students with A's can receive reverse scholarship money, but others who don't pass will not be allowed to graduate until the next semester. While some classes require students to make presentations in their pajamas (to learn how to handle uncomfortable situations), other professors take students to eat at expensive restaurants to learn what it takes to succeed in the fine dining industry. Further, some "best courses" include classes in which students must patent inventions or incorporate iPhone technology into applications they build.

Boni, et.al. (2009) of Carnegie Mellon University suggest that preparing students for careers in entrepreneurship is a challenge. They have developed an innovative capstone course in their MBA program, which is offered jointly by faculty. The interdisciplinary course blends three perspectives needed for the effective commercialization of innovation: entrepreneurial thought, action, and leadership; design thinking; and team building.

The concept of teaching core business in an integrated fashion has been utilized by a few universities. For example, Brunel and Hibbard (2006) studied Boston University's attempt to devise an integrated business core. They reported Boston University's 12 years of successful integration of four courses –marketing, operations, information systems, and finance--into a 16-credit, semester-long sequence. The process culminated in a project in which students developed a comprehensive business plan for a new consumer product. Faculty provided evidence of successful team learning but emphasized the need for strong commitment from participating faculty and the dean. Entrepreneurship was not an area of focus in this curriculum integration.

Our article provides a useful model that combines (1) an innovative method of teaching entrepreneurship and (2) an integration of business core classes with the central focus of operating actual businesses. This model provides a valuable template for other universities that are considering alternative methods to teaching entrepreneurship.

AN ALTERNATIVE METHOD OF TEACHING ENTREPRENEURSHIP

This article focuses on another alternative approach to teaching entrepreneurship: entrepreneurship is the cornerstone and theme of four courses in an integrated business core. At a satellite campus of a major university, full-time students registered for the four courses of the business core for one semester and were required to participate in developing and operating a business during the semester. Nearly all of these 70 students in the business core worked part-time on campus or in the business community nearby.

The integrated business core was designed to emphasize entrepreneurship skills in several aspects: (1) individual entrepreneurship performance in his/her company impacted significantly in grade calculations for each of the four integrated courses [25 percent of the Finance course, 25 percent of the Marketing course, 25 percent of the Entrepreneurship course and 25 percent of the Business Communication course]. (2) Instead of teaching these courses in isolation, the school of business combined these four courses into an integrated business core with student-operated companies as the vehicle to apply learning from the courses. (3) The four professors of the separate disciplines team-taught. Besides teaching his/her respective course material, all four professors were actively involved in every class. For example, the four professors worked collaboratively in teaching separate aspects of the business plan and the final report to a bankers' committee. Collaboratively, the professors planned their timely delivery of content; agreed on employee (the students) handbook of

rules, policies, and procedures; and interviewed students for company presidents. (4) The teams/companies were taught principles of high-performing teams and were strongly encouraged and rewarded for team cohesiveness. Details of the program elements and conclusions regarding this innovative curriculum are discussed below.

Structure of the Entrepreneurial Integrated Business Core (IBC)

The integrated business core (IBC) approach provided a vehicle for students to learn business concepts and skills in four courses while operating their new company. The four integrated courses were business communication, marketing, entrepreneurship, and finance. During a semester, the IBC students met for four hours each morning, Monday through Friday. During the first week of the course, the professors from the four disciplines oriented the students to the unique learning experience with entrepreneurial companies as the thread running through the entire integrated business core. Faculty reviewed the syllabi for each of the four courses, and emphasis was placed on forming and operating their own business during the semester.

The four professors facilitated the formation of 70 IBC students into four teams that would soon become companies. All students were invited to apply for president of a company. Typically, a team consisted of 15-20 students. Each of the four professors had the responsibility of being an advisor for one of the four companies. In preparation for the team member selection, the business communication professor taught the principles of writing a resume and interviewing effectively. After reviewing resumes submitted for president, the professors–as an interviewing panel–met with each student applicant. The panel of professors selected a president for each of the companies. Next, the class was notified of the selected presidents. Students interested in leadership opportunities then submitted resumes to be a part of each president's executive management team--consisting of VP of Finance, VP of Operations, VP of Marketing, and VP of Communications. Through interviews, each president selected his/her executives for these positions. Professors were silent observers of these interviews conducted by team presidents.

Next, each of the four management teams interviewed those students who were interested in joining their team. The students interviewed for more than one team and indicated their interests in operations, marketing, finance, or communication. After the entire class was interviewed, the executive management teams of the four companies met together, selected their company members, and placed team members in departments.

Once the teams were organized, the professors instructed the teams to agree on a business venture for their new company, craft a mission statement to reflect not only the product or service but also team values, and write a business plan. The four professors team-taught business plan construction so the teams could begin to formulate their new venture.

An illustrative portion of an executive summary from a company's business plan is shown below:

> *"**T**raditional **O**riginal **A**ttitude (**TOA**) is a student company determined to make this semester a semester of a lifetime for the students and faculty involved. The initial financing requested will fund operations to help the team provide food products, t-shirts, and entertainment that represent the different cultures on campus. The company will operate in the late morning and early afternoon on weekdays and at special university events, such as songfest, dances, athletic tournaments, and movies. TOA seeks a loan of $2,000 to cover operating expenses."*

Teams brainstormed to devise their new business concept. Company presidents ensured that each team member agreed to specific responsibilities. Faculty advisors attended respective company meetings held during class time; they advised as needed. Companies also met outside of class to ensure plans were carefully made. Each team wrote business plans that were sent to the members of the bankers' committee who would be coming to campus the following week.

Through business contacts, the professors formed a bankers' committee of businesspeople in neighboring cities to review each team's written business plan. The banker's committee came to campus to hear the four teams present their business plans orally. Each team's representatives presented their financing requests. The bankers' expertise and presence contributed greatly to student learning. After asking questions and considering each funding request, the bankers' committee approved a funding amount for each team. Thus, the bankers' committee made the decision on the amount of loans for the companies, <u>not the dean</u>. Companies didn't complain to the dean; they realized the decision was made by the bankers' committee. The students understood that these bankers' livelihoods rests on making loans that are repaid.

Initial funding for the IBC companies came from monies previously donated to the university by private donors–successful entrepreneurs, alumni, university friends, and companies who hired graduates. After the initial funding, the IBC sustained itself through the earnings of the student-run companies. The use of funds was managed by the dean of the school of business, but the dean adhered to the decision of the bankers' committee regarding funding amounts for specific teams. The bankers' committee was composed of loan officers who frequently reviewed business plans for funding by business men and women in the business community. Successful entrepreneurs were added as often as possible to the bankers' selection committee. Hence, the credibility of the reviewing committee was high.

The students learned valuable tools in developing and selling their business concept through writing an effective business plan and making a persuasive oral presentation. After operating their companies for seven weeks, the companies were closed. The bankers' committee returned to campus to review the operations and results of each company. The

professors advised each company in writing a final written report to the bankers' committee and making oral presentations to the bankers' committee, focusing on the use of the loan, company profits or losses, and lessons learned in developing and operating a company. The team presenters also reviewed the final financial statements of the companies with the bankers' committee.

The average amount requested by the companies was $3,600 with a maximum of $4,200 and a minimum of $1,500. The average amount funded by the bankers was $2,900 with the largest loan of $3,500 and the smallest loan of $1,500. Over several semesters, successful company ventures included selling products, providing entertainment shows for the community and student-body, and marketing online products.

The IBC program with entrepreneurship as the focus has been very successful. A snapshot of three years of the IBC indicated that 16 of 17 companies had positive net earnings and one company broke even. These companies had total net earnings of approximately $48,000. Further, two of these companies continued operations as the university recognized the value of these companies. In particular, the university administration appreciated the contribution to the university image. The university continued operating these companies with university staff.

The four professors met periodically to ensure the companies were running smoothly. Their coordination facilitated course concepts being taught strategically during the semester. Finance, business communication, marketing, and entrepreneurship principles were taught at the most appropriate times, given the needs of the companies. For example, the business plan was team-taught early in the course.

The four professors attended all of the classes. Any one of the four professors could interject comments to assist the learning during another professor's lecture. In this way, team solidarity was exemplified by the professors working together-- as a team-- to foster effective student learning and company teamwork.

The seven weeks of operation gave the companies sufficient time to utilize marketing concepts, learn from mistakes, capitalize on successful decisions, and unify as a real team. Team meetings were held periodically during class time. Often, teams agreed to meet outside of class. The team's executive committee members rotated in conducting the meetings during the semester. These team leaders gained experience in planning, organizing, motivating, and developing a corporate culture. Leaders asked advice from their professor/advisor as needed.

Grading Components

To reward solid performance and to reduce the possibility of a student trying to avoid company involvement and taking advantage of others' work, the professors agreed to a scoring method. The Employee Handbook for the IBC, produced by the professors, was

given to each student and referred to often. The section on grading specifically stated the following:

> Twenty-five (25) percent of your total grades in marketing, finance, entrepreneurship, and business communication shall be decided by your grade in the entrepreneurship practicum portion of the Core, the creation and operation of a real company.
>
> Of this 25 percent, criteria are shown below with set percentages:
>
> – 36 % of the 25 % will be determined on a company basis. Criteria determining the performance of the company/team will include:
>
> - creation and implementation and use of company business plan
> - written business plan and oral presentation to bankers' committee
> - day-to-day operations of the company/team
> - final written report and oral presentation to the bankers' committee
>
> – 50% of the 25% will be determined by a student's performance within his/her company. A prepared rating sheet will be used for all teams for each faculty advisor rating his/her company members on performance. Each student will also receive input from each of the team members as well as the executive management of the team. These multiple evaluations will be gathered by the faculty advisor to compute an overall score for each team member on your team effectiveness.
>
> -- **7%** of the 25% will be determined by attendance at Entrepreneurial Executives Lecture Series.
>
> --**7%** of the 25% will be determined by company awards (e.g. top company that earned the greatest profit; team showing greatest innovation; team with greatest team cohesiveness, etc.)

Each of the four professors required various assignments to be submitted to him/her periodically during the semester. Each professor submitted individual grades for his/her course. The pre-determined IBC guidelines stipulated that 25 percent of a student's grade for each class of the four classes came from his or her entrepreneurial performance within the respective company.

Culmination of the Entrepreneurship Experience

During the last two weeks of class, company performance was discussed in class and lessons learned were emphasized. Each professor held a debriefing class session with his/her assigned team, focusing on successes, areas for improvement, teamwork skills, leadership, followership, etc. The four professors found this to be a very valuable ending session for the companies.

During the last week of the semester, the school of business held an awards banquet to recognize successes of companies and individual students. This event was one of the "pay-offs" for the teams and the four professors. The IBC professors presented awards to the most successful companies. Team effectiveness was based on these components:

- **Performance** (how successful was the company team as measured in profits, timeliness, quality, innovation)
- **Member satisfaction** (how well team members created a positive experience through commitment, trust, and concern for each others' needs)
- **Team learning** (how well team members acquired new skills, perspectives, and behaviors)
- **Outsider satisfaction** (how well team members met needs and communicated with stakeholders such as customers, lenders, suppliers)

Also, each company created awards for various team member contributions, such as "Team Energizer," "The Marketing Guru," etc. This capstone banquet fostered relationships among the students within a team and with faculty members.

CONCLUSIONS

Some potential limiting factors need to be addressed in order to create a model that undertakes an entrepreneurship-fueled integrated business core: (1) continuity of faculty from semester to semester, (2) enthusiastic faculty participants and constant support of the dean, (3) faculty load/budget, and (4) initial funding for start-up businesses.

Continuity of professors in the program can be a significant issue. Professors are mobile and can be lured to other universities. At times, professors are needed for other administrative assignments in the university, such as dean or provost. Periodically, a faculty member may take a sabbatical. In other words, maintaining a team of faculty who enthusiastically embrace the business core and the entrepreneurial emphasis can be a challenge.

Gaining faculty "buy-in" can be another issue. Without the dean's support of this alternative method of teaching entrepreneurship, an innovative program will go nowhere.

Further, the dean must enlist willing faculty participants. Likely motivators include: facilitating student-company success as an advisor, enjoying team unity with students; being part of an innovative, exciting learning experience; and gaining greater cohesiveness with other business core faculty. Also, the dean should offer additional credit hours to a business core professor for team advisor. The extra time to facilitate his/her team's learning during the semester justifies an equivalent assignment of credit hours.

Offering credit hours for being an advisor can precipitate a funding issue for the dean. The dean must work with his/her faculty in providing an equivalent number of credit hours for those who provide the business core teaching and advising. Faculty resources must be available to handle this additional load.

Finally, the initial funding for the start-up teams must be addressed when this alternative model is utilized. One successful approach is to solicit seed money from successful entrepreneurs in the market area. Another successful approach has been to ask university alumni to donate to the new program being developed to foster entrepreneurship. Naming a Center for Entrepreneurship after a major donor is another alternative. After one or two semesters, profits from the student companies can be used to fund a new semester of student-companies.

More research is needed to determine whether students learned more about entrepreneurship in an integrated business core (with start-up companies) vs. a traditional lecture course in entrepreneurship. Likewise, more research is needed to determine whether students learned more regarding finance, marketing, and business communication from an integrated business core than in traditional standalone courses. Student satisfaction of the business core approach needs to be measured and compared to traditional separate course delivery. Exit feedback is needed from graduating students regarding the educational value of operating companies in an integrated core. Student feedback on the team teaching effectiveness of the four professors in the core would be useful in the selection of faculty participants for upcoming semesters. Perhaps there are courses other than finance, business communication, and marketing to consider integrating with the thematic entrepreneurship course.

In summary, streaming entrepreneurship through an integrated business core has numerous benefits. The students were the ultimate winners by learning through hands-on practice in a business startup. Designing and operating a company was a life lesson for students. They suffered through setbacks and rose to various challenges by problem-solving together. Applying concepts learned from the four courses was insightful. With entrepreneurial companies as the engine, the integrated business core fostered:

1. Understanding of entrepreneurship in practice
2. Ability to understand interrelationships among marketing, finance, business communication, and entrepreneurship

3. Interest in applying concepts learned
4. Written, oral, interpersonal, and teamwork skill development
5. Student and faculty involvement with the business community
6. Network development with university administration, nearby businesses, and fellow students
7. Excitement on campus and business community (because of student-run businesses selling products or services to students, staff, faculty, administration, and surrounding community)
8. Faculty involvement with students through team teaching and advising companies
9. Faculty synergy to collaborate on research and publication.
10. Lasting bonds of friendship

IBC students learned business concepts through actual practice by running real businesses. IBC professors structured a challenging environment for students, which enhanced student learning, leadership, and team performance. A significant learning experience was enabled by combining four business disciplines: entrepreneurship, finance, marketing, and business communication. Multiple benefits were realized by using entrepreneurship as the focus of the entire learning experience. For the vast majority of the students, the entrepreneurial-focused integrated business core was an unforgettable experience. Learning was fun, friendships were fostered, and professional networks were born. Following graduation, some team members set up business partnerships. Further, faculty friendships spurred research and writing projects. In the end, the teaching method presented in this study benefits and connects administration, faculty, students, and community.

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INCORPORATING THE TRIPLE BOTTOM LINE IN AN ENTREPRENEURSHIP SUMMER CAMP

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ABSTRACT

Today's students will face a variety of challenges in the future--technological, environmental, human and economic. To innovate new ways to meet these challenges, they will need an entrepreneurial orientation showing creativity, proactiveness and a willingness to take strategic risks. They will also need to work together in teams and negotiate with others in a global context. Entrepreneurship summer camp was designed to prepare students for these challenges by bringing together students from different countries for two-weeks of intensive study and collaborative work. Given the importance of sustainability for current and future generations, camp activities focused on the triple bottom line: people, planet and profit. This paper describes some of the activities included in the entrepreneurship summer camp and presents the results of students' self-evaluations of their skills and how much they learned from the experience.

INTRODUCTION

Entrepreneurship is an important topic for today's university students regardless of major. In most countries, the vast majority of firms are SMEs small and medium-sized enterprises with fewer than 250 employees According to the Kauffman Foundation (2011), 54% of Millennials (aged 18-34) in the United States want to start a business or have already done so. To be successful in this endeavor, they will need an entrepreneurial orientation, including the ability to be creative and a willingness to take strategic risks (Bolton and Lane, 2012; Boyles, 2012; Fillis, 2010; Hamidi, Wennberg & Bergland, 2008; Lumpkin & Dess, 1996; Rauch, Wiklund, Lumpkin & Frese, 2009; Ward, 2004). People-oriented soft skills such as the ability to solve problems, communicate, negotiate and work in teams are also important to success (Elia, Margherita, Scundo & Moustaghfir, 2011; Frank, 2007; Gibb, 1987.

The entrepreneurship summer camp introduced students to different aspects of entrepreneurship through an active learning approach involving many creative projects and peer evaluation (Barr, Baker, Markham & Kingon, 2009; Boocock, Frank & Warren, 2009; Gibb, 1987; Jones & English, 2004; Jones-Evans, Williams & Deacon, 2000; Kolb, 1984; Rasmussen & Sørheim, 2006). The instructor and guest speakers attempted to instill in students an entrepreneurial orientation as well as knowledge about social entrepreneurship, sustainability and alternative energy, following the 3Ps of the triple bottom line people, planet and profit (Elkington, 1997). Active learning methods (Jones & English, 2004; Jones-Evans, Williams & Deacon, 2000; Kolb, 1984; Rasmussen & Sørheim, 2006) included (1) learning-

by-doing (2) students responsible for their own learning (3) orientation towards practice (4) integration of discipline knowledge in a thematic structure (5) integration of teamwork and communication skills (DeGraaff & Ravesteijn, 2001).

The participation of students from different countries provided valuable experience in intercultural communication and collaboration. Students from Norway and France worked together with students from an American university during the entrepreneurship camp, which was held at the American university during the first two weeks of June 2012. English and Norwegian languages were both spoken during the camp, allowing all students to improve their skills in a foreign language. Students made numerous short oral presentations in English, increasing their skills and confidence in public speaking through repeated practice in a low-stakes, supportive environment.

Students came from a variety of majors, including business, "law and leadership," liberal arts and engineering. This interdisciplinary context was conducive to strengthening teamwork and innovative thinking skills (Mangan, 2004; Shinnar, Pruett & Toney, 2008). Although the camp focused on increasing entrepreneurial orientation rather than on producing a viable business plan, the manager of a local business incubator spoke to the students about the purpose and content of business plans and how organizations such as his can assist entrepreneurs in the start-up phase. Past experience with business students showed that the most common ideas for new businesses involved restaurants or retail shops. Through a focus on creativity and interdisciplinary topics, the camp encouraged students to think outside the box to envision innovative new products.

The entrepreneurship summer camp was deemed an overall success, particularly in the area of idea generation as all groups presented ideas for products that were new and innovative rather than derivative of existing products. To assess student learning and attitudes toward entrepreneurship in a more detailed manner, pre- and post-tests were conducted at the beginning and end of the camp. Topics included teamwork, communication, problem-solving, creativity and innovation, following Cooper & Lucas (2006). The following sections provide a description of the major topics and some (but not all) of the activities included in the camp. The results of pre- and post-tests regarding learning outcomes are then presented.

PEOPLE, PLANET, PROFIT

People are the building blocks of societies and organizations. Being able to work together in teams is highly important given the global society in which we live today. People are also vital to innovation because collaboration with other people within a network is an established factor in innovation (Day & Schoemaker, 2011; Hoang & Antoncic, 2002; Robinson & Stubberud, 2011a, 2011b). Day and Schoemaker (2011) state, "Considering the scale, scope and complexity of most green technology markets, experience shows that collaboration can be key to capturing the market opportunity" (p. 39).

People are also the central factor in social entrepreneurship, which involves the establishment of businesses that pursue other goals in addition to profits and growth. Some businesses, such as Shady Maple in Pennsylvania, USA, strive to increase sales and profits, but place an equal weight on providing a good quality of life for employees as well as

customers, and helping the surrounding community (Shady Maple, 2012). Other businesses exist to improve the lives of less fortunate individuals who are not employed by the company but benefit from its operations. For example, Ten Thousand Villages is an organization that abides by the people-planet-profit framework. An originator of fair trade in 1946, this organization buys handicrafts from suppliers in developing countries and sells them in retail stores in the United States under the condition that suppliers must themselves pay their employees a living wage (Ten Thousand Villages, 2012). This ensures that everyone in the distribution channel is able to meet their basic needs. Many products are created using discarded materials and sustainable methods. These examples were used as case studies in the course to present different forms of social entrepreneurship, and were supplemented by field trips. Additional case studies that provided an international perspective on social entrepreneurship were viewed online from the Global 3000 website (http://www.dw.de/dw/0,,11487,00.html). This website provides English-language television programs produced by Deutsche Welle (Germany) that can be viewed on demand. To encourage students to think of people and planet as well as profits, students developed two product concepts during the entrepreneurship camp, at least one of which involved a product that could be used in some form of social entrepreneurship. Some students chose social entrepreneurship for both projects.

With social entrepreneurship as a context, students were introduced to basic engineering concepts related to sustainable energy. After two introductory lessons, students baked bread and cooked noodles using a solar cooker made of a parabolic dish. Similar devices are being used in economically disadvantaged countries where cooking fuels are rare and/or expensive. Alternative energy also tied into the profit motives of entrepreneurship. Some students took the idea of solar energy and used it as inspiration for product ideas, such as a water-proof device targeted at beach-goers that would protect and charge a cell phone and provide speakers for music.

Entrepreneurs who pursue environmental as well as monetary goals are called "ecopreneurs" (Cato, Arthur, Keenoy & Smith, 2008; Linnanen, 2002; Robinson & Stubberud, 2012; Schaltegger, 2002; Schaper, 2002). Just as with social entrepreneurship, a focus on alternative goals does not preclude profitability, but money is not the driving force. Among the ecopreneurs studied by Cato and associates (2008), independence from the National Grid (electric) and sustainability were more important motivators than financial achievement. Kirkwood and Walton (2010) found that green values were a common motivator for ecopreneurs, but monetary motives were also mentioned by some participants. A psychologist who studies "Peak Oil" presented theories to the entrepreneurship camp students about a future in which oil is no longer available as a resource, thus providing motivation for innovation in alternative energies and materials. Students brainstormed ideas for products and services that could be developed to address the needs of a world without oil.

Environmental innovation can be instrumental to business growth (Dangelico & Pujari, 2010). In addition to the "feel good" rewards that come from creating environmentally sustainable products, the financial rewards that "going green" can provide also contribute to a successful business strategy (Gibbs, 2009; Millard, 2011; Schick, Marxen & Freimann, 2002; von Weltzien Høivik & Shankar, 2010). Reduced energy use in manufacturing and for end-

consumers were found to be the most common types of environmental innovation among German SMEs (Robinson & Stubberud, 2012) Eco-friendly products are popular and can present an effective method for small businesses to differentiate themselves from competitors (Isaak, 2002; Schick et al., 2002; von Weltzien Høivik & Shankar, 2010). In addition to learning about alternative energies and the general mechanics for developing products using photovoltaics and direct solar energy, students were taught how to conduct a basic energy audit so that they would be able to analyze the cost and potential benefits of new devices.

Marketing concepts were naturally an important part of the entrepreneurship camp. In the age of Web 2.0, an awareness of how to use social media to promote a business' products and values is vital. An expert on the topic presented the "state of the art" in social media, followed by student analyses of the websites of the companies included on the next day's fieldtrip. Today's students are often more in-tune with social media than traditional media, and are well-placed to reach a new generation of consumers. From the bricks-and-mortar perspective, discussion about retail environments and personal selling were based on a video about the psychological processes involved in consumer behavior and retail strategies used around the world. To conclude the marketing segment, a guest lecturer with extensive experience in product development in the baked goods industry presented the students with examples of cookies he had helped developed and the tools and processes he used while working with those products, including how he came up with creative new ideas to solve problems. His presentation was rated by the students as one of the most interesting and beneficial activities of the entire camp.

Many of the activities included in the camp were presented as games and challenges for which teams could earn points. At the end of the camp, the top three (of seven) teams received awards. Students reported that this system not only made the activities more exciting, but also helped to build interpersonal and team skills. In these low-stakes environments, students could analyze strategies and risks, and take bolder actions than they might in other situations. One game was the relatively simple online simulation Lemonade Stand, in which players buy the raw materials to make lemonade and then sell it to animated characters at prices they set according to costs and demand (based on the weather forecast). Given that the weather forecasts were not always accurate, students gained practice in dealing with risk and uncertainty, as well as with pricing and inventory issues. Risk analysis, negotiating and decision-making were also taught through interactive exercises and learning games together with lessons on relevant concepts.

Creative activities were integrated throughout the course from beginning to end. The varied mix of topics relating to sustainability and alternative energy served not only to provide information on these topics, but also to provide fodder for creativity as it introduced students to topics few of them had studied (Couger, 1995). Students were also encouraged to participate in the sports, games and other activities that were provided as part of the camp because physical exercise can be helpful in incubating creative ideas.

Before the first activity had even begun, the majority of students professed that they were not creative people. Convincing students that they could all be creative in different ways (Couger, 1995; Kuratko, Goldsby & Hornsby, 2012) was a significant challenge. Being creative is in some respects a form of risk-taking, a skill that most students also said they

lacked. The success of a truly innovative project is often very uncertain, and the extent to which a potential entrepreneur is willing to take the risk to engage in a creative project is therefore an indicator of entrepreneurial orientation.

In the study by Cooper & Lucas (2006, p. 676), 81.7% of the 217 participants rated themselves (post-test) as good to excellent in "design something novel and innovative," 82.2% rated themselves this high in their ability to "start a successful business if you want." Solving an unstructured problem had the highest proportion of respondents rating themselves good to excellent in both the pre-test (75.2%) and post-test (88.6%). "Ask probing questions that clarify facts" (87.2%), "recognize a good opportunity" (86.8%), and motivate others to work together" (84.4%) had similar percentages of students rating themselves as good to excellent in post-tests.

Inspired by the researched conducted by Cooper and Lucas (2006), this study assessed the skill levels (more specifically, self-confidence in skills) of students who participated in the entrepreneurship camp. In the following section, the methodology and results of this study are presented, following by further analysis and conclusions.

METHODOLOGY AND RESULTS

On the first and last days of camp, students were asked to voluntarily complete a survey rating their current level of skill/knowledge in a variety of areas. These included 8 items taken directly from Cooper and Lucas (2006), and 11 items based on relevant content, such as sustainability, alternative energy and social entrepreneurship (understanding how to people who are economically less fortunate). Although these will be referred to as skills/knowledge areas, these items essentially measure students self-confidence in their abilities in these areas rather than their actual skills. Self-efficacy has been shown to be an important element in entrepreneurship (Bolton & Lane, 2012; Cooper & Lucas, 2006; Zhao, Seibert & Lumpkin, 2010). Following Cooper and Lucas, these surveys used the scale of (1) weak/poor, (2) fair, (3) good, (4) very good and (5) excellent.

The post-test also included a section in which students used a Likert scale with strong agree (1), agree (2), neither agree nor disagree (3), agree (4) and strongly agree (5) to respond to the statement "I believe my skills/knowledge have improved" for each of the previously listed skills/knowledge areas. This section was included to examine students' perceptions of their learning regardless of their stated skill-levels in the pre- and post-tests. For example, a student might rate his or her skill level as excellent in the pre-test and post-test, but still feel that he or she has learned a considerable amount. On the other hand, a student might learn that his or her knowledge is not as extensive as her or she previously thought. Such a student might decrease his or her rating in the post-test to very good or good (instead of excellent), but could indicate that he or she improved his or her skills/knowledge. It was therefore important to be able to match the post-tests to the pre-tests for each participant while preserving anonymity. To do this, participants were asked to provide an indicator that would allow the pre-tests and post-tests to be matched without revealing the respondent's identity. From the 32 students in the entrepreneurship camp, 29 usable sets of pre- and post-tests were

collected (some students did not answer the section on skill improvement, believing it was the same question, while others did not use the same indicators on both the pre- and post-tests).

Table 1: Skill and Knowledge Ratings

Skill/knowledge	Percent rating skill "good" to "excellent" in pre-test	Percent rating skill "good" to "excellent" in post-test	Mean pre-test¨ Rating	Mean post-test rating	t	P<	Imp. Rating
to work effectively in a team	86.2	100	3.21	3.76	2.9	.007	3.77
to network with other people who can give you the help you need	75.9	96.6	2.86	3.72	6.3	.001	3.88
to motivate others to work together	69.0	93.1	2.97	3.66	3.7	.001	3.65
to negotiate with others for a solution that is good for both sides	69.0	89.7	2.79	3.66	4.0	.001	3.85
to understand concepts about alternative energy and sustainability	44.8	89.7	2.34	3.66	6.6	.001	3.73
to understand concepts about sustainability in business or products	41.4	100	2.41	3.55	5.3	.001	3.65
to plan a strategy and act on it	58.6	89.7	2.66	3.48	5.0	.001	3.69
to start a business, if desired	31.0	87.7	2.28	3.45	5.4	.001	3.46
to market a product	31.0	93.1	2.28	3.41	5.6	.001	3.69
to clearly describe a problem in written English	55.2	79.3	2.48	3.34	6.7	.001	3.35
to recognize a good opportunity	44.8	86.2	2.41	3.31	5.1	.001	3.58
to clearly describe a problem orally in English	34.5	89.7	2.21	3.31	6.7	.001	3.62
to manage inventory	55.2	89.7	2.52	3.28	4.3	.001	3.32
to ask probing questions that clarify facts	44.8	89.7	2.38	3.28	4.9	.001	3.27
to understand how to help people who are economically less fortunate than you	48.3	82.8	2.59	3.17	2.8	.009	3.50
to solve an unstructured problem	41.4	89.7	2.38	3.14	5.8	.001	3.68
to think creatively	34.5	75.9	2.07	2.97	4.6	.001	3.77
to take calculated risks	31.0	62.1	2.14	2.93	3.6	.001	3.19
to design something novel and innovative	20.7	55.2	1.97	2.66	3.8	.001	3.42

Three students missed a significant portion of camp activities due to sickness, yet their surveys may have been included in the results because the anonymous nature of the survey prevented their omission from the pool. It could be expected that those students learned less than students who participated in all activities. Paired sample t-tests were conducted to

determine if there were statistically significant differences in the pre- and post-test ratings. Table 1 shows the percentages of students rating their skills as "good" to "excellent" and the mean response regarding skill/knowledge improvement.

The results of the paired t-tests show that the post-test ratings were significantly higher, suggesting students overall improved their skills/knowledge during the camp (or rather, increased their self-efficacy regarding this skills/knowledge areas). "Being able to work in a team" was the only skill that received a rating over 3.0 (3.21) in the pre-test, but in the post-test, only "think creatively" (2.97), "take calculated risks" (2.93) and "design something novel and innovative" (2.66) had means below 3.0. The pre-test means for these were 2.07, 2.14 and 1.97 respectively. Even these three skills received improvement ratings that suggest students felt they had improved their skills regardless of their starting level (poor/weak through excellent) and final level at the end of the camp. The percentage of people rating their skill as good, very good or excellent increased, often dramatically. For 17 out of 19 skills, over 75% of students rated their skill level as good to excellent in the post-test In contrast, only 2 skills in the pre-test were rated as good to excellent by at least 75% of the participants, and only 7 of the 19 pre-test skills were rated as good or better by more than 50% of the participants.

Taking calculated risks and designing something novel and innovative were the two skills that appeared to be the most challenging for students. Given students' initial assertions that they were neither creative nor risk-seeking, it is not surprising that these two were in the bottom three in mean ratings and in the percentage of students rating their skills as good to excellent. Taking calculated risks started at 2.14 and increased to only 2.93, with an improvement rating of 3.19 (the lowest out of 19). In the post-test, 62.1% rated their skills as good to excellent, up from 31.0% in the pre-test. To design something novel and innovative received the lowest pre-test rating (1.97) and increased to 2.66, with an improvement rating of 3.42. In the pre-test, only 20.7% rated their skills as good to excellent, but 55.2% did so in the post-test. To think creatively, which would logically be related to designing something novel and innovative, showed a pre-test rating of 2.07, increasing to 2.97 in the post-test, with an improvement rating of 3.77 (tied for 3rd highest) and 75.9% rated their skills as good to excellent in the post-test, compared to 34.5% in the pre-test.

The five skills with the highest ratings in the post-test were the abilities (1) to work in a team (2) to network with others (tie for 3) motivate others, negotiate with others, and understand concepts about alternative energy. Working in a team was also the top rated skill in the pre-test, yet students still felt they had improved their skills. In fact, working in a team was tied for the third highest improvement rating, and in the post-test, 100% of participants reported that their skills were good to excellent. Networking with others received the highest improvement rating (3.88), and 96.6% of students rated their skills as good to excellent in the post-test. Negotiating with others received the second-highest improvement rating (3.85), with 89.7% reporting their skills as good to excellent after camp. Motivating others (improvement rating 3.65) rose to 3.66 from 2.97 in the survey ratings, with 93.2% eventually rating their skills as good to excellent. Although only 44.8% of students rated their understanding of concepts about alternative energy as good to excellent in the pre-test, this proportion grew to 89.7% in the post-test. The improvement rating was 3.73 (fourth highest), and the mean rating

rose from 2.34 in the pre-test to 3.66 in the post-test. This was the only knowledge area in the top five that did not involve working with people, but it clearly was appreciated by the students.

Overall, these findings suggest that creativity, innovation and risk-taking are indeed related. They also suggest that these skills can be improved, although clearly more emphasis needs to be placed on these skills in future sessions.

CONCLUSIONS

Entrepreneurship is an important topic for today's university students. They will need an entrepreneurial orientation including creativity and a willingness to take strategic risks, in order to innovate new ways to meet the challenges of the future (Fillis, 2010; Gielnik, Frese, Graf & Kampschulte, 2012; Hamidi et al., 2008; Ward, 2004). Being able to solve-problems, communicate and work in interdisciplinary teams are also important underlying skills (Elia et al., 2011; Frank, 2007; Mangan, 2004). It is only logical that students who develop the right skills and attitudes are more likely to start businesses with high potential for growth. Boocock and associates Warren (2009) contend that transferable skills that can be taught in an entrepreneurship course that involves interdisciplinary cooperation include risk management, problem solving, critical and creative thinking, communication, teamwork and project management. Except for project management as a specific topic, all of these were covered in this camp and students indicated that they improved their skills in these areas.

The results of this study support previous research showing that experiential learning is appropriate for entrepreneurship education (Barr et al., 2009; DeGraaff & Ravensteijn, 2001; Deakins & Freel, 1998: Elia et al., 2011; Gibb, 1987; Jones & English, 2004; Jones-Evans et al., 2000; Kolb, 1984; Minniti & Bygrave, 2011; Rasmussen & Sørheim, 2006). This entrepreneurship summer camp used an action-learning approach to increase students' entrepreneurial orientation through hands-on activities focusing on creativity, risk-taking and pro-activeness, communication and teamwork. By learning about sustainability and alternative energy, the students also were introduced to topics that provided new material for creative ideas. Diversity of information has been associated with enhanced creativity (Gielnik et al., 2012). In the future, the entrepreneurship camp may expand to include a second session focusing on live case studies of successful entrepreneurs, hands-on product development and the development of a realistic business plan. Because business plans could be completed online, students would also gain practice with another learning format after the hands-on entrepreneurship camp.

Similar to Barr and associates' (2009) program, the goal of the camp was not to make entrepreneurs of all the students, but to increase students' understanding of entrepreneurship, encourage them to view entrepreneurship as a good opportunity for them and to increase their self-confidence in this regard. However, profits were not promoted as the only possible goal,

as social entrepreneurship was also presented as a way to make a difference in the world. Schipperijm (1999, in DeGraaff & Ravensteijn, 2001 p. 421) contends that self-interest ("small me") is "inextricably linked to the welfare of the whole—Da Wo ("Big Me")."

Although the activities will be refined for the next entrepreneurship camp, students clearly believed that they had improved their skills and knowledge in a numerous areas. Lower percentages of students in this study's pre-test rated their skills as good to excellent in each of the eight areas used by Cooper and Lucas (2006), but post-test percentages were approximately the same or greater for seven items. Students in this study found it difficult to design something novel and innovative, with only 20.7% in the pre-test and 55.2% in the post-test rating their skills as good to excellent in the pre-test. In the study by Cooper and Lucas, which included students from school in the US and UK, pre-test ratings were 61.0% and post-test rating rose to 81.7%. In the future, more emphasis will be given to designing novel and innovative products as well as general creativity and risk-taking. Attitude toward risk and innovation may be related to culture, and this will be examined in future entrepreneurship camps.

Many students stated at the beginning of the camp that they were not creative and did not feel that they could be. This was borne out by their low ratings of their skills (2.07 pre-test). Although the post-test rating mean was below 3 (2.97), the improvement rating was one of the highest (3.77) and the proportion of students rating their skills as good to excellent rose from 34.5% (pre-test) to 75.9% (post-test). These results confirmed the need for a survey question regarding perception of improvement in addition to skill rating. The results, combined with informal comments by students, also suggest that in the future, students may benefit from greater encouragement in both creativity and risk-taking (the willingness to take calculate risks and to risk thinking outside the box in a creative way). A fear of, or at least discomfort with, risk is apparently quite common. Over one-third of the people who want to start a business see "too much risk" as a significant barrier to entrepreneurship (Kauffman Foundation, 2011). Greater emotional support and encouragement, combined with a variety of ways that students can find ways to be creative and learn about risk-taking may also be beneficial (Schmidt, Soper & Facca, 2012).

The overall theme of people, planet and profit created an opportunity for students to think about all three elements of the triple bottom line. Students were very receptive to concepts regarding social entrepreneurship, alternative energy and sustainability, and these will be expanded upon in the future. To increase the opportunity for interdisciplinary and intercultural communication and understanding, students from additional countries and majors will be invited to participate in the camp, creating a richer experience for all students.

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FOSTERING CUSTOMER ORIENTATION THROUGH WORKSPACE FLEXIBILITY: EVIDENCE FROM ENTREPRENEURSHIP EDUCATION

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ABSTRACT

This paper highlights the important role of the physical teaching and learning environment (workspace) on customer orientation when educating students who may create their own new ventures. In the case of knowledge-based work, such as product and service development (PSD), workspace can be considered an enabling and generative mechanism (Peponis et al. 2007); that is, it can be understood as an instrument for teaching entrepreneurship. We argue that workspace flexibility influences the way entrepreneurship students perceive their customer orientation. Using a sample of 62 participants from entrepreneurship courses, we analyzed how workspace flexibility can enhance the student's ability to develop more customer-oriented products and services. Our findings show that workspace flexibility has a significantly positive effect on the perceived customer orientation. However, as our students work in entrepreneurial teams, we found that team size has no significant effect on the perceived customer orientation. Our study initially provides insights into analyzing the role of workspace in entrepreneurship education. Additionally, it suggests measures to assess workspace flexibility and customer orientation for future research.

Keywords: customer orientation, workspace flexibility, entrepreneurship education, entrepreneurial teams

INTRODUCTION

Companies are showing an increase in customer orientation by integrating their customers into their innovation processes (Schaffers and Santoro, 2010), as doing so reduces business risks such as the acceptance of new products and services (Schumacher and Feurstein, 2007; Lichtenthaler, 2005). This development is based on the fact that many newly developed products and services do not fail because of a lack of advanced technology, but because of a failure to understand and address the customers' actual needs (Chen et al., 2010). Customer orientation is an essential entrepreneurial quality that must be taught to prepare

students for future entrepreneurial endeavors: new ventures must capitalize on the venture's potential for customer orientation in product and service development (PSD) as it increases their innovativeness and success (Lin et al., 2008; Tajeddini et al., 2006; Lukas and Ferrell, 2000; Han et al., 1998).

The customers' experiences, valuations and suggestions for improvements or for new products or services have become important components in the innovation process. Therefore, it is crucial that a company develops solutions according to the needs of the customer rather than focusing solely on the technological possibilities. One way companies can address this issue is to become and to act more market oriented. Market orientation, however, can be disadvantageous because the company's reactions are based solely on the articulated needs of the customer (Christensen and Bower, 1996; Hamel and Prahalad, 1994) as opportunities to develop new products and services would be missed because customers would not be able to describe problems for products and services of which they are unaware. Hence, there is a clear need for entrepreneurs to develop a customer-oriented approach to address customer needs that are not observable. The need for customer orientation becomes even more important in the context of new ventures, where resources are scarce and failure is more risky than it is for established ventures. In addition, new ventures as well as entrepreneurship students often lack actual customers, especially in the first phases of PSD. Thus, market orientation is not feasible when there are no actual customers. Even so, customer orientation is the right approach for new ventures, and it is important that students address this problem.

In the literature, the impact of customer orientation on performance has been analyzed in the context of small enterprises (e.g., Narver et al., 2000; Appiah-Adu and Singh, 1998), and several studies have proven that customer orientation increases the innovativeness and success of ventures (Lin et al., 2008; Tajeddini et al., 2006; Lukas and Ferrell, 2000; Han et al., 1998). However, customer orientation is generally analyzed as the independent variable, influencing variables such as sales performance, customer satisfaction or the success of ventures. The question of whether customer orientation can actually be triggered remains unanswered. In researching entrepreneurship education, it is our task to understand how customer orientation can be fostered and thus exploited. Accordingly, knowing how to foster customer orientation would be a valuable contribution to entrepreneurship education. Therefore, in teaching entrepreneurship, it is our task to enhance the future entrepreneurs' ability to develop customer orientation.

Our study focuses on analyzing the effect of workspace flexibility on students' perceived customer orientation. We argue that the flexibility of workspace is important for the perceived customer orientation because workspace flexibility influences the availability of two different potential cognitive resources from which companies can benefit: people (with different types of expertise, experiences and skills) and various forms of material inscriptions that are part of the cognitive creative process, such as visual representations (Peponis et al.,

2007). Team size plays an important role in PSD. To account for the role of team size, we test for an effect on the perceived customer orientation.

This paper addresses the following five objectives:

1. To recognize the potential benefit of workspace as an instrument for entrepreneurship education.
2. To make an initial attempt to explain the theoretical basis for the roles of customer orientation and workspace.
3. To provide appropriate measures for entrepreneurship education research on workspace and customer orientation.
4. To identify opportunities for future research.
5. To expand the academic opinion of entrepreneurship education by emphasizing the roles of customer orientation and workspace.

The remainder of the paper is organized as follows. First, we discuss the importance of customer orientation for new ventures and, therefore, the need to foster customer orientation in entrepreneurship education. We then review the role of workspace flexibility in customer orientation. To measure the effect of workspace flexibility on customer orientation, we develop a questionnaire, and we develop hypotheses concerning the effects of workspace flexibility and team size on customer orientation. Subsequently, we introduce our study based on 62 online questionnaires and analyze the findings. In conclusion, we discuss our findings and suggest future research possibilities based on this contribution.

THEORETICAL BACKROUND

Customer Orientation and Entrepreneurship Education

According to *Amabile et al.* (1996), studies showed that the perception of free choice when approaching tasks results in more creative teamwork. Studies on creativity have revealed that individuals produce more creative work when they perceive themselves to have choice in how to accomplish the tasks that they are given (e.g., Amabile and Gitomer, 1984). Creativity enables entrepreneurs to recognize the potential opportunities of non-articulated prospective customer needs, interests and problems (Chen, 2007). Free choice on the design of the workspace is a contextual factor of PSD (Haner, 2005). With respect to our research, we refer to this factor as workspace flexibility. Following the argument of *Lechner et al.* (2008) that workspace design affects the way in which work is performed, we argue that workspace flexibility enables students to put themselves in the position of prospective customers when working on PSD.

In entrepreneurship education, students often develop their products and services in classrooms and in the absence of actual customers because the students are in the idea phase of PSD. Because of the lack of actual customers, we cannot measure customer orientation from the view of the customer, as other research does (e.g., Brady and Cronin Jr., 2001). When there are customers, the literature suggests using the sales orientation/customer orientation scale developed by Saxe and Weitz (1982). However, the measurement of customer orientation in the idea phase of PSD is an unexplored field. In our case, we must develop a new scale to measure customer orientation in the absence of customers. To develop such a scale, we conducted interviews with founder teams that were in the idea stage of their new venture and, therefore, also operating without actual customers. As a result of the interviews, we developed a four-item scale to measure the perceived customer orientation for entrepreneurship students. The use of perceptual variables seems to be promising in the context of investigating workspace design (e.g., Hua et al., 2010; Peponis et al., 2007). While customer orientation has been analyzed extensively in the literature, especially with regards to marketing research (e.g., Blocker et al., 2011; Jones and Rowley, 2011), it is often analyzed in the context of its effects on service quality or sales performance (e.g., Rafaeli et al., 2008; Tadepalli, 1995). *Duening* (2008) stated in his work that it is vital for entrepreneurs to be able to design customer-oriented solutions, and he frames this ability in his call for teaching entrepreneurship students design thinking. In the design thinking literature, it has been emphasized that customer orientation is one of the main goals of the methodology (Boni et al., 2009; Brown 2008; Dunne and Martin, 2006) and that it is a valuable entrepreneurial quality worth being taught in entrepreneurship education.

Hypotheses Development

Workspace design affects users' perceptions about how well the workspace supports their work (Peponis et al., 2007), in our case, the perceived customer orientation. Workspace design plays an important role in PSD, as it influences behaviors and activities (Winemann et al., 2009). Traditional workspace designs, such as "open-plan" or "cellular", cannot provide support for all phases of PSD as these designs rarely support the need for communication and interaction while allowing for privacy at the same time (Haner, 2005). Knowledge-based work, however, such as PSD requires workspaces that allow for communication, interaction and privacy simultaneously (Peponis et al., 2007). A workspace offers infrastructural content to control and measure variables such as interaction and communication (Lewis and Moultrie, 2005), and it supports and stimulates knowledge-based teamwork (Hua et al., 2010). PSD can be particularly effective in such environments because all of these environments require dislocation, team building, communication, creativity and problem-solving (Lewis and Moultrie, 2000). The simultaneous need for communication, interaction and privacy for PSD (Hua et al., 2010) can be fulfilled by flexible workspaces. As a result, we postulate that

workspace flexibility enhances the perceived customer orientation among entrepreneurship students. In this study, we analyze customer orientation as a dependent variable, and therefore, we develop a questionnaire to measure the perceived customer orientation of the teams as well as the workspace flexibility. We expect that workspace flexibility as the independent variable has a positive impact on the perceived customer orientation.

H1: Workspace flexibility is positively related to the perceived customer orientation.

Individual efforts and achievements are the basis for the initiation, contribution and evaluation of creativity and innovation - including customer orientation (Haner, 2005). The number of specialized domains is increasing, and as a result, there is an exponential growth of knowledge and the subsequent need for individual learning capacity growth as well as the need for the acquisition of diverse information from other team members (Van de Ven, 1999).

Given that team size plays an important role in PSD, several studies have found that the size of a team has effects on teamwork variables such as effectiveness (Rouasseau and Aubé, 2010; Ucbasaran et al., 2003). While team size has varying effects on the outcome of the teamwork, there are positive effects as a larger team offers increased potential access to information and information processing capabilities (Metzger et al., 2008). Thus, on the one hand, studies have found a positive effect between team size and team effectiveness (e.g., Hirschfeld et al., 2006; Campion et al., 1993). On the other hand, a negative relation was also revealed with respect to increased team size because more members lead to increased coordination problems (e.g., Price et al., 2006). In the entrepreneurship literature, team size has generally resulted in an inverted u-shaped effect on entrepreneurial performance (Shrivastana and Tamvada, 2011; Backes-Geller et al., 2006). To some extent, a team benefits from an increasing member count until the team reaches its optimal size, after which an increasing member count seems to impair entrepreneurial performance. The underlying theories for these findings are team synergy and team dissonance (Shrivastana and Tamvada, 2011). However, the cited studies focused on entrepreneurial performance such as sales growth, while the effect of team size on customer orientation has, to date, not been analyzed. Overall, it can be concluded that perceived customer orientation is situational and that the presence and behavior of additional team members has an effect on creativity as well as on the concomitant benefits of different groups sizes (Haner, 2005). With respect to fostering customer orientation, we expect team size to have a positive effect because teams can capitalize on their increased stock of information and information processing capabilities. Furthermore, larger teams can more easily process parallel tasks, and they can work more effectively to gain a customer perspective. While some team members prepare a simulation for a customer situation, others may conduct interviews. Hence, we hypothesize that team size has a positive effect on the perceived customer orientation of entrepreneurship students.

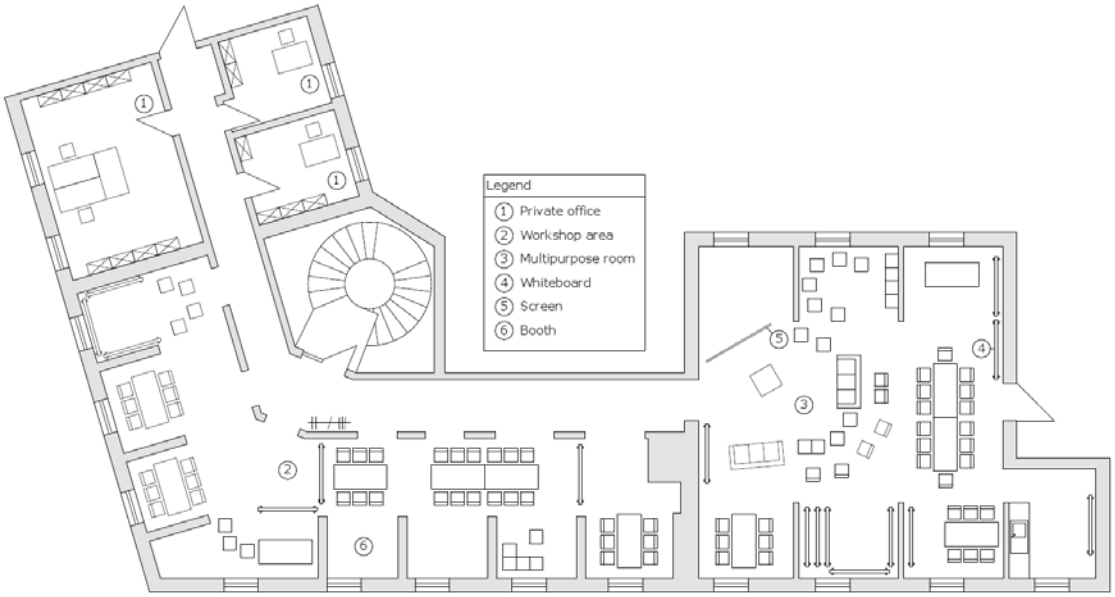
H2: Team size is positively related to the perceived customer orientation.

METHODOLOGY

Research Setting

In the entrepreneurship courses we analyze, students participate in classes that are held according to the design thinking methodology: students work in flexible workspaces, which can be self-designed by the participants (Figure 1). The class rooms were specifically designed to support collaborative as well as individual work.

Figure 1: Classroom layout



One of the assets in these classrooms is mobile furniture, which allows students to move and arrange whiteboards and desks in ways that best promote the team's specified objective. For example, students can enclose their workspace with several whiteboards and concentrate on teamwork, or they can open their workspace and present their ideas to other classmates for their feedback. Teams can separate and work individually and in privacy in special booths or offices. Students are also able to simulate a prospective customer's situation by building an auxiliary set in the classroom and role playing various scenarios where they act as a customer. The workspace for the course "supports organizational productivity when it provides an intelligible framework within which copresence, coawareness, and interaction patterns become engaged in the exploration, representation, interpretation, and transformation of collective knowledge in relation to ongoing projects" (Peponis et al., 2007, 818).

Furthermore, following the open system approach of *Czuchr et al.* (2003), students can invite possible customers into their workspace and test a solution in a laboratory setting. In other words, the teams are capable of customer-oriented PSD. These concepts of experimenting and of experience-based learning are important for entrepreneurship education, as they enhance learning success (Kourilsky and Carlson, 1997). Therefore, in this flexible workspace, the possibility of gaining customer insight is assumed to be high.

Figure 2: Different workspace designs in the multipurpose room

Data Collection and Measures

We invited 114 students to complete an online questionnaire after they completed their entrepreneurship courses in our classrooms. The students participated in the courses as work teams, developing business ideas and writing business plans together. The courses were taught based on the methodology of entrepreneurial design thinking (von Kortzfleisch et al., 2010), which emphasizes teamwork in a flexible workspace to identify and exploit business opportunities. Entrepreneurial design thinking is "...a team-diversity-based approach for treating user-centered problems as entrepreneurial opportunities within an iterative open process supported by the use of creativity fostering tools and open environments..." (von Kortzfleisch et al., 2010). The courses mainly trigger the 'designing mind' of entrepreneurs, which was called for by *Duening* (2010) to be integrated into the entrepreneurship curriculum. In class, students are allowed to flexibly design their own workspaces, simulate customer experiences and invite prospective customers for tests. Participation in the survey was voluntary and of the 114 students invited to take the survey, 62 students responded for a response rate of 46%. The sample consists of 43 male and 19 female participants from different degree programs: information management (37), business administration (13), informatics (7) and others (5). The typical participant was 26 years of age or younger. The team sizes ranged from 2 to 7 participants, while the typical team consisted of 5 participants or less (Table 1).

Table 1: Team frequencies			
Team size	# of cases	%	Cumulative %
2	2	3.2	3.2
3	9	14.5	17.7
4	11	17.7	35.5
5	16	25.8	61.3
6	19	30.6	91.9
7	5	8.1	100.0
Mean team size: 4.9			

For some students, the course was a business elective, while for others, it was required for their certification in entrepreneurial studies. The courses were held in the above introduced classrooms that provided flexible workspaces. At the end of every semester, we asked all students to participate in an online questionnaire that we had constructed for collecting data about the students, workspace flexibility and perceived customer orientation. The data consist of student responses from three semesters (during the years 2010 to 2012).

The sample provides data from students of both genders and of different ages and degree programs. Furthermore, the participants display different motivations (mandatory or voluntary) and periods of participation, which ensures a certain variation in the construct. Therefore, the sample can be considered representative of entrepreneurship students in general.

The multi-item scale for the measurement of workspace flexibility was developed based on a literature analysis. Workspace flexibility was measured by using a 4-item scale (Cronbach's $\alpha = 0.8179$) that asked about the students' perceptions about space-openness and the opportunity to design one's workspace. Based on a study of 12 interviews conducted on new venture teams in a science park, we developed a multi-item scale to measure the perceived customer orientation. Customer orientation was also measured using a 4-item scale consisting of statements such as "During classes, I was able to develop solutions for prospective customers' problems." (Cronbach's $\alpha = 0.8972$). Both scales were ranged from 1 (strongly disagree) to 5 (strongly agree). We conducted a factor analysis to examine the distinctiveness of our scales for the elaboration of workspace flexibility and customer orientation. The expected two-factor model fit the data well ($\chi^2=43.72$, $df = 13$; $p < 0.0001$).

ANALYSIS AND RESULTS

After testing the sample for normal distribution using Pearson's Chi-square goodness-of-fit test, we carried forward analyzing the postulated effects. Using correlation and linear regression analysis, we tested our hypotheses concerning team size, workspace flexibility and perceived customer orientation. Table 2 provides an overview of the descriptive results as well as the correlations between variables.

Table 2: Means, Standard Deviations, Correlations and Reliabilities					
Variables	M	S	(1)	(2)	(3)
(1) Team size	4.901	1.302	-		
(2) Workspace flexibility	2.083	.772	.250	-	
(3) Costumer orientation	1.811	.692	.162	.522***	-
Notes: ***p<.001 (N=62)					

We postulated in hypothesis 1 that workspace flexibility is positively related to the perceived customer orientation of entrepreneurship students. The results ($r = 0.522$, $p < 0.001$) indicate that hypothesis 1 was strongly supported.

We postulated in hypothesis 2 that team size is positively related to the perceived customer orientation. However, while the correlation was found to be positive, there was no significance ($r = 0.162$, $p > 0.5$). Therefore, hypothesis 2 was not supported.

To identify the optimal regression model, we used a hierarchical regression analysis. To find the best model, we conducted a step-down regression where non-significant variables are stepwise excluded. We first built Model 1, the full model, and included the predictor variables team size and workspace flexibility. In this model, the variable team size was not significant and was therefore excluded in Model 2, which only considered workspace flexibility (Table 3). Model 2 has a 0.1% smaller R^2 than Model 1 and, therefore, only a slightly poorer explained variance. However, the adjusted R^2 in Model 2 is considerably higher than it is in Model 1. Therefore, Model 2 displays a better overall model quality considering the explained variance and the number of independent variables. If several models show the same degree of explained variance, the model with the fewest variables should always be preferred because R^2 increases with the amount of independent variables, even if the added variable does not contribute to the explanatory power. Model 2 shows that workspace flexibility has a highly significant positive effect on customer orientation.

Table 3: Regression models and coefficients				
	Model 1	Std. error	Model 2	Std. error
Workspace flexibility	.460***	.103	.468***	.099
Team size	.017	.061		
R^2	.2735		.2725	
Adjusted R^2	.2489		.260	
Notes: ***p<.001				

DISCUSSION

In this study, we analyzed the influence of workspace flexibility on the perceived customer orientation of entrepreneurship students. To capture these variables, we developed

and validated two 4-item scales. The items, correlations and reliabilities of the variables can be found in the appendix of this study. We tested two hypotheses concerning the influences of workspace flexibility and team size on the perceived customer orientation of entrepreneurship students. We found strong support for the positive effect of workspace flexibility on the perceived customer orientation. Additionally, we hypothesized that team size has a positive effect on the perceived customer orientation of entrepreneurship students. The results show that the correlation was positive but lacked significance. The positive relation is consistent with prior studies on team size, indicating more members lead to increased work effectiveness and, as a result, to customer orientation. After conducting a hierarchical regression analysis, we found the workspace flexibility singularly best explains the perceived customer orientation.

The findings show that the workspace of an entrepreneurship course has an influence on the success of imparting customer orientation among entrepreneurship students. Our study initially provides insights on analyzing the physical environment for entrepreneurship education. Entrepreneurship research often mentions the problem of "left-censoring", meaning that it is difficult to identify entrepreneurial teams when they emerge (Forbes et al., 2006). Therefore, in general, there is a lack of data on nascent entrepreneurial teams. Our study contributes to filling this gap by focusing on emerging entrepreneurial teams in their first phase, the idea phase (Clarysse and Moray, 2004), and by providing suitable measures.

Although the use of data based on perceived attributes is established in the context of workspace research, there may be possibilities to enhance the measurement of entrepreneurship students' customer orientation. One possibility would be to introduce peer-reviewed measures. Student teams could be asked to measure the customer orientation of the work of their fellow teams. Another limitation of this study is that it was conducted only in one German university. Future research should consider applying the findings to several regions.

CONCLUSION AND IMPLICATIONS FOR FUTURE RESEARCH

Although writing a business plan is ought to be "…the foremost pedagogical tool in many entrepreneurship programs…" (Hamidi et al. 2008, 306), we should also focus on other tools for entrepreneurship education. Our study suggests considering the workspace as the physical teaching and learning environment as such a tool, and to prepare students for future entrepreneurial ventures, the analysis of educational triggers such as workspace must be expanded.

In today's highly educated and specialized society, the collaboration within knowledge-based work is increasing, and therefore, the demand of flexibility in workspaces to simultaneously support communication, interaction and privacy is increasing, as such flexibility is critical for collaboration performance (Hua et al., 2011). To create this flexibility

in a workspace, an understanding of the relationship between the spatial characteristics of a workspace that determine the flexibility is necessary and must be thoroughly investigated in future studies. Therefore, a focus on the principles of the conceptualization and the design of flexible workspaces is important.

Design thinking courses, as they begin to surface in several universities, offer an optimal test environment. As shown in our study, the courses in entrepreneurial design thinking served as our source for data. The developed scales can serve as research tools for future research as well as first components of an inventory for researching the entrepreneurship education environment and circumstances. Following the design thinking approaches in teaching entrepreneurship, the next fields of study should be the structure of student teams, the tools for fostering creativity and the working process (von Kortzfleisch et al., 2010). Research in these areas can also enhance our knowledge of entrepreneurship education.

Regarding the limitations of this study on predicting the entrepreneurial learning of later-stage entrepreneurial teams, we invite researchers to consider the variables developed in this study. An implementation of the variables on later-stage entrepreneurial teams appears to be promising, as our study aims to foster research on customer orientation and workspace design for entrepreneurial teams. With respect to this contribution, we developed and successfully tested the variables to conduct this research on entrepreneurial teams.

Although team size shows no significant influence on customer orientation in our study, the extant literature indicates a positive relationship. Future research should address this question in terms of several resources that become accessible when team size increases. As an example, team size is considered a predictor for multidisciplinarity in teams (Tuten and Aşcıgil, 2010; Fay et al., 2006). The role of human and social capital offers a promising area for research on the relationship between team size and customer orientation.

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APPENDIX

Items, correlations and reliabilities for workspace flexibility	
By using mobile furniture, I could design my own workspace.	.82
I felt that the classroom concept was an open environment.	.67
The classroom concept enabled me to work and use my imagination.	.87
The classroom concept allowed for experimentation and testing.	.86
Cronbach	.8179

Items, correlations and reliabilities for perceived customer orientation	
During classes, I was able to develop solutions for prospective customers' problems.	.82
During classes, I was able to put myself into the problem situation of prospective customers.	.93
During classes, I was able to understand the problems of prospective customers.	.92
During classes, I was able to identify problems of prospective customers.	.83
Cronbach	.8972

ACADEMIC ENTREPRENEURSHIP: TECHNOLOGY TRANSFER IN HIGHER EDUCATION

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ABSTRACT

The practice of academic entrepreneurship continues to rise as many institutions of higher learning embrace its role in stimulating the economy through commercialization of intellectual property. In contrast, research in the field pales relative to other areas of entrepreneurship. In order to reverse this problematic trend we first present a framework for academic entrepreneurship. Secondly, we conducted an extensive review of articles published in leading entrepreneurship journals from journal inception till the end of 2010 and compared the frequency of publication in academic entrepreneurship-related research to entrepreneurship research as a whole.

INTRODUCTION

The importance and contribution of academic entrepreneurship (AE) to regional economic development is well documented and cannot be over-emphasized (O'Shea, Allen, O'Gorman & Roche, 2004). While spin-offs have been the main focus in AE, there are other outcomes of AE. The investigation of academic spin-offs by researchers is understandable for two main reasons: (1) spin-offs are a good metric for AE and (2) the impact of spin-offs can be easily measured. For example, the Association of University Technology Managers (AUTM) attributed a total of $33.5 billion in economic value added between 1980 and 1999 to American university spin-offs alone, excluding the value added from other types of deals, such as taking an equity ownership position in a venture, which may result due to technology transfer from an academic institution (Shane 2004). In fact, Scott Shane, in his book, *Academic Entrepreneurship: University Spin-offs and Wealth Creation* (Shane 2004), noted that spin-offs encourage economic development, generate significant economic value, create jobs, induce investment in university technologies, promote local economic development, enhance the commercialization of university technologies, are an effective commercialization vehicle for uncertain technologies and are an effective vehicle for encouraging inventor involvement. Despite, these obvious merits, there has been very little research conducted in the area of AE. It also appears AE lacks a clear scope and purpose and it has, perhaps, focused too much on spin-offs. One of the reasons for this research deficiency could be due to the lack

of a framework to guide scholars in this field. A framework would enable researchers to see the "big picture" for research on AE and could guide future work.

Authors have explored several independent variables in the study of AE and many of the studies considered metrics related to spin-offs as dependent variables, even though there are other outcomes besides spin-offs should be explored by researchers. In this paper, we propose a framework that should foster cause/effect-type studies in AE. The framework includes independent, dependent and moderating variables, which should then trigger the investigation of more complex situations in AE. Secondly, we tracked the publication rate of academic entrepreneurship-related research relative to other areas of entrepreneurship based on a comprehensive study on AE by accessing all the articles in five journals that heavily publishes in entrepreneurship articles. These journals are *Journal of Business Venturing* (JBV), *Entrepreneurship Theory and Practice* (ETP), *Journal of Technology Transfer* (JTT), *Research Policy* (RP), and *Journal of Engineering and Technology Management* (JETM). Based on this in-depth study, definitions of important terminologies were provided and the determinants of AE were elucidated. While we cited relevant articles from other journals, a thorough review of journals, such as the *Academy of Entrepreneurship Journal, Strategic Entrepreneurship Journal, International Journal of Entrepreneurship and Innovation Management, Economics of Innovation and New Technology,* the *Enterprise and Innovation Management Studies* and others, was not conducted. Nonetheless, we believe that the articles reviewed herein are a representative set of scholarly work in the study of entrepreneurship.

An understanding of terms, definitions and jargon used in the field is important. Unfortunately, some authors have noted several inconsistencies in AE research and this, in addition to other factors, may have prohibited the development of an AE framework. On a related note, some authors have used "spin-offs" to describe companies emanating from academic institutions that engage in entrepreneurship (Shane and Stuart, 2002); whereas, some others have used the term "spin-outs" to describe the same phenomenon (Nicolaou and Birley, 2003). The former was found to be commonly used in the literature. Nonetheless, this particular difference in the choice of words is negligible and does not prohibit the development a framework for AE. A disagreement that has more serious ramifications is the scope authors have conferred to the term. For instance, while some authors have restricted the use of "spin-offs" (or spin-outs) in AE to only those companies that result from the exploitation of intellectual property (IP) (Jelinek, 2005; Shane and Venkataraman, 2000), others have included companies that did not exploit any IP (Roberts, 1991). The latter and second school of thought removes the emphasis from "the exploitation of institution's IP" and places it on "the involvement of a member of an academic institution." This disagreement by scholars on how academic spin-off should be defined is indeed confusing, and, to date, there has been no consensus on this matter.

There are three aspects of that should be concurrently studied in entrepreneurship: (1) the entrepreneur, (2) the entrepreneurial attitudes and behavior, and (3) the entrepreneurial process (Johnson, 2001). In AE research, the focus has been on the faculty, and so, the faculty member whose idea and IP upon which a company was founded is the "innovator." However, in a many cases, the faculty member was not the entrepreneur in the entrepreneurial (or technology transfer) process. This situation, where the academic is the key player in the AE

process (i.e., the innovator) but not the entrepreneur, makes AE a more interesting field of study; and conflicting reports about the role of faculty has appeared in literature. For example, some authors argue that the lack of entrepreneurial orientation (EO) on the part of the faculty could negatively influence entrepreneurial outcome (Amanor-Boadu and Metla, 2008). They conclude that there is a need for effective educational programs to increase awareness among faculty and researchers. Yet, others show a negative correlation between entrepreneurial outcome and possession of prior knowledge about ways to serve a market using the developed technology by technology entrepreneurs (Marvel and Lumpkin, 2007).

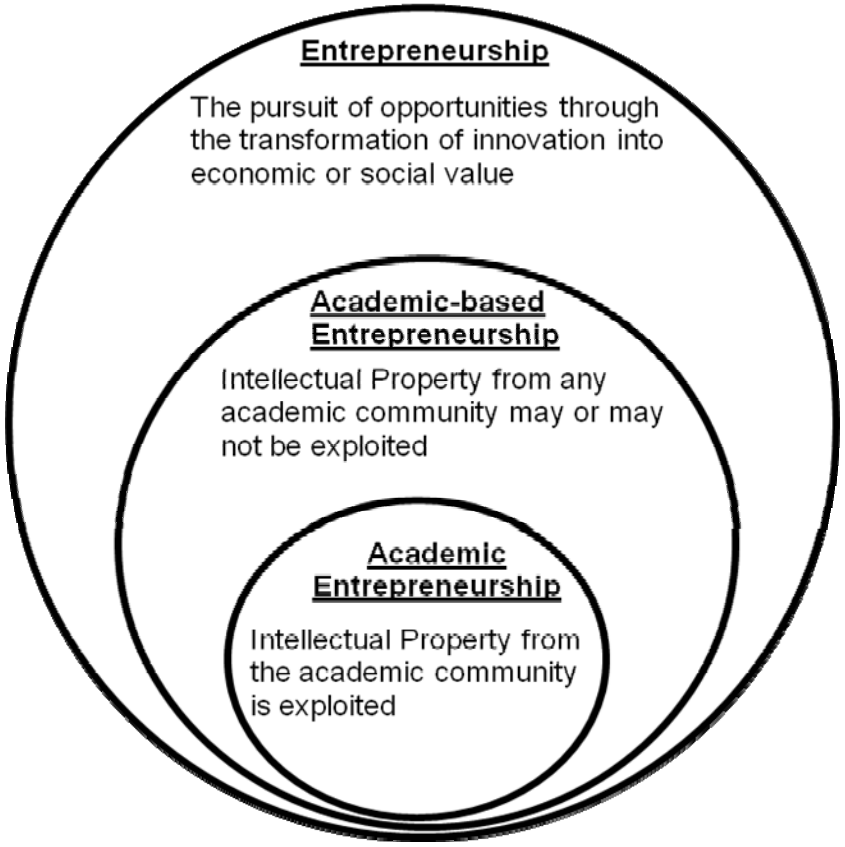
To begin, we define entrepreneurship as the act of exploiting opportunities and transforming innovations into social or economic value. This definition is encompassing and does not restrict entrepreneurship to only new venture creation, but it includes any outcome that has social or economic value. The definition of AE is less clear, however, and differs from one author to another. Smilor, Gibson, and Dietrich defined spin-offs as (a) companies wherein the founder was a faculty member, staff member or student who left the university to start a company or who started a company while still affiliated with the university; or, (b) companies based on technology or technology-based ideas developed within the university (Smilor et al, 1990). We consider AE as a sub-field of Entrepreneurship; and, for that to be the case, AE should possess certain aspects that make it unique yet conforming to the general concept of entrepreneurship. Because academic institutions are a basin for generating IP, and because the entrepreneurial exploitation of IP in itself is unique, we believe that this phenomenon – "the entrepreneurial exploitation of IP" - should be clearly distinguished from other academic entrepreneurial events that do not exploit IP. In order words, Smilor et al's part (a) and (b) should not define the same sub-field of entrepreneurship. Therefore, consistent with part (b) of Smilor et al's definition, we define academic entrepreneurship, or AE, as the exploitation of academic institution's IP to create social or economic value. This definition highlights the distinctiveness of AE while clearly placing AE within the broader field of entrepreneurship. When a university transforms an idea into a patent that has some perceived economic value, even though a company was not created, based on this definition, that university has engaged in AE.

But when faculty members assist in the formation of a new ventures outside the university and that venture did not exploit some IP developed within a university, this does not meet the definition of AE.

What then should be the appropriate term to describe the phenomenon when university members engage in entrepreneurial activities that do not exploit IP? To answer this question, we coin the term, "*academic-based entrepreneurship.*" Part (a) of Smilor et al's definition would fall under the broader scope of academic-based entrepreneurship. We must add that, like AE, this definition considers the involvement of members of the academic community, which is unique enough; however, it stops at "the pursuit of opportunity." For the sake of laying some ground rules that would enable the development of a framework for AE, we define *academic-based entrepreneurship* as the pursuit of any opportunity, including the exploitation of academic-related resources not limited to IP, by members of the academic community for economic or social good. In essence, academic entrepreneurship is a subset of academic-based entrepreneurship as shown in Figure 1. So, the creation of a real estate

venture by a faculty member and the participation of students in a business plan competition event organized by a college of business are examples academic-based entrepreneurship.

Figure 1: A diagram showing academic entrepreneurship as a subset of academic-based entrepreneurship and entrepreneurship.



The outcomes in AE are varied and include IP disclosures, patents, licenses, cash, deals (e.g. equity), spin-offs, partnerships, revenue, returns-on-investment, and so on. In other words, any metric that possesses some value by which AE can be measured is an entrepreneurial outcome. Therefore, the purpose of AE is to attain any, some, or all of these outcomes. Based on these metrics, there is evidence that some universities outperform others. Some institutions are "wired" to churn out successful start-ups, and their success is attributable to their ability to create IP and then transform the IP into useful products, processes and services. This transformational process is a vital area of research.

We believe that AE is complex, containing a variety of input (or independent) and moderating variables. In the next section, we discuss the key variables and determinants of AE. They are namely: (1) *institution's capacity to generate IP*, (2) *institution's entrepreneurial culture*, (3) *access to financial capital*, (4) *the presence and the characteristics of university technology transfer office (TTO)* and (5) *the involvement of*

entrepreneurship experts. Each of these factors can be dissected and analyzed. For instance, an institution's capacity to generate IP can be impacted by certain faculty characteristics as well as the level of sponsored research funding. Some faculty characteristics to consider are: faculty quality, age, tenure, etc. Similarly, an institution's entrepreneurial culture can be impacted by several other factors including, but not limited to, faculty's ties to industry, TTO's mission, university president's and dean's support of AE, the nature of the competition among AE players within the academic institution, the entrepreneurial orientation and perception of faculty, students and staff on AE, and any written or unwritten rules and policies regarding AE. So, careful attention should be given to each of AE determinants in order to adequately decipher their respective make-ups.

THEORITCAL PERSPECTIVE

Since the enactment of the Bayh-Dole Act in 1980, there has been an increase in the commercialization of IP from academic institutions. IP is comprised of tangible and intangible creations of intellect that have commercial value. Even though by definition students and staff are members of the academic community, historically, a majority of commercialized IP have come from faculty members. Because AE is hinged upon the idea of exploiting IP, it naturally follows that one of the chief determinants of AE is institution's capacity to generate IP. It is well known that academic spin-offs emanate from research institutions (Clarysse, Wright, Lockett, Van de Velde, & Vohora, 2005). Evidently, most commercialized IP are technology-based, including computer technology, software, healthcare technology and biotechnology. In order to develop technology innovations such as these, institutions must rely on faculty ingenuity and research programs, especially of scientists and engineers (Merrifield, 1987).

It has been showed that both full-time and part-time professors were not only instrumental to the development of the original ideas for academic spin-offs, but that in some cases they devoted time and energy throughout the company start-up process. In fact, some professors have separated from the university to nurture their start-ups while some others maintained their positions with their institutions (Doutriaux, 1987). Therefore, faculty risk taking behavior was linked to growth of start-up companies. Smilor et al. (1990) reported that a faculty's drive to try something new and the desire to put theory to practice were most important pull factors that influenced spin-offs at The University of Texas-Austin. Shane (2002) highlighted the important role of faculty members as facilitators of technology transfer from a university to industry, accomplished through consulting arrangements. He added that faculty involvement in these situations is more intense in the case of technology transfer to entrepreneurial firms compared to large firms (Shane, 2002). Further, it has been showed that faculty quality is positively correlated with the number of academic spin-offs (Powers & McDougall, 2005). To buttress the importance of the talent that faculty brings to bear, other scholars demonstrated a positive correlation between faculty characteristics (tenure and age) and patenting activity (Allen, Link, & Rosenbaum, 2007).

Also, university research and design (R&D) expenditure positively influences new business formation around the vicinity of the university (Kirchhoff, Newber, Hasan, &

Armington, 2007). Even though Kirchhoff et al. (2007) did not link the expenditure to academic spin-offs but to start-ups outside the university, the study established the impact of faculty research beyond the walls of institutions where they work. In the U.S., 4.5 million trained scientists and engineers were credited to turning $15 billion per year in basic research expenditure into IP and technologies that were readily transformed into useful products, processes and services that filled various market niches (Merrifield, 1987).

Intuitively, it appears that high quality faculty members are able to attract sponsored research funding, and a similar argument can be made that generous sponsored research funding (or endowment) can help an institution to attract high quality faculty members. This situation could potentially create a cycle, which ultimately helps research institutions retain high quality faculty who can attract research funding, which in turn provides the platform for scientific/engineering discoveries that could lead to the development of technologies and the creation of IP within the institution. So, faculty and the research funding are key ingredients to building the capacity to generate IP. We therefore propose that:

P1 (a): Faculty characteristics will influence with the number and quality of the IP generated in an academic institution

P1 (b): Faculty characteristics will influence with the number of desired entrepreneurial outcomes

P1 (c): The level of sponsored research funding will positively correlate with the number and quality of the IP generated

P1 (d): The level of sponsored research funding will positively correlate with the number of desired entrepreneurial outcomes

INSTITUTION'S ENTREPRENEURIAL CULTURE

As faculty characteristics and sponsored research funding influence academic entrepreneurial outcomes as independent variables, the *entrepreneurial culture* (EC) at an institution will moderate the relationships. Culture can be defined as a set of shared attitudes, values, goals, and practices that characterizes an institution, organization or group (Kroeber and Kluckhohn, 1952). Therefore, we define EC as a set of shared attitudes, values, goals, and practices that influence the level of entrepreneurship and entrepreneurial outcomes at an organization. It has been noted that "the U.S. has a remarkable entrepreneurial culture which provides permission to fail and to try again until success is achieved without permanent or public penalty" (Merrifield, 1987). This means that EC is the factor that sustains entrepreneurship within any community and process. Our literature search uncovered neither any institution's EC study nor its ramification on entrepreneurial outcomes. Merrifield's work was the only reference to EC in our literature search. Granted, EC is a difficult variable to capture and measure, but it is a very important factor because the attitudes, actions, and inactions of key actors within an institution towards entrepreneurship would affect institution's entrepreneurial outcome in various ways. For instance, a university president may implement policies that encourage faculty members to disclose IP and pursue AE. She may

also equip university research parks with incubators and provide resources to foster AE. A university president may do all the things within her power to encourage AE, but if faculty members are not interested, they would not disclose their IP. Similarly, a negative outcome may also result, if faculty members are interested, but their college dean is complacent about AE and simply ignores favorable university policies on AE. The effect of an institution's EC could be felt as a pull factor or push factor on faculty members or any other actor for that matter. We view EC as the total (or net) effect of all the implicit and explicit rules, attitudes, orientations and behaviors that affect AE within an institution. The implicit and explicit nature of the components comprising EC makes it all difficult to measure.

Some authors have hinted at the effects of EC in an institution. For example, Smilor et al. (1990) concluded that university policy combined with a variety of institutional mechanisms directly contributed to the formation and the development of spin-off companies. Another report also maintained that both university and technology transfer missions, which supposedly sets the tone for the institutional culture, should work in concert in the AE process (Mian, 1997). In a different study, scholars recommended that university policy of facilitating technology transfer through "formal search and shopping," should be replaced by providing assistance to build networks and relationships in the marketplace (Massa and Testa, 2008). Others scholars noted that an important factor in the success of a spin-off was the degree of support - formal and informal - it received from its parent university center (Steffensen and Rogers, 2000).

If the culture at an institution does not require the disclosure of IPs through the TTO or any other internal unit, a "backdoor" technology transfer may occur. The term "backdoor" describes technology transfers that are not formally disclosed to the institution. In this case, the transfer cannot be accounted for by the institution and faculty members may engage directly with industry or create new ventures without involving other institution key players such TTO personnel in the process. A question arises as to whether backdoor technology transfer is unethical; especially when the institution in question is indifferent about AE, or does not even have a TTO to facilitate the AE process.

EC depends on the reactions and actions of people within a given organization. It has been reported that the administration at universities revealed a wide spectrum of attitudes towards taking equity in spin-offs; while some universities pursued this strategy, others developed firm policies against it (Bray and Lee, 2000). This indicates that an institution's EC culture can impact outcomes. We therefore propose that:

P2 (a): Favorable entrepreneurial culture at an institution will positively correlate with the number of IP disclosures by faculty members at an institution.

P2 (b): Favorable entrepreneurial culture at an institution will positively correlate with the entrepreneurial outcomes at an institution.

OTHER MODERATING VARIABLES

So far we have identified the desired outcomes (also the output or dependent variables) and key input (or independent) variables, namely faculty characteristics and level of sponsored research funding (in US dollars). We have also discussed the importance of EC as a moderating variable. Next, we will discuss other variables that moderate the effects of faculty characteristics and level of sponsored research funding on entrepreneurial outcomes.

The other moderating variables are: *access to financial capital*, *the presence and the characteristics of university TTO* and *the involvement of entrepreneurship experts*. Financial capital is an important factor in the transfer technology process, especially in the case where spin-offs or patents are to be created or filed, respectively. Most biotechnology and other university-types spin-offs often obtain financial capital from angels or venture capitalists that provide both financial resources and business counseling to the start-up (Pratt, 1995; Sapienza, 1989). Research has also shown that the abundance and availability of financial resources positively correlated with the number of university spin-offs and start-up success (Powell et al., 2002; Shane and Stuart, 2002). Using a resource-based view of the firm framework, both venture capital munificence and age of TTO were positively related to the number of initial public offering (IPO) companies to which a university had licensed a technology and to the number of start-ups formed (Powers and McDougall, 2005).

"Human resources (or TTO personnel)" is often the focus when discussing TTOs; however, certain fixed and material assets designated for research and other purposes are often associated with TTOs. At most universities, TTOs and incubators are housed within a research park. However, in this paper, we used "TTOs," "incubators," and "research parks" to represent the idea of a place within an institution where academic start-ups are assisted and nurtured and where institution's technology transfer mission is executed. The role of TTOs in AE cannot be overemphasized: They provide an environment in which learning from exploration and experimentation is most likely to take place (Slater and Narver, 1995). It was showed that incubation strategies, (i.e., low selective, supportive, and incubative), have different resource implications in the management process (Clarysse et al., 2005). Nearly half of the publications we studied made some reference to TTO, an incubator or research park, further underscoring the importance of TTO in the AE. In fact, today every major research university has a TTO (Colyvas et al., 2002). We also recognize that an ineffective TTO might in fact hinder AE, and so we posit that a TTO must be effective in order for it contribute positively to AE outcomes.

Last, but not least, is the influence of an entrepreneurship expert. In the AE process, the faculty generates the IP, but the entrepreneurship expert is the one who is concerned with transforming of the IP into an economic or social value. Recent study shows that the less technology entrepreneurs know about ways to serve a market, the greater their chances of using technology knowledge to create breakthrough innovations within it (Marvel and Lumpkin, 2007). This suggests that "creators of innovation" should focus on developing the innovation and worry less about the commercialization of the innovation. This further suggests that the advice or involvement of an entrepreneurship expert, someone other than the faculty with the original idea, is needed. The expertise of a business expert can be drawn from

multiple sources. They can be a TTO staff, an entrepreneur-in-residence at a research park, an entrepreneur investor, a venture capitalist (VC), a company staff negotiating a technology transfer deal with the university, an outside expert solicited by the university for assistance or a part of a formal or informal strategic network.

Researchers have noted that in addition to the core researchers, TTO personnel and in some cases outsiders, with no formal link to the institution even participate in the AE process (Vanaelst et al., 2006). Others reported that outsiders, also called surrogate entrepreneurs, are attracted to the AE process because they have experience (Vanaelst et al., 2006). We must quickly add that it appears that the moderating variables (EC, access to financial capital, TTO and entrepreneurship expertise) may also influence one another. For instance, a high level EC at an institution may lead to the hiring of knowledgeable and proactive TTO personnel who in turn may engage VCs better, thus attracting the necessary financial capital to successfully create a spin-off. Based on the evidence presented above, we proposed that:

P3: The availability and accessibility to financial capital will influence the number of entrepreneurial outcomes

P4: The presence and characteristics of university TTO will influence the number of entrepreneurial outcomes.

P5: The involvement of entrepreneurship experts will influence the number of entrepreneurial outcomes.

A FRAMEWORK FOR ACADEMIC ENTREPRENEURSHIP

Based on the propositions, we developed a practical framework for AE as shown in Figure 2. It depicts the necessary input variable of institution's capacity to generate IP and how faculty and funding affect it. This input is required in order to yield the expected outcome at the end of any academic entrepreneurial process. It also shows the variables that moderate the effects of the input variable.

Next, we conducted a comprehensive study of AE by accessing all the volumes and issues in the following journals: JBV, JTT, JETM, RP, and ETP. The last articles for both journals were accessed on March 12, 2011. From the year JBV was launched (1985) until 2010, a total of 840 articles (including editorial notes) were published out of which 30 (approximately 3.57%) were academic entrepreneurship-related, represented as AE* henceforth; that is, made reference to "Academic" and "Entrepreneurship." Two thousand and five (2005) was the year with the highest number of AE* reports. From the year ETP was launched (2002) until 2010, a total of 370 articles (including editorial notes, cases and teaching instructions) were published by ETP, out of which 8 (approximately 2.16%) were AE* papers. Exactly half of the AE* papers in ETP were published in 2006. From the year that JTT was launched (1976) until 2010, a total of 885 articles (including editorial notes) were published by JTT, out of which 34 (approximately 3.84%) were AE* papers. A total of 2,573 articles were published in RP from launch (1972) to 2010, of which only 11 (0.4%) were AE* papers. Finally, a total of 468 articles were published in JETM from launch (1989)

to 2010, of which only 1 (0.2%) was an AE* paper. (Figure 3 is shows trends of AE* research publications in JBV, ETP, JTT, RP, and JETM).

It is interesting to note that AE* research in general, much less AE research, is not keeping up with the upward trend of the total number of articles published in both journals each year. In fact, the relationship between AE* papers and the total number of entrepreneurship articles published per annum appears to be divergent, highlighting the fact the sub-field of AE needs the attention of scholars and researchers if it is to keep up with the growth of the entrepreneurship field. Furthermore, not all the AE* papers focused on AE or academic-based entrepreneurship in the sense of exploiting an opportunity, rather some of the AE* papers were more or less educational in orientation. To make this distinction, all the papers are listed in the appendix table (See Appendix) to assist future researchers who wish to make contributions in the area of AE.

Figure 2: A Framework for Academic Entrepreneurship: The framework depicts input variables, faculty characteristics and sponsored research funding, which together influence an institution's capacity to generate intellectual property. The expected outcomes are shown as well as four moderating variables that impact the input/output relationship in AE.

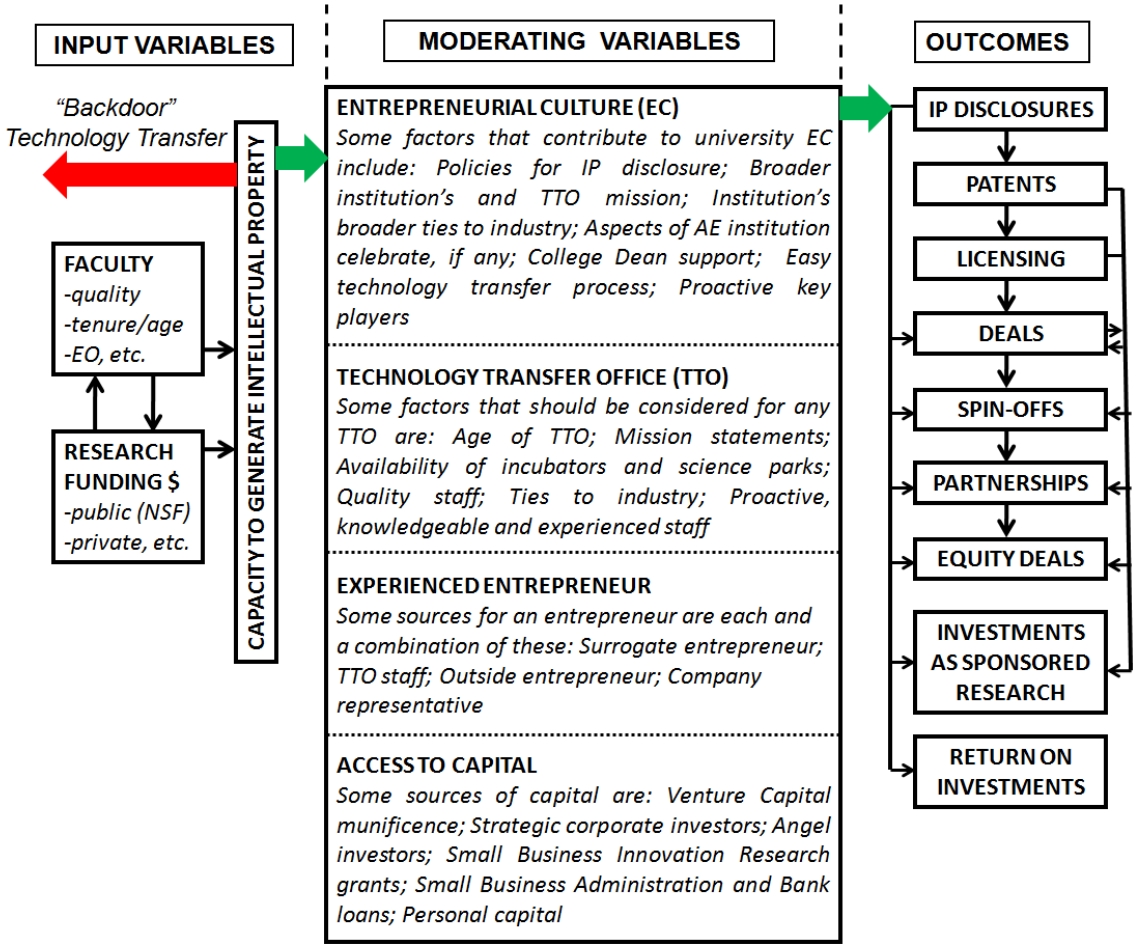
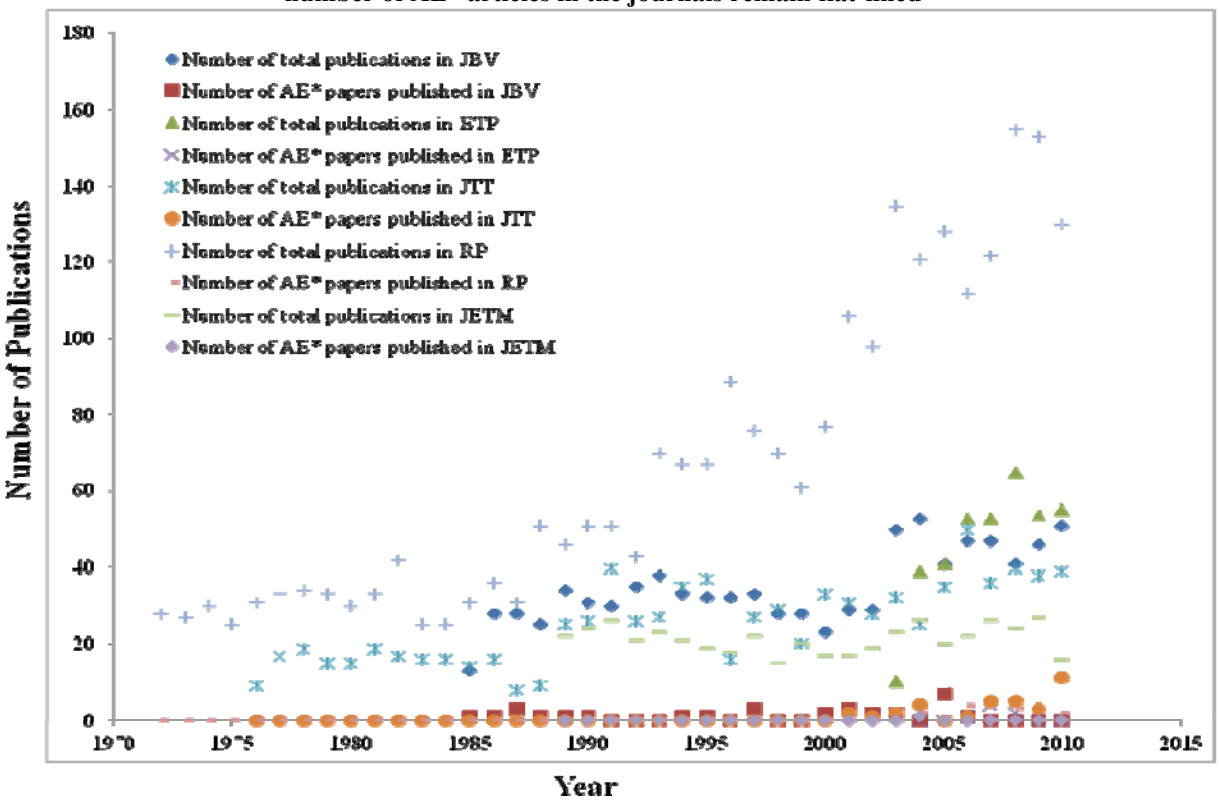


Figure 3: Trends in academic entrepreneurship-related (AE*) research publications: Trends of total number of publications and AE* reports in JBV, ETP, JTT, RP, and JETM from the first issue of the each journal to 2010. The total number of publications in these journals trends upwards whereas the number of AE* articles in the journals remain flat-lined



CONCLUDING THOUGHTS

A comprehensive study on AE was conducted by accessing all the articles in five leading entrepreneurship journals – JBV, JTT, JETM, RP, and ETP. Trends in AE* research in these journals was presented: AE* remained flat-lined as the total number of entrepreneurship publications per annum trends upward. This finding exposed the need for empirical and theoretical research in AE particularly as universities struggle to become more self-sustaining and embrace their new role as contributors to regional economic development. Definitions of important terms were provided; the determinants of academic entrepreneurship were elucidated; and a detailed framework was developed. We sincerely hope that this work will mostly benefit AE researchers and scholars as they pursue this line of work.

Practitioners could also benefit from this paper. For example, stakeholders in AE, such as faculty members, investors and university administrators, can use the entrepreneurship model presented here as a decision making guide. The model lays out a great potential set of metrics for AE on a campus, including: sponsored research, resources for TTO, disclosures,

patent filings, licensing, company formation/launches, revenue generated, return on investment, job creation, and other deals.

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APPENDIX: ACADEMIC-RELATED ENTREPRENEURSHIP PAPERS PUBLISHED BY JBV, ETP, JTT, RP, AND JETM

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
1. The role of incubator organizations in the founding of growth-oriented firms	Impact of industry (technical or nontechnical) and location of entrepreneur's former organization as well as experience on growth of start-ups	161 new, growth-oriented firms	Author studied incubators in broader contexts. This paper focused on non-academic organizations as well as academic institutions	(Cooper, 1985)
2. Assessing economic value added by university based new-venture outreach programs	Impact of assigning community ventures as projects to student groups supervised by faculty members	89 different venture projects with a weighted average of 125 man-hours per project	This is an academic-based entrepreneurship paper. Authors reported a total value of $1.75 million added due to student/faculty contribution to ventures	(McMullan, Long and Gram, 1986)
3. New business incubators	Impact of company and university incubators as well as entrepreneurial culture on discoveries and creation of useful offerings on the U.S. economy	Paper reviewed the U.S. advantage over other nations in terms of IP generation capabilities	Did not focus on academic entrepreneurship per se, but laid a foundation with good hints about its determinants	(Merrifield, 1987)
4. Growth Pattern of Academic Entrepreneurial Firms	Correlation between spin-off connection to university and firm growth	8 Canadian high-technology companies plus 38 young firms created by entrepreneurs while at	Author emphasized the role of faculty in start-up which may or may not have exploited IP	(Doutriaux, 1987)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
		Canadian universities		
5. Entrepreneurship Education in the Nineties	Linking entrepreneurship education and economic development	Not applicable	This is an education paper with strong focus on how entrepreneurship should be taught to have to most economic impact	(McMullan and Long, 1987)
6. Variations in University Entrepreneurship Education: An Empirical Study of an Evolving Field	A study of what entrepreneurship education should be about	Not applicable	Highlighted the proper content for entrepreneurial studies and effective methods for teaching such courses.	(Hills, 1988)
7. Incubators and Performance: A Comparison of high- and low-growth high-tech firms	Incubator Features: 1. Size (revenue and employees); 2. Similarity to start-up similarity in terms of markets or technology; 3. Is it publically or privately-held?	Questionnaire to 39 very-high-growth firms from *Inc.* to a "matched set" of 3 low-growth firms. 108 founders responded.	Underscores the importance of incubator structure.	(Feeser & Willard, 1989)
8. University Spin-out Companies: Technology Start-ups from UT-Austin	Study assessed factors that enhance and inhibit the formation and development of spin-out companies from the university	23 technology-based spin-offs from the University of Texas at Austin	Illustrated the traditional role universities played in entrepreneurship and that pull factors were more important than push factors in influencing the start-up of spin-out companies.	(Smilor et al., 1990)
9. Experiments in Entrepreneurship Education: Success and Failures	Sought to determine what entrepreneurship courses are taught in universities	Not Applicable	Highlighted the proper content for entrepreneurial studies and effective methods for teaching such courses.	(Vesper, 1994)
10. Faculty Entrepreneurship and Economic Development: The Case of the University of Calgary	Impact of faculty activities and interventions on number of start-ups founded by faculty or by other entrepreneurs	Questionnaire to 1335 faculty members. A total of 367 usable responses (27.5% response rate)	Asked: 'Who started or planned to start a business?''Who helped entrepreneurs outside the university start a business?'	(Chrisman, Hynes, Fraser, 1995)
11. Assessing and Managing the University Technology Business Incubator: An Integrative Framework	Contributions of university's mission and support services to incubator performance	Thirty >5 year-old U.S. –based incubators and their 29 out of 84 firms.	Provided a framework for assessing incubator performance.	(Mian, 1997)
12. Measuring Progress in Entrepreneurship Education	Courses and criteria that constitute high quality entrepreneurship programs	Surveyed deans at US, Canadian and overseas business programs	An entrepreneurship education paper with focus on what courses should be offered as well as how to measure the program impact	(Vesper & Gartner, 1997)
13. Mapping the University Technology Transfer Process	Dynamics in the technology transfer process: to established firm, to a new venture, resulting in a spin-off	23 different transfer processes at University of Minnesota from 1983-1993	Of technologies, >50% went to large companies, 8 to small firms, 3 to VC firms or intermediaries, the rest to new spin-offs	(Harmon & Ardishvili, 1997)
14. Spin-offs From Research Centers at a Research University	Role of university research centers in the start-up process and during the early stages of spin-off	6 of 19 spin-offs from 55 research centers at University of New Mexico	The influence of the degree support from center on spin-offs was highlighted	(Steffensen & Rogers, 2000)
15. University Revenues From Technology Transfer: Licensing Fees Vs. Equity Positions	Motivations why universities take equity during technology transfer deals	Not Applicable	The paper noted that taking equity in start-ups seem to maximize financial return	(Bray & Lee, 2000)
16. The Theoretical Side of Teaching Entrepreneurship	Attempts to answer the question, 'Can you teach people to become entrepreneurs?'	Not Applicable	This paper highlighted what should be taught in an entrepreneurship program	(Fiet, 2001a)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
	Teaching entrepreneurship theories			
17. The Pedagogical Side of Entrepreneurship Theory	How to teach entrepreneurship was explored	Not Applicable	This paper highlighted how to teach entrepreneurship	(Fiet, 2001b)
18. Defining the Field of Research in Entrepreneurship	Emphasized on understanding the entrepreneurial process	Not Applicable	Considered the relationship among entrepreneur, the project and the environment in the research	(Bruyat & Julien, 2001)
19. Executive Forum: University Technology Transfer to Entrepreneurial Companies	Collaborative ways universities transfer technology to firms	Observations of collaborations	Four dimensions identified: 1. Contract research, 2. Consulting, 3. Technology licensing, 4. Technology commercialization	(Shane, 2002)
20. The Effects of Business-University Alliances on Innovative Output and Financial Performance	Impact of biotechnology firms relationships with universities	2457 alliances undertaken by 147 biotechnology firms was studied	Companies enjoyed lower research expenses and higher levels of innovation due to university ties	(George, Zahra, & Wood, 2002)
21. The Chronology and Intellectual Trajectory of American Entrepreneurship Education 1876-1999	Historical progress in academic education	Not Applicable	This paper highlights the broader issues on entrepreneurship education in the U.S.	(Katz, 2003)
22. Academic Networks in a Trichotomous Categorisation of University Spinouts	Attempts to understand mechanisms generating spinoffs	Not Applicable	Studied the influence of embeddedness in a network of exoinstitutional and endoinstitutional ties the structure type of spin-off	(Nicolaou & Birley, 2003)
23. Science Parks and Incubators: Observations, Synthesis and Future Research	Analyzed park/incubator resources and personnel as well as how entrepreneur teams interact within and outside the parks	Not Applicable	Enterprise and network dimensions within incubators were studied	(Phan, Sigel & Wright, 2005)
24. Spinning Out New Ventures: A Typology of Incubation Strategies From European Research Institutions	Explored differences or similarities in the goals and incubation strategies among incubators at various institutions	Seven spin-off services in five European countries validated by 43 cases	Identified two groups: 1. Resource-Deficient group and 2. Competence-Deficient group	(Clarysse et al., 2005)
25. An Analytical Framework for Science Parks and Technology Districts with an Application to Singapore	Examined the gestation, evolution, and sustainability of science parks	Not Applicable	Proposed a framework on science par growth mechanisms based on experiences from Silicon Valley, Cambridge Science Park and the Hsinchu Science District	(Koh, Koh, & Tschang., 2005)
26. Entrepreneurship and University-Based Technology Transfer	Explored how technology is transferred from labs to firms through TTO.	Interviewed 128 university TTO directors and analyzed TTO's mission statements as well	Found that for-profit TTOs and licensing-for-equity strategies are positively related to new venture formation. Traditional and non-profit TTOs correlate with the presence of incubators. Licensing-for-cash least correlated and sponsored research strategies negatively related to new formation	(Markman, Phan, Balkin, & Gianiodis., 2005)
27. The Networked Business Incubator-	Highlighted the uniqueness of "network incubator" and how it	Based on ethnographic data	Underscored the importance of social capital in	(Bollingtoftand & Ulhoi, 2005)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
Leveraging Entrepreneurial Agency?	differs from traditional incubator		academic entrepreneurship	
28. University Start-up Formation and Technology Licensing with Firms that Go Public: A Resource-Based View of Academic Entrepreneurship	Illustrated that certain resources positively related with number of spin-offs as well as number of spin-off s that go public having licensed from a university	120 research institutions	Factors considered were: 1. Faculty quality 2. Industry R&D revenue 3. University patents 4. Age of TTO 5. Venture capital munificence	(Powers & McDougall, 2005)
29. Academics' organizational characteristics and the Generation of Successful Business Ideas	Focused on two characteristic features of academics' business ideas (market attractiveness and articulation) and their impact on success of academic start-up	42 Italian start-ups	Market orientation, frequency of interaction with external agents, articulation of roles and prior experience of founders were found to influence academic-based entrepreneurship	(Grandi & Grimaldi, 2005)
30. The Impact of Network Capabilities and Entrepreneurial Orientation on University Spin-off Performance	Studied the impact of EO on spin-off performance and the moderating role of network capability in that relationship	149 university spin-offs	Found that firm EO did not enhance growth and secure long-term survival.	(Walter, 2006)
31. Enterprise Education: Influencing Students' Perceptions of Entrepreneurship	Studied the effect of introducing enterprise projects in entrepreneurship secondary school education	Not Applicable	This is an education paper that showed that enterprise education increased the desirability of starting a business	(Peterman & Kennedy, 2003)
32. Entrepreneurial Team Development in Academic Spinouts: An Examination of Team Heterogeneity	Examined teams throughout different stages of the spin-off process	Data covering all team members in 10 cases	Found that teams evolve and change in composition throughout different stages of the business	(Vanaelst et al., 2006)
33. The Influence of University R & D Expenditures on New Business Formations and Employment Growth	Explored the influence of the presence of research university clusters on the number of start-ups	Secondary data from government sources on U.S. labor market level from 1990 - 1999	Found that university R&D expenditures spur both secondary and primary start-ups	(Kirchhoff et al., 2007)
34. Technology Entrepreneurs' Human Capital and Its Effects on Innovation Radicalness	Investigated the influence of experience, education, and prior knowledge of technology entrepreneurs on innovation radicalness.	145 technology entrepreneurs operating within university-related incubators	Found that technology entrepreneurs have a greater chance of creating radical innovations if they know less about the market for their innovation	(Marvel & Lumpkin, 2007)
35. From Human Capital to Social Capital: A Longitudinal Study of Technology-Based Academic Entrepreneurs	Explored how human capital affects the acquisition of social capital	Not Applicable	Proposed that business ownership experiences helps entrepreneurs to build relationships with experienced managers and potential equity investors	(Mosey and Wright, 2007)
36. Entrepreneurship and Human Capital: Evidence of Patenting Activity from the Academic Sector	Presented evidence of the relationship between faculty entrepreneurial activity and their "accumulated advantage" and absorptive capacity	Not Applicable	Documented that older and tenured faculty are more likely to engage with industry folks and in entrepreneurial activity	(Allen et al., 2007)
37. Returnee Entrepreneurs, Science Park Location Choice and Performance: An	Explored the tendency of entrepreneurs to consider science parks based on human and social capital	Data set of 349 SMEs from Zhongguancum Science Park in China, including 53 university	Illustrated that returning entrepreneurs with academic knowledge locate in non-university parks	(Wright et al., 2008)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
Analysis of High-Technology SMEs in China		SMEs	while those with firm ownership choose university science parks	
38. Innovation Policy and Nanotechnology Entrepreneurship	Explored the relationship between innovation policy and new venture creation	Not Applicable	Found that science and technology initiatives as well as economic initiatives positively related to new start-up formation	(Woolley & Rottner, 2008)
39. Patenting and Invention Activity of U.S. Scientists and Engineers in the Academic Sector: Comparisons with Industry	Compared the patent activity of scientists and engineers in industry with those activities of university personnel.	NSF survey data from 1995.	Though a large percentage of patent activity by scientists and engineers in the U.S. occurs in industry, university personnel are highly involved.	(Morgan et al., 2001)
40. Entrepreneurship, Secrecy, and Productivity: A Comparison of Clinical and Non-Clinical Life Sciences Faculty	Examined faculty member entrepreneurial activity and compared activity levels of clinical and non-clinical faculty in the life sciences.	Survey responses of a national sample of 4,000 clinical and non-clinical faculty in 49 U.S. research universities.	Findings suggest that non-clinical faculty are more involved in the front end while clinical faculty are involved in the back end.	(Louis et al., 2001)
41. Designing Efficient Institutions for Science-Based Entrepreneurship: Lesson from the US and Sweden	Suggested a framework identifying strategic individual decisions involved when translating educational choice into science-based entrepreneurship.	Tested informally using a comparison of science-based entrepreneurship and incentive structures in Sweden and the U.S.	Analysis suggests that policies should focus on individual incentives both within universities and businesses.	(Henrekson & Rosenberg, 2002)
42. Science Is Golden: Academic R&D and University Patents	Applied econometric techniques to estimate the patents of American universities.	WEBCASPAR data of the NSF	Find that more money spent on academic research leads to more university patents.	(Coupé, 2003)
43. University Technology Transfer: Do Incentives, Management, and Location Matter?	Examined the determinants of technology transfer.	Association of University Technology Transfer Managers Annual Licensing Survey 1997 - 1999	Identified four factors which enhance university technology transfer: faculty rewards, university location, university mission, and the university's tech transfer experience.	(Friedman & Silberman, 2003)
44. Science Parks and the Development of NTBFs—Location, Survival and Growth	Investigated the survival and growth of NTBFs located on and off of two Swedish science parks.	66 Swedish start up firms.	Firms located on science parks have significantly higher survival rates than firms located off of the park.	(Ferguson & Olofsson, 2004)
45. Do Academic Spin-Outs Differ and Does it Matter?	Suggested an initial typology of university-based spin-outs based on a dynamic view of the entrepreneurial process.	Observation data collected through the Anglia Enterprise Network	Developed a typology that takes into account the dynamic of the entrepreneurial process.	(Druilhe and Garnsey, 2004)
46. Entrepreneurship from the Ivory Tower: Do Incentive Systems Matter?	Examined whether financial incentives effect entrepreneurial activity.	Interviews with 128 UTTO directors	Incentives to scientists and their departments are negatively related to entrepreneurial activity.	(Markman et al., 2004)
47. Overcoming Weak Entrepreneurial Infrastructures for Academic Spin-Off Ventures	Explored whether academic "spin-off policies" explain the lack of growth potential of spin-off ventures.	Spin-off policies in 47 firms and the eight largest academic institutions of Belgium	Propose that spin-off policies in academic institutions affect the growth potential of ventures.	(Degroof & Roberts, 2004)
48. Success Factors in Canadian Academic Spin-offs	Analyzed spin-offs produced by Canadian universities.	1200 spin-offs	Successful spin-offs obtained patents and received support from the Industrial Research Assistance Program	(Niosi, 2006)
49. Effects on academia-	Examined the contribution that	Danish and Swedish	Found that the LUP effects	(Valentin &

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
industry collaboration of extending university property rights	university scientists make to inventions patented by dedicated biotech firms (DBFs) and the impact of the Law on University Patenting (LUP)	DBF patent information between 1990 – 2004	the contributions of domestic and non-domestic academic inventors.	Jensen, 2007)
50. Patenting and spin-off creation by Canadian researchers in engineering and life sciences	Examined the determinants of patenting and spin-off creation.	Survey of 479 researchers in engineering and 449 researchers in life sciences	Resource combinations required for patenting and spin-off formation differ for engineering and life sciences	(Landry, Amara, & Saïhi, 2007)
51. Faculty Entrepreneurs and Research Productivity	Examined whether faculty entrepreneurs are more productive researchers compared to their colleagues. Also examined whether faculty productivity changes after founding a firm.	Faculty entrepreneurs at 15 research institutes	Find that faculty entrepreneurs are more productive than peers and that productivity remains unchanged after founding a firm.	(Lowe, & Gonzalez-Brambila, 2007)
52. The beginning of university entrepreneurship in Japan: TLOs and bioventures lead the way	Described the institutional transformation of Japan's system of technology transfer.	University data	Joint research with large companies leads to a large proportion of inventions.	(Kneller, 2007)
53. The effect of university culture and stakeholders' perceptions on university–business linking activities	Discussed the effects of university culture and structure on university-business relations.	Science Citation Index of ISI Society	The prevailing university culture and structure can hinder the university's ability to change.	(Gassol, 2007)
54. How scientists commercialise new knowledge via entrepreneurship	Explored how university-based scientists overcome the barriers to appropriation.	In depth case analysis of 2 firms	Identified how scientists overcome three barriers to commercialization.	(O'Gorman, Byrne, & Pandya, 2008)
55. The effect of informal industry contacts on the time university scientists allocate to collaborative research with industry	Examined whether informal interactions between university and industry scientists lead to collaborative research.	Survey data	Informal interactions increase both the likelihood and intensity of collaborative research.	(Ponomariov, & Boardman, 2008)
56. Becoming an entrepreneurial university? A case study of knowledge exchange relationships and faculty attitudes in a medium-sized, research-oriented university	Mapped knowledge exchange relationships of entrepreneurial faculty and captured faculty attitudes concerning promotion of entrepreneurship.	Exploratory study of Sussex University	Links to industrial partners are maintained through technology transfer activities.	(Martinelli, Meyer, & Tunzelmann, 2008)
57. Spinouts from academic institutions: a literature review with suggestions for further research	Identified spinout papers in key management journals and categorized the findings.	Not applicable	Literature Review	(Djokovic, & Souitaris, 2008)
58. Determinants and consequences of university spinoff activity: a conceptual framework	Offered a framework of the study of academic entrepreneurship which explained aspects of university spinoff behavior.	Not applicable	Identify six separate streams which capture the determinants and consequences of spinoff activity.	(O'Shea, Chugh, & Allen, 2008)
59. The performance of university spin-offs: an exploratory analysis using venture capital data	Described university spin-off characteristics and investigated whether these spin-offs perform differently than other firms.	VentureOne	University spin-offs have a higher survival rate but are characteristically similar to other start-ups.	(Zhang, 2009)
60. Factors fostering	Examined why university	88 Italian academics	Technology availability,	(Fini, Grimaldi,

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
academics to start up new ventures: an assessment of Italian founders' incentives	researchers start new ventures and identified the factors which influence this decision.	involved in 47 spin-offs created between 1999 - 2005	personal benefits, and access to university infrastructure are the most important incentives for academics.	and Sobrero, 2009)
61. Academic entrepreneurship and business schools	Examined the role of business schools in academic entrepreneurship	Case-based methodology	The business schools' ability to fill knowledge gaps in development of academic entrepreneurship is constrained by institutional structures of the university	(Wright, Piva, Mosey, and Lockett, 2009)
62. The M&A dynamics of European science-based entrepreneurial firms	Investigated the dynamics of SBEFs that went public in Europe between 1995 – 2003	131 science based entrepreneurial firms	University affiliation enhanced attractiveness but negatively affected the propensity for acquisition.	(Bonardo, Paleari, & Vismara, 2010)
63. The contribution of university research to the growth of academic start-ups: an empirical analysis	Examined the effects that various university characteristics have on the growth of academic start-ups	487 NTBFs (48 ASUs) from 1994 – 2003	Universities do influence the growth rates of local academic start-ups but have negligible effects on NTBFs	(Colombo, D'Adda, Piva, 2010)
64. Convergence or path dependency in policies to foster the creation of university spin-off firms? A comparison of France and the United Kingdom	Examined government approaches to fostering the creation of new ventures by academics	Not applicable	Identified governmental policy differences in the UK and France	(Mustar, & Wright, 2010)
65. Facilitating public-to-private technology transfer through consortia: initial evidence from Korea	Examined effective technology transfer of five regional consortia in Korea	5 regional technology transfer consortia in Korea	Consortia membership enhances technology transfer.	(Park, Ryu, & Gibson, 2010)
66. Managing and incentivizing research commercialization in Chinese Universities	Examines how China is developing appropriate organizational structures and incentives in its universities	Content analysis of two Chinese universities	The organizational structure necessary to manage technology transfer is a product of historical legacy and institutional learning.	(Wu, 2010)
67. What drives the university use of technology transfer offices? Evidence from Italy	Investigated the determinants of a university's use of technology transfer offices.	Interviews with 197 university departments in Italy	Research performance, appropriate management of technology transfer offices, and university department receptiveness impact the probability that the TTO will be involved in university-industry collaboration.	(Muscio, 2010)
68. Inventing and patenting activities of scientists: in the expectation of money or reputation?	Explored whether scientists' expectations of commercial gain impact patenting and disclosure behavior	2.500 scientists affiliated with 67 institutes	Reputation gain, rather than financial gain, is correlated with patenting and disclosure activities	(Göktepe-Hulten & Mahagaonkar, 2010)
69. Overcoming obstacles encountered on the way to commercialize university IP	Provided insight into challenges facing the Technology Transfer Offices of university.	Not applicable	Technology Transfer Offices are able to serve a useful purpose by maintaining nimbleness.	(Klein, Haan, & Goldberg, 2010)
70. Informal university technology transfer: a comparison between the United States and Germany	Comparative examination between the U.S. and Germany in regards to the impact of the Bayh-Dole Act	800 university scientists	Faculty quality, based on patent applications, serves as a major predictor for informal technology transfer	(Grimpe, & Fier, 2010)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
71. Transfer of academic research: uncovering the grey zone	Investigated why and how scientists choose to commercialize their research.	Case study data	Expand the typology for mechanisms for transfer of academic research	(Nilsson, Rickne, and Bengtsson, &_
72. Agency and similarity effects and the VC's attitude towards academic spin-out investing	Developed an understanding of the factors explaining venture capital investment managers' attitudes towards investment in the unique context of academic spin-outs.	68 early stage VC investment managers in Europe	Attitudes toward academic spin-out investing are positively affected by public sector capital and by more intensively involved investment managers.	(Knockaert et al., 2010)
73. Research expenditures, technology transfer activity, and university licensing revenue	Related university licensing revenues to university research expenditures and characteristics of the university and the university technology transfer office.	62 research universities	Early initiation of technology transfer programs and staff size increase expected licensing revenues.	(Heisey, & Adelman, 2011)
74. In search of the profit-maximizing actor: motivations and definitions of success from nascent academic entrepreneurs	Presented a discussion of the mediating factors of academic entrepreneurship.	74 nascent entrepreneurs	Academic entrepreneurs define success in complex, interrelated ways which include technology diffusion and development.	(Hayter, 2011)
75. Why do academics engage with industry? The entrepreneurial university and individual motivations	Examined what motivates academic scientists to engage with industry	Survey of UK researchers	Results suggest that academics engage with industry to further their research rather than commercialize their knowledge	(D'Este, & Perkmann, 2011)
76. Boundary spanning between industry and university: the role of Technology Transfer Centres	Examined whether Technology Transfer Centers can bond the academic and industrial system	148 Technology Transfer Centers	Main determinants of task coordination are the endowment of human capital at the individual level and qualified social capital at the individual and organizational level.	(Comacchio, Bonesso, & Pizzi, 2011)
77. The third mission stalled? Universities in China's technological progress	Outlined China's progress in developing the capacity for knowledge diffusion and commercialization in higher education.	Ministry of Education data	Presents policy suggestions for overcoming the stall in growth of technological endeavors.	(Wu, & Zhou, 2011)
78. Redeploying Bayh-Dole: beyond Merely doing good to optimizing the potential in results of taxpayer-funded	Offered an assessment of the university practices in response to the Bayh-Dole Act	Not applicable	Identifies a disconnect between the Bayh-Dole Act and the university policies	(Tyler III, 2011)
79. Combining entrepreneurial and scientific performance in academia: towards a compounded and reciprocal Matthew-effect?	Examined whether entrepreneurial and scientific performance in academia can be reconciled.	University of Leuven faculty	Findings suggest that entrepreneurial activity and scientific performance do not hamper eachother.	(Van Looy, et al. 2004)
80. Biotechnology entrepreneurial scientists and their collaborations	Explored the relation between scientific collaborations and the scientific and intellectual capital of the scientists and the impact of institution characteristics.	Survey data	Offers distinctions between various forms of scientific-entrepreneurship.	(Oliver, 2004)
81. University spin-out companies and venture capital	Identified problems faced by university spin-out companies seeking venture capital.	124 research institutions	Identify a mismatch between the demand and supply side of the market.	(Wright et al., 2006)
82. Why are some	Examined why some university	1554 university	Traditional and	(Landry, Amara,

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
university researchers more likely to create spin-offs than others? Evidence from Canadian universities	researchers are more likely to create spin-off companies than others.	researchers	entrepreneurial visions of university research compliment eachother.	and Rherrad, 2006)
83. Universities and industrially relevant science: Towards measurement models and indicators of entrepreneurial orientation	Attempted to understand which university departments engaged in industrially relevant science are likely to become entrepreneurial.	Research publications	Identify structural factors which determine university-industry interaction and entrepreneurial orientation.	(Tijssen, 2006)
84. Paths of commercial knowledge: Forms and consequences of university–enterprise synergy in scientist-sponsored firms	Examined paths of commercial learning.	Questionnaire and Interviews	Identified multiple paths within the commercial knowledge process.	(Shinn, & Lamy 2006)
85. Close enough but not too far: Assessing the effects of university–industry research relationships and the rise of academic capitalism	Assessed the impact of university-industry research relations and university IP policies.	Interviews with 84 biological scientists at 9 universities	Scientists have complex views of concerning the impact of university-industry research relations. These views are not uniformly positive.	(Welsh et al., 2008)
86. Engaging the scholar: Three types of academic consulting and their impact on universities and industry	Presented a conceptual framework of academic consulting and explored its impact on universities	Not applicable	Presented a distinction between opportunity-driven, commercialization-driven, and research-driven consulting.	(Perkmann, & Walsh, 2008)
87. Analysing knowledge transfer channels between universities and industry: To what degree do sectors also matter?	Explained the contextual differences of the various channels through which knowledge and technology are transferred between universities and industry.	Questionnaire responses from Dutch industrial and university researchers	The variety of channels is better explained by the knowledge characteristics than by industrial activities.	(Bekkers, & Freitas, 2008)
88. University capabilities in facilitating entrepreneurship: A longitudinal study of spin-off ventures at mid-range universities	Investigated how universities facilitate spin-off venture formation according to academic research.	Case study approach	Present three capabilities which facilitate new venture formation: 1. New path creation, 2. Balance between academic and commercial interests 3. New resource integration.	(Rasmussen, & Borch, 2010)
89. Inside or outside the IP system? Business creation in academia	Determined how much academic entrepreneurship occurs outside the university intellectual property system.	11,572 professors	Nearly 2/3 of businesses started by academics are not based on disclosed or patented inventions.	(Fini, Lacetera, & Shane, 2010)
90. Divergent paths to commercial science: A comparison of scientists' founding and advising activities	Examined differences between university scientists that founded companies rather than advised companies.	6,138 university life scientists	Evidence suggests that founding and advising are divergent paths which commercially oriented university scientists may pursue.	(Ding, & Choi, 2011)
91. Breaking the Ivory Tower: Academic Entrepreneurship in the Life Sciences in UK and Germany	Examined commercial activity engagement of life scientists.	2,200 German and UK life scientists	Commercial involvement is impacted by the reputational benefits associated with commercial achievements.	(Haeussler, & Colyvas, 2011)
92. Commercial science, scientists' values, and university biotechnology	Examined the differences among scientists' value orientations.	Survey of biotechnology scientists	Value orientations on "market" and "expert" science affect the amount of	(Glenna et al., 2011)

Chronology of Academic Entrepreneurship-Related Articles Published by Journal of Business Venturing				
Paper Title	**Factors and Variables Studied**	**Sample Studied**	**Comments**	**Reference**
research agendas			industry funding that is received.	
93. Complements or substitutes? The role of universities and local context in supporting the creation of academic spin-offs	Examined University-Level Support Mechanisms and Local-Context Support Mechanisms to determine their joint impact on academic spin-offs.	404 spin-offs form 64 Italian universities	University-Level Support Mechanisms and Local-Context Support Mechanisms are complementary.	(Fini et al., 2011)
94. Does inventor ownership encourage university research-derived entrepreneurship? A six university comparison	Examined whether university ownership of inventions encourages technology commercialization and entrepreneurship.	527 spin-offs from 6 universities	Inventor, rather than university, ownership of inventions can be more efficient in producing spin-offs.	(Kenney, & Patton, 2011)
95. The impact of entrepreneurial capacity, experience and organizational support on academic entrepreneurship	Examined whether previous entrepreneurial experience and entrepreneurial capacity impact the likelihood of being involved in starting a new venture	6,200 academic researchers in the UK	Concluded that individual level attributes and experience are the most important predictors of academic entrepreneurship.	(Clarysse, Tartari, & Salte, 2011)
96. The Bayh-Dole Act and scientist entrepreneurship	Developed alternative measures (beyond the TTO – compiled by AUTM) to measure scientist entrepreneurship	Grant recipients of the National Cancer Institute	Scientist entrepreneurship is more robust than indicated by studies using the TTO data	(Aldridge, & Audretscha, 2011)
97. 30 years after Bayh–Dole: Reassessing academic entrepreneurship	Described the evolving role of universities in commercialization of research.	Not applicable	Outlines an agenda for future research in the field.	(Grimaldia et al., 2011)
98. Worked toward a model of the effective transfer of scientific knowledge from academicians to practitioners: qualitative evidence from the commercialization of university technologies	Examined the role of organizational practices in the process of commercial knowledge transfer.	Structured Interviews of technology transfer stakeholders	Many faculty members circumvent formal technology transfer processes.	(Siegel, et al., 2004)

PERCEIVED SOCIAL SUPPORT AND SOCIAL STATUS AS DRIVERS OF ENTREPRENEURIAL CAREER INTENTIONS BETWEEN CAUCASIAN AND MEXICAN-AMERICAN YOUNG ADULTS

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ABSTRACT

This study explores perceived social status, social support as well as institutional support as important antecedents of entrepreneurial career intentions (ECI). Specifically, two research questions were empirically investigated: Do social and institutional factors predict ECI among minority (Mexican-American) and non-minority (Caucasian) groups? and, Is there a significant difference in ECI between U.S.-born Mexican-American and Caucasian adults? The results of our data analyses of 170 graduating seniors in two large US universities indicate that social factors are significant predictors of ECI. Specifically, we found that perceived social status and perceived social support significantly predicted ECI among Mexican-American respondents. The findings also showed that the degree of ECI is significantly higher among Mexican-American respondents. Overall, the findings highlight the important role social factors play in fostering entrepreneurship and nascent behavior among Mexican-American Americans. This study contributes to the minority entrepreneurship literature by exploring entrepreneurial intention in general and social factors in particular.

INTRODUCTION

What drives individuals to pursue entrepreneurial careers? Are people with strong entrepreneurial intentions more likely to actually launch a new venture? These and other related questions have captured the interests of entrepreneurship scholars over the last couple of decades. Specifically, an extensive stream of research has examined personality (e.g. Crant, 1996; Chen, Greene, and Crick, 1998; Zhao and Seibert, 2006), social (e.g. Liao and Welsch, 2005; De Carolis and Saparito, 2006; Sequeira, Mueller, and McGee, 2007), cross-cultural (e.g. Kristiansen and Indarti, 2004; Nguyen, Bryant, and Rose, 2009; Linan and Chen, 2009) and institutional (Cumming, 2007; Bowen and De Clercq, 2008; Bruton, Ahlstrom, and Puky, 2009) predictors of entrepreneurial career intention. The overall perspective in this literature is derived from the theory of planned behavior (Azjen, 1991; Krueger, Reilly, and Carsrud,

2000; Linan and Chen, 2009), which states that behavior is the outcome of intention and that there are three antecedents of intention: attitude, subjective norm, and perceived behavioral control (Azjen, 1991).

While a lot has been studied about the predictors of entrepreneurial career intentions, our understanding of the dynamics of entrepreneurial career intentions among minority groups is still limited. Very few studies (e.g. Walstad and Kourilsky, 1998; Kollinger and Minniti, 2006) to the best of our knowledge, have specifically examined issues in entrepreneurial career intentions among minority groups (e.g. African-Americans and Mexican-Americans). For instance, the issue whether what major social and institutional factors significantly predict entrepreneurial career intentions among minority groups remains to be investigated. Moreover, research is still needed that comparatively examine the various antecedents of entrepreneurial career intentions between minority and non-minority groups.

This study attempts to fill the above research gap in the entrepreneurial intentions literature in two ways: first, we empirically examine selected social and institutional issues to see if they significantly predict entrepreneurial career intentions among adults. Specifically, we focus on perceived social status, perceived social support as well as perceived institutional support as important antecedents of entrepreneurial career intentions. We chose to study these particular variables because past research has shown that social and institutional issues have stronger role in predicting entrepreneurial career intentions over and above personality variables (e.g. Jack and Anderson, 2002; Van Auken, Fry, and Stephens, 2006; Sequeira et al., 2007). Second, we contribute to the current literature by conducting a comparative empirical analysis of the social and institutional antecedents of entrepreneurial career intentions between Caucasian and Mexican-American adults.

According to a recent U.S. Census data, Mexican-Americans account for roughly 16% of the total U.S. population in 2010 compared to only 4.7% in 1970 (U.S. Census Bureau, 2009). Since new venture start-up constitutes a major step in greater socio-economic empowerment (Robles and Cordero-Guzman, 2007), studying factors influencing entrepreneurial intentions and new venture formation among this demographic group is considered a critical first step. Hence, by conducting a comparative empirical analysis, we will be able to contribute to the growing minority entrepreneurship literature that put less emphasis on entrepreneurial intention in general and social and institutional factors in particular. Furthermore, the results of a comparative analysis could identify antecedents that potentially have impact that is more disproportionate on entrepreneurial career intentions on either the minority or non-minority group. In sum, we ask two research questions: (1) Do social (i.e. perceived social support and perceived social status) and institutional (i.e. perceived institutional support) factors predict entrepreneurial career intentions among minority (Mexican-American) and non-minority (Caucasian) groups?, and (2) Is there a significant difference in entrepreneurial career intention between Mexican-American and Caucasian adults?

ANTECEDENTS OF ENTREPRENEURIAL CAREER INTENTIONS

In this study, we adopt Crant's (1996) definition of entrepreneurial career intention as "one's judgment about the likelihood of owning one's own business" (p.43). Past research has so far explored multi-level predictors of entrepreneurial career intention. Specifically, researchers have examined individual (personality traits), organizational (job satisfaction), situational (job loss, resource availability), and cultural predictors (e.g. power distance) of entrepreneurial career intentions. In the so-called trait approach to entrepreneurial activity, a substantial number of personality variables have been extensively studied including the Big Five personality dimensions (i.e., neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness) (Hmieleski and Corbett, 2006; Zhao and Seibert, 2006; Zhao, Seibert, and Lumpkin,2009), proactive personality (Crant, 1996), risk disposition (Raijman, 2001), achievement motivation (De Pillis and Reardon, 2007) and locus of control (Kaufmann, Welsh, and Bushmarin, 1995). As part of the on-going scholarly inquiry, a considerable amount of empirical research has examined personality variables as predictors of entrepreneurial career intentions (Crant, 1996; Raijman, 2001; Zhao et al., 2009). Zhao and Colleagues (2009) have shown that of the big five personality variables, four variables (conscientiousness, neuroticism, extraversion and openness to experience) were found to be associated with entrepreneurial career intentions. Other personality studies have found a general positive association between entrepreneurial career intentions and internal locus of control, proactive personality, high-risk disposition and achievement orientation.

In addition to the focus on personality predictors, past research has also examined important social factors that play a role in facilitating or hindering entrepreneurial intention and nascent behavior (Shapero and Sokol, 1982; Begley and Tan, 2001). More specifically, research has extensively examined the effect of social networks (Jack and Anderson, 2002; Menzies, Brenner and Filion, 2003; Greve and Salaff, 2003; Sequeira et al., 2007), social capital (Baron and Markman, 2003; De Carolis and Saparito, 2006; Linan and Santos, 2007; Mosey and Wright, 2007; De Carolis, Litzky and Eddleston, 2009) as well as social cognition (Shepherd and Krueger, 2002) on entrepreneurial behavior. The role social networks and corresponding social capital play in fostering entrepreneurial intentions and nascent behavior has specifically been studied by a number of researchers (e.g. Linan and Santos, 2007; Sequeira et al., 2007). Linan and Santos (2007), for instance, empirically examined the relationship between the extent of individual's social capital and entrepreneurial intention using 354 Spanish university students. . Similarly, Sequeira and colleagues (2007) studied the relationship between social network ties and entrepreneurial intentions and nascent behavior of 389 respondents from local organizations. Based on the concept of strong and weak ties originally introduced by Granovetter (1973), Sequeira and colleagues hypothesized that the presence of strong and weak ties influences both entrepreneurial intentions and nascent behavior among individuals. The result of their analyses indicates that the presence of strong

network ties is a strong predictor of entrepreneurial intention among respondents. Moreover, the findings suggest the active predictive role both strong and weak network ties play in respondents' nascent behavior.

Personality and social factors notwithstanding, scholars have also examined a number of institutional factors that predict entrepreneurial behavior (Thornton, 1999; Vaillant and Lafuente, 2007; Bowen and De Clercq, 2008). Several studies have explored the role institutional factors play in the development of new ventures especially in the area of entrepreneurial finance (e.g. Cumming, 2007; Bruton et al., 2009). A series of studies have also examined the disparity in institutional environment among different countries and how such disparity potentially affects new venture formations (e.g. Young and Welsch, 1993). More recently, entrepreneurship scholars have focused more on the role government plays in the new venture creation process (e.g. Audretsch, 2004; Minniti, 2008). Overall, these studies explore the important role institutional environments play in fostering entrepreneurial behavior and consequently economic growth. For instance, both Bowen and De Clercq (2008) and Vaillant and Lafuente (2007) discuss why and how a country's institutional environment facilitate entrepreneurial activity using emerging country datasets. Similarly, Young and Welsh (2003) also observed the role of enabling institutional environments in their study of entrepreneurial activity in Mexico.

More recently, studies have examined the influence of governmental policy on entrepreneurship. Audretsch (2004) observed that public policy could have an important impact on the development and growth of innovative new ventures. Similarly, Minniti (2008) discussed the specific role governmental policy plays in fostering entrepreneurial activities and economic growth through a variety of direct and indirect institutional support.

Entrepreneurial Career Intention among Minority Groups

Research on minority entrepreneurship has extensively examined a number of factors that influence the creation and growth of entrepreneurial new ventures among historically underrepresented minority groups (mainly African Americans and Mexican-American). Scholars have particularly been interested in, among others, important issues such as access to capital/financing problems (e.g. Ando, 1988; Bates, 1997; Coleman, 2005; Robb and Fairlie, 2007), personality and gender differences between minority and nonminority entrepreneurs (e.g. Hisrich and Brush, 1986; Enz, Dollinger and Daily, 1990; Chaganti and Green, 2002) as well as the impact of human and social capital (Menzies et al. 2003) on entrepreneurial activities of minority groups. A growing number of research evidence in the minority entrepreneurship literature has shown that entrepreneurial intention and new venture formation activities among minority groups (i.e. African Americans and Mexican-Americans) is considerably high (Green, Carter and Reynolds, 2003; Kollinger and Minniti, 2006). Given such an increasingly growing trend of new venture formation among minority groups, we

believe that there might be a disproportionate level of entrepreneurial career intention among minority groups than their Caucasian counterparts. Hence, we hypothesize that:

Hypothesis 1: There is a significant difference in entrepreneurial career intentions between Caucasian and Mexican-American adults.

The overall rise in entrepreneurial activity among U.S. minority groups is well documented. Mexican-American Americans in particular, being the largest fastest growing minority group in the country, are experiencing a growing economic role in terms of self-employment (Robles and Cordero-Guzman, 2007). Such an increase in entrepreneurial behavior among Mexican-American Americans implicitly suggests a growing view of self-employment and entrepreneurship as a channel for economic and social freedom (Bates, Jackson and Johnson, 2007). The degree to which a certain career choice is valued in a society can often determine whether individuals are attracted to it (Busenitz, Gomez and Spencer, 2000; Mueller and Thomas, 2001).

In other words, the level of social status that individuals attach to a particular career choice can directly determine the overall number of individuals in a society that are committed to it. Empirical evidence from several studies suggests that the growth and expansion of entrepreneurial activity in some countries is strongly related to the specific socio-cultural values, attitudes and perceptions relating to such activity (e.g. Begley and Tan, 2001; Baughn, Cao, Li, Lim and Neupert, 2006; Vaillant and Lafuente, 2007). Given such a relationship between social status and entrepreneurial career intentions, we hypothesize that:

Hypothesis 2: The extent of perceived social status is positively related to the degree of entrepreneurial career intentions.

Perceived social support can play an important role in fostering entrepreneurial career intention and subsequent nascent behavior (Young and Welsch, 1993; Premaratne, 2001; Baughn et al., 2006; Carr and Sequeira, 2007). Past research indicates that individuals with high-perceived social support are more likely to engage in entrepreneurial activity than those without (Sequeira et al., 2007). A number of empirical studies have examined the role of perceived social support in the entrepreneurial process. For instance, in a study of 303 Sri Lankan small firms, Premaratne (2001) found that those small firms with robust social network ties (operationalized as social, support and inter-firm network ties) reported strong financial performance as these network ties served both as sources of monetary resources as well as non-material support.

Similarly, Baughn et al (2006) investigated factors predicting entrepreneurial career intention in a multi-country sample composed of data from 782 business students in China, Vietnam and the Philippines. Their empirical analyses indicated, among other things, that

social support (operationalized as close personal support) significantly predicted entrepreneurial career intention in all three countries. Carr and Sequeira (2007), in their study of the effect of prior family business exposure on entrepreneurial career intention among 308 individuals, found that perceived family support partially mediated the relationship between prior family business exposure and entrepreneurial intention. Such relationships between social support and entrepreneurial behavior could be especially strong among Mexican-American. Since Mexican-American Americans' culture seems to put more emphasis on family, relationships and close-knit social circle, we can reasonably argue that perceived social support positively predicts entrepreneurial career intention among both minority and non-minority groups. Hence, we hypothesize that:

Hypothesis 3: The extent of perceived social support is positively related to the degree of entrepreneurial career intentions

An extensive line of research has studied the impact of macro-institutional contexts on entrepreneurial activities (e.g. Busenitz et al., 2000; Spencer and Gomez, 2004; Bowen and De Clercq, 2008; Manolova, Eunni, and Gyoshev, 2008). Scholars in this area have particularly examined whether and how some institutional environments and government policies foster or hinder entrepreneurial activities (Cumming, 2007; Vaillant and Lafuente, 2007; Minniti, 2008). While these studies in general focus on a more macro aspect of institutional environment, this study focuses on the micro aspect by examining individuals' perceptions of the existence and availability of institutional support, i.e. perceived support from financial institutions.

We particularly focus on financial institutions as important components of perceived institutional support because they are often cited as the major impediment in new venture creation especially among African Americans and Mexican-American Americans (Walstad and Kourilsky, 1998; Tienda and Raijman, 2004; Coleman, 2005). A number of studies in the minority entrepreneurship literature have indicated that minorities are in fact are more likely to start a new venture but are less likely to succeed in the long run due primarily to capital and financing constraints (Kollinger and Minniti, 2006; Sullivan, 2007). In sum, past research in minority entrepreneurship has shown that individuals' perceived institutional support is closely associated with their entrepreneurial career intention. Hence, we hypothesize that:

Hypothesis 4: The extent of perceived institutional support is positively related to the degree of entrepreneurial career intentions.

METHODS

Sample and Data Collection

In order to empirically test the aforementioned hypotheses, we designed comparative analyses of two sub-samples: Mexican-American and Caucasian University students representing the minority and the non-minority samples respectively. While we acknowledge the presence of other minority groups (e.g. African-Americans) that could be included in the sample, our study focused on Mexican-American respondents due to data availability and comparability issues. Our data were collected from two large public universities located in the southern and western part of United States.

We chose to use student sample because past studies (e.g. Chen et al., 1998; Krueger et al., 2000; Radu and Loue, 2008; Linan and Chen, 2009), have extensively used student samples to study the degree of entrepreneurial career intentions. Moreover, Reynolds et al., (2002) found that college graduates have a greater tendency to start new ventures and that they are prone to choosing new venture creation as a career choice. There were 328 respondents in our preliminary sample; including 90 Caucasians, 217 Mexican-Americans and 21 respondents from other ethnic groups. For the purpose of this study, we randomly chose 170 cases out of the 328 respondents in the aggregate sample. Accordingly, the final study sample was composed of 85 Mexican-American and 85 Caucasian respondents for the purposes of comparative analysis. All our final respondents were completing their senior years as undergraduate business students. The average age of the combined sample is 23.48 years, with a standard deviation (SD) of 4.63. Of the total 170 respondents, 79 (46.5%) were males and 91 (53.5 %) were females. Out of the combined sample of 170 respondents, 125 (73.5%) reported to have work experience as owners or managers of small business, 148 (87%) acknowledged that they personally know someone in their inner circle who has started his/her business. Finally, 56 (32.9%) respondents noted that they have taken at least one entrepreneurship course and/or small business management course in the university.

To have a better understanding of the sample, we examined some of the demographic information for Mexican-American and Caucasian respondents separately. Accordingly, the average age was 23.39 years (SD= 3.99) and 23.58 years (SD= 5.21) for the Mexican-American and Caucasian sub-samples respectively. The majority of Mexican-American respondents were females (60%), while the majority of Caucasian respondents were males (52.9%). Caucasians (77.6%) reported to have more work experience than the Mexican-Americans (69.4%). Only 19 (22.4%) respondents in the Caucasian sub-sample compared to 37 (43.5%) Mexican-American respondents claimed to have taken at least one entrepreneurship course and/or small business management course during their college career. Finally, similar number of respondents (87%) in both sub-samples acknowledged that they personally know someone in their close circle who is an entrepreneur.

MEASURES

Dependent Variable

***Entrepreneurial Career Intention*:** We used a four-item scale to measure the degree of entrepreneurial career intention. The measure we used is a variant of measures used by Chen et al. (1998) and Zhao et al. (2005). The items included (1)"I am interested in setting up my own business", (2) "I have considered setting up my own business", (3) "I am interested in setting up and building a high growth business" and (4) "It is likely that I am going to set up my own business in the near future.". The response format consisted of a seven-point Likert scale ("1" = strongly disagree and "7= strongly agree). The four-item measure loaded on a single factor with 83.29% of the variance explained. The factor scores for the measure were 0.852, 0.869, 0.793 and 0.817 respectively. The Cronbach's Alpha for the overall measure was 0.93.

Independent Variables

The independent variables of the study were ***perceived social support, perceived social status*** and ***perceived institutional support***. ***Perceived social status:*** We used a three-item scale to measure the social status perceived by the entrepreneurs (students). The items included – (1) My family and friends will think highly of me if I become an entrepreneur, (2) The community I live in values being an entrepreneur highly and (3) My social status will improve if I become an entrepreneur. The respondents were asked to rate their agreement with the statements through a seven point Likert scale. The Cronbach's alpha for the overall measure was 0.82. ***Perceived social support:*** We used an eight-item scale developed by Sequeira et al (2007) to measure the perceived social support of the students. The items included questions on both emotional support and resource support.

Respondents were asked to rate the extent to which their parents, siblings, relatives, spouse and close friends would provide them with emotional support and resource support respectively, using a seven point Likert scale(1=Extremely Negative, 7=Extremely Positive). We observed that majority of the students did not have a spouse, hence our analysis included only four categories: parents, siblings, relatives, and close friends. The Cronbach's alpha for the eight-item scale was 0.797. ***Perceived Institutional support:*** We used a four-item scale to measure the institutional support perceived by the respondents. This measure gauged the ease of how they felt the financial institutions would provide them the required capital to start a new venture. The scale had three reverse coded items. The Cronbach's alpha was reported to be 0.745.

Control Variables

We included *proactive personality*; *achievement orientation* and *locus of control* as control variables. In addition to the personality predictors, the *level of work experience* as owners or managers of small business, *level of entrepreneurial education* and *presence of an entrepreneur role model* were treated controlled during the analysis.

Proactive personality: Past research (Bateman and Crant, 1993; Crant, 1996; Gupta and Bhawe, 2007) has indicated a positive relationship between proactive personality and entrepreneurial intention. We used a 17-item scale to measure proactive personality.

This measure developed by Bateman and Crant (1993), has items including –"I love being a champion for my ideas, even against others' opposition," "I am always looking for better ways to do things." The response format consisted of a seven-point Likert scale in which respondents indicated their level of agreement (1= "strongly disagree" to 7 ="strongly agree"). The Cronbach's Alpha for the overall measure is 0.91.

Achievement Orientation: We measured achievement orientation using a 14-item scale adopted from Ray (1979). Sample items include "Is being comfortable more important to you than getting ahead?" and "Are you inclined to read of the success of others rather than do the work of making yourself a success?" Respondents were asked to select "1" if their answer was "no", "2" if "not sure", and "3" if "yes". The maximum possible score on this scale is 42 while the minimum is 14.

Locus of control: We used Rotter (1966) forced scale to measure locus of control. The scale contains 13 paired-items, and the respondents were required to select one of the two statements in each pair that best describes how they feel. Some of the paired items in this scale include: "Many of the unhappy things in people's lives are partly due to bad luck" or "People's misfortunes result from the mistakes they make". The maximum possible score is 13 while the minimum possible score is 0. Higher scores in this scale indicate an external locus of control while lower scores indicate internal locus of control.

Demographic variables. As mentioned above, the demographic variables such as gender, level of work experience, presence of role model, and entrepreneurial education were also included as control variables.

Past studies have shown that each of these variables could affect entrepreneurial career intention. Specifically, researchers have found significant relationship between entrepreneurial career intention and gender (Wilson, Kickul, and Marlino, 2007), work

experience (Carr and Sequeira (2007) and the presence of role models (Souitaris, Zerbinati, and Al-Laham 2007; Edelman, Monolova and Brush, 2008). These studies have also observed that entrepreneurial education significantly predicts the level of entrepreneurial career intention (Souitaris et al., 2007; Edelman et al., 2008). The response format for work experience, entrepreneurial education and presence of role model included dichotomous response option of yes or no (0=No, 1= Yes) and the data for gender was collected using a dichotomous response (1= Male, 2 = Female).

In order to capture entrepreneurial education, we asked the respondents: "*Have you ever taken any small business/entrepreneurship course?*" and to capture the presence or absence of role model, they responded to the question: "*Do you personally know anyone in your inner circle (i.e., family and close friends) who has started his/her own business?*"

RESULTS

The descriptive statistics and the zero-order correlations for the study variables are presented below in Table 1 and Table 2 for the Caucasian and Mexican-American sub-sample respectively. Table 1 below shows that, of the three personality variables included in the analysis, only proactive personality and achievement orientation were significantly correlated with entrepreneurial career intentions. Moreover, Table 1 indicates that there is a significant correlation between all three independent variables (i.e. perceived social status, perceived social support and perceived institutional support) and entrepreneurial career intentions.

According to Table 2 below, proactive personality and work experience are significantly correlated with entrepreneurial career intention. Moreover, Table 2 also shows a significant positive correlation between entrepreneurial career intention and only two of the social predictors, namely, perceived social status and perceived social support. An interesting observation in the descriptive statistics tables is that the mean entrepreneurial career intention score (Mean = 5.564, SD= 1.48) was higher for the Mexican-American sub-sample compared to the Caucasian counterpart (Mean = 4.864, SD=1.70).

In order to empirically test the first hypothesis, we conducted a one-way Analysis of Variance (ANOVA) to test the difference in the mean entrepreneurial career intention scores between the Caucasian and Mexican-American sub-samples. We conducted separate OLS regression analyses on the two sub-samples to test the rest of the hypotheses on the effect of the social and institutional predictors on entrepreneurial career intentions. Hypothesis 1 (H1) proposed a significant difference in entrepreneurial career intentions between Caucasian and Mexican-American adults. The one way ANOVA results presented below in Table 3 indicate that there is indeed a significant difference in the entrepreneurial career intentions between Caucasian and Mexican-American respondents ($F(1, 168) = 8.156$, $p < 0.01$).

Table 1: Descriptive Statistics for Caucasian Sub-Sample#

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1	Proactive Personality	5.186	0.73	1									
2	Achievement Orientation	2.63	0.24	0.542***	1								
3	Locus of control	5.21	1.87	-0.179	-0.193*	1							
4	Entrepreneurial education	0.22	0.42	0.264**	0.069	-0.153	1						
5	Work Experience	0.78	0.42	0.133	0.073	-0.106	0.085	1					
6	Role Model	0.87	0.34	0.056	0.099	0.044	0.039	0.298***	1				
7	Perceived Social Status	5.18	1.25	0.172	0.047	0.067	0.118	0.163	0.067	1			
8	Perceived Institutional Support	4.14	1.05	0.081	0.003	-0.021	0.086	0.157	0.175	0.110	1		
9	Perceived Social Support	5.18	0.94	0.276**	0.171	0.145	0.045	0.219**	0.083	0.462***	0.182*	1	
10	Entrepreneurial Career Intention	4.87	1.71	0.395***	0.232**	0.142	0.243**	0.320***	0.269**	0.264**	0.228**	0.32***	1

*# n=85 * p < 0.10 ** p < 0.05 *** p < 0.01*

Table 2: Descriptive Statistics for Mexican-American Sub-Sample#

	Variables	Mean	SD	1	2	3	4	5	6	7	8	9	10
1	Proactive Personality	5.59	0.722	1									
2	Achievement Orientation	2.65	0.24	0.342***	1								
3	Locus of control	4.12	1.89	-0.171	-.318***	1							
4	Entrepreneurial education	0.44	0.49	0.145	0.003	0.046	1						
5	Work Experience	0.69	0.46	0.208*	0.075	-0.026	0.119	1					
6	Role Model	0.87	0.34	0.151	0.124	-0.087	0.056	0.505***	1				
7	Perceived Social Status	5.46	1.37	0.359***	0.070	-0.064	0.055	0.348***	0.172	1			
8	Perceived Institutional Support	4.19	1.19	-0.052	0.058	-0.030	0.193*	-0.210*	-0.137	-0.157	1		
9	Perceived Social Support	5.09	1.27	0.262**	0.150	-0.046	0.148	0.112	0.122	0.224**	0.272**	1	
10	Entrepreneurial Career Intentions	5.57	1.48	0.444***	0.067	-0.093	0.054	0.285***	0.076	0.537***	0.01	0.484***	1

*# n=85 * p < 0.10 ** p < 0.05 *** p < 0.01*

Table 3 also shows that the entrepreneurial career intentions for the Mexican-American sub-sample (Mean= 5.56, SD=1.48) was higher than that of the Caucasian sub-sample (Mean= 4.86, SD= 1.71). Hence, hypothesis 1 received full support. From the table below, we can also see that there was significant between the two groups in terms of proactive personality ($F(1,168) = 13.341$, $p<0.01$), locus of control ($F(1,168) = 14.365$, $p<0.01$) and entrepreneurship education ($F(1,168) = 8.982$, $p<0.01$).

Hypothesis 2 proposed a positive relationship between perceived social status and entrepreneurial career intention. To empirically test this hypothesis, we first considered the aggregate (combined) sample of respondents and run an OLS regression analysis on both Mexican-American and Caucasian respondents (n=170). The regression coefficient in Model 2 of Table 4 indicate that this hypothesis receives support ($B = 0.216$, $p < 0.01$). Since Table 4 is an aggregate sample, we conducted additional OLS regression for each sub-sample. The results in Tables 5 and 6 show that while perceived social status appears to be a significant predictor of entrepreneurial career intention in the Mexican-American sub-sample ($B = 0.344$, $p < 0.01$), this was not the case in the Caucasian sub-sample ($B = 0.093$, n.s).

Table 3: Results of a One-Way Analysis of Variance (ANOVA) by Ethnicity (Caucasian vs. Mexican-American)			
Variables	**Caucasian**	**Hispanic**	**F**
Proactive personality	Mean= 5.186 SD= 0.73	Mean= 5.59 SD= 0.72	13.341***
Achievement Orientation	Mean= 2.63 SD= 0.24	Mean= 2.65 SD= 0.24	.323
Locus of control	Mean= 5.21 SD= 1.87	Mean= 4.12 SD= 1.89	14.365***
Entrepreneurial education	Mean= 0.22 SD= 0.42	Mean= 0.44 SD= 0.5	8.982***
Work Experience	Mean= 0.78 SD= 0.42	Mean= 0.69 SD= 0.46	1.476
Role Model	Mean= 0.87 SD= 0.34	Mean= 0.87 SD= 0.34	.000
Perceived Social Status	Mean= 5.18 SD= 1.25	Mean= 5.45 SD= 1.37	1.820
Perceived Social Support	Mean= 5.17 SD= 0.94	Mean= 5.09 SD= 1.27	.238
Perceived Institutional Support	Mean= 4.14 SD= 1.05	Mean= 4.19 SD= 1.20	.104
Entrepreneurial Career Intentions	Mean= 4.86 SD= 1.71	Mean= 5.56 SD= 1.48	8.156***
***p<0.01 **p<0.05 *p<0.10			

Table 4: OLS Regression Results for Aggregate Sample [a]		
	DV= Entrepreneurial Career Intentions	
Control Variables	**Model 1**	**Model 2**
Proactive personality	0.433***	0.335
Achievement Orientation	-0.030	-0.033
Locus of Control	0.08	0.052
Entrepreneurial education	0.071	0.046
Work Experience	0.187**	0.127*
Role Model	0.058	0.047
Independent Variables		
Perceived Social Status		0.216***
Perceived Social Support		0.185**
Perceived Institutional Support		0.08
R^2	0.262	0.363
Adjusted R^2	0.235	0.327
R^2 Change		0.101***
F	9.629***	10.117***
[a]*Standardized regression coefficients are shown * p< 0.10 ** p < 0.05 ***p < 0.01 n =*170		

Hence, Hypothesis 2 was supported specifically in the Mexican-American sub-sample. Hypothesis 3 proposed a positive relationship between perceived social support and entrepreneurial career intention. The aggregate result in Table 4 provides support for hypothesis 3 (B = 0.185, $p < 0.05$). The follow up analyses on the sub-samples in Tables 5 and 6 indicate support for the hypothesis in the Mexican-American (B= 0.361, p< 0.01) but not in the Caucasian sub-sample (B= 0.068, n.s). Hence, hypothesis 3 received full support from the Mexican-American sub-sample as well as the aggregate sample. Finally, hypothesis

4 proposed a significant positive relationship between perceived institutional support and entrepreneurial career intentions. The result of the aggregate sample analysis in Model 2 of Table 4 indicates a statistically non-significant regression coefficient (B = 0.08, n.s.). Similarly, the results of the sub-sample analyses in Table 5 and 6 indicate a statistically non-significant regression coefficient. Hence, hypothesis 4 was not supported.

Table 5: OLS Regression Results for Caucasian Sub-Sample[a]		
	DV= Entrepreneurial Career Intentions	
Control Variables	**Model 1**	**Model 2**
Proactive personality	0.323***	0.279**
Achievement Orientation	0.062	0.070
Locus of Control	0.256***	0.230**
Entrepreneurial education	0.166*	0.153
Work Experience	0.239**	0.199
Role Model	0.156	0.138
Independent Variables		
Perceived Social Status		0.093
Perceived Social Support		0.068
Perceived Institutional Support		0.119
R^2	0.337	0.370
Adjusted R^2	0.286	0.295
R^2 Change		0.034
F	6.602***	1.338
[a] *Standardized regression coefficients are shown * p< 0.10 ** p < 0.05 ***p < 0.01 n=85*		

Table 6: OLS Regression Results for Mexican-American Sub-Sample [a]		
	DV= Entrepreneurial Career Intentions	
Control Variables	**Model 1**	**Model 2**
Proactive personality	0.438***	0.252**
Achievement Orientation	-0.105	-0.109
Locus of Control	-0.052	-0.049
Entrepreneurial education	-0.032	-0065
Work Experience	0.260**	0.153
Role Model	-0.111	-0.128
Independent Variables		
Perceived Social Status		0.344***
Perceived Social Support		0.361***
Perceived Institutional Support		0.008
R^2	0.256	0.499
Adjusted R^2	0.199	0.439
R^2 Change		0.243***
F	4.470***	12.109***
[a] *Standardized regression coefficients are shown * p< 0.10 ** p < 0.05 ***p < 0.01 ; n=85*		

DISCUSSION

The goals of this study were to first empirically examine the relationship between social and institutional predictors of entrepreneurial career intentions and to investigate if there are significant differences between Caucasian and Mexican-American young adults in terms of entrepreneurial career intentions. Our overall results suggest that (1) social factors (i.e. perceived social status and perceived social support) play a significant role in predicting entrepreneurial career intention especially among Mexican-American young adults, and that (2) there is a statistically significant difference in the average entrepreneurial career intention score between Caucasian and Mexican-American sub-samples. More specifically, we found that Mexican-American young adults had higher average entrepreneurial career intention score than their Caucasian counterparts. This is interesting and consistent with some previous studies that indicated that minority groups are more likely to engage in entrepreneurial activities but are less likely to succeed (Kollinger and Minniti, 2006; Fairlie and Robb, 2008).

We believe that social factors play an important role by both legitimating entrepreneurship as a viable and respectable career choice as well as providing emotional and substantive resource support for aspiring entrepreneurs. The results of our analysis provided strong support for this argument. The significant predictive power of social factors that we observed in our study is consistent with a number of past studies in the literature (e.g. Kristiansen and Indarti, 2004; Carr and Sequeira, 2007; Linan and Santos, 2007). In their comparative empirical analyses of Norwegian and Indonesian students' entrepreneurial intentions, Kristiansen and Indarti (2004) observed that the level of entrepreneurial intention among Swedish students is noticeably lower than that of Indonesian students. They partly attributed such lower entrepreneurial intention to the differential role of perceived social status (i.e. variation in the perception of entrepreneurial career as being admirable or prestigious).

In our study, we found that perceived social status significantly predicts entrepreneurial career intentions. As such, our findings indicate the active role social status could play in entrepreneurial intention and subsequently nascent behavior. Perceived social status was found to positively predict the level of entrepreneurial career intention especially among Mexican-American respondents. Similarly, perceived social support was found to be a strong predictor of entrepreneurial career intention among Mexican-American respondents.

Despite our significant findings on social predictors, our study did not find perceived institutional support as an important predictor of entrepreneurial career intention in both Caucasian and Mexican-American sub-samples. We suspect that, given the nature of our respondents (undergraduate seniors), a lack of knowledge and practical understanding of the intricacies of institutional support may be a factor. More specifically, since our measures were focused on financial institutions, we believe that lack of experience in dealing with financial

institutions in the context of new venture start-ups could be one explanation for the non-significant result.

LIMITATIONS AND FUTURE RESEARCH

As it is true for any study, our study has a number of limitations. First, while studying entrepreneurial career intention using student sample is justifiable in some sense, some scholars disagree on the appropriateness of such methodology. Specifically, the fact that we only collected data from business undergraduate students in only two regions of the country may reduce the generalizability of our study. Second, because we used a cross-sectional research methodology, we were not able to study entrepreneurial behavior of our respondents in a longitudinal fashion. As such, it could be difficult to assess whether our respondents did in fact follow-up with their entrepreneurial career intention in terms of actually taking steps in establishing new ventures. The above limitations notwithstanding, we believe that our findings contribute to our understanding of the social antecedents of entrepreneurial and nascent behaviors especially among minority populations. Future research in this area can explore at least three related issues. First, future studies can explore similar social and institutional antecedents of entrepreneurial career intentions by using a more inclusive comparative approach. Unlike our study that only compared Mexican-Americans and Caucasians, future research can compare and contrast such antecedents in different demographic minorities (e.g. African-Americans, immigrant groups, etc). Second, we believe that future research should explore the behavioral antecedents of entrepreneurial career intentions by using a cross-cultural research setting. Such a research design not only helps compare and contrast the strength of this relationship across different countries and/or cultural contexts, it also enables researchers to closely examine the influence of cultural dispositions and ethnic/demographic make-ups within each country. Last but not least, we believe that future studies should investigate the relationship between social and institutional antecedents using a time series/longitudinal research design to take advantage of the temporal dynamics involved in such relationships over time.

CONCLUSION

This study empirically examined the social and institutional predictors of entrepreneurial career intentions among Caucasian and Mexican-American young adults. The results of our data analyses provide significant support for social and not institutional predictor of entrepreneurial career intentions. More specifically, we found that perceived social status and perceived social support significantly predict the level of entrepreneurial career intention among Mexican-American respondents. The findings of our study also showed that the degree of entrepreneurial career intention is significantly higher among

Mexican-American subjects. Overall, the findings highlight the importance of social factors play in fostering entrepreneurship and nascent behavior among minority groups--in our case Mexican-American American young adults.

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ENTREPRENEURSHIP EDUCATION AND VENTURE CREATION: THE ROLE OF THE SOCIAL CONTEXT

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ABSTRACT

Entrepreneurship education promotes entrepreneurial success, but not all aspects of entrepreneurship can be taught. It is relatively easy to equip students with knowledge and skills necessary for setting up and running a business, but more difficult to instill an entrepreneurial attitude and shape an entrepreneurial behavior. Students need to be inspired to possess an intention to start a business. Inspiration is an emotional issue which is essentially social. In this study, we establish the importance of the social context in generating emotions toward venture creation. We also propose important criteria for designing the social context in entrepreneurship education.

INTRODUCTION

Scholars and practitioners have been debating whether or not entrepreneurship can be taught (Fiet, 2001). Proponents assume that entrepreneurs can be made. According to Drucker (1985), one of the leading management thinkers of our time, entrepreneurship is a discipline, so it can be learned. Neck and Greene (2011), however, contended that entrepreneurship cannot be taught because entrepreneurial activities are performed in an unknown world. People need unusual tolerance for ambiguity and risk taking propensity to pursue entrepreneurial opportunities. These traits are better acquired through experience than education. In entrepreneurship, therefore, "experience supersedes education" (p.56). In an interview conducted by Aronsson (2004), David Birch, a well-known entrepreneurship scholar, asserted that business schools cannot teach people to be entrepreneurs, but can encourage them to be more entrepreneurial through apprenticeship.

The creation of new enterprise or organization is a central issue of entrepreneurship (Gartner, 1988; Low & MacMillan, 1988). It needs basic knowledge and skills, as well as entrepreneurial behavior. From this perspective, some aspects, if not all, of entrepreneurship can be taught (Kuratko, 2005). Existing entrepreneurship programs have largely focused on the teachable aspects which are often covered in general business courses. For example, Fiet (2001) studied 18 entrepreneurship syllabi and found that they included as many as 116 different topics. He grouped them into 6 broad areas: strategy/competitive analysis, managing growth, discovery/idea generation, risk and rationality, financing, and creativity. He argued

that questions in these areas can be addressed on the basis of existing theories such as agency theory, decision making theory, game theory, industry organization economics, etc. In another study conducted by Garavan and O'Cinne´ide (1994a) on the basis of their analysis of six entrepreneurship education and training programs across five European countries, they found that the content of those programs covered a wide range of topics, including idea generation, business planning, market selection, financial planning, and managing growth. Students can also learn to address these issues in other business courses. As a result, entrepreneurship education tends to have a "generic" nature (von Graevenitz et al., 2010).

According to Ireland and colleagues (2003), the entrepreneurial and managerial domains are not mutually exclusive. They overlap to a certain degree. Zeithaml and Rice (1987) even asserted that entrepreneurship education covers an entire scope of business administration. Students learn knowledge and skills necessary for venture creation such as market research, planning, and financing in entrepreneurship courses, but the same knowledge and skills are also important for business management and are taught in general business courses. Vesper (1982) reported that despite the use of the term "entrepreneurship", most entrepreneurship courses taught in the US were actually aimed at equipping students with information about setting up and running a small business. As a result, teaching entrepreneurship becomes teaching small business management (Garavan & O'Cinne´ide, 1994a). Entrepreneurship education should differentiate from typical business education (Kurako, 2005). It should not simply repeat what is covered in other business courses. What constitute distinctive features of entrepreneurship education?

According to Gartner (1988: 11), "What differentiates entrepreneurs from non-entrepreneurs is that entrepreneurs create organizations, while non-entrepreneurs do not." Existing entrepreneurship courses do teach students to create ventures, but they emphasize the venture creation process rather than new venture initiation. In the transition to entrepreneurship, students face two challenges: the "intention challenge" and the "implementation challenge" (Souitaris et al., 2007). The former addresses the question "do I want to be an entrepreneur?" and the latter deals with the venture creation process such as acquiring knowledge and skills and assembling resources. The implementation challenge is common in small business management. It is the intention challenge that makes an entrepreneurship course distinctive, but it is this aspect that is hard to teach.

Scholars have generally agreed that entrepreneurship needs practice, so experiential education is important (Honig, 2004). Many entrepreneurship courses have incorporated an experiential component, requiring students to participate in real world projects. Experiential learning helps students improve their knowledge and skills in the venture creation process, but does not necessarily change their behavior. Entrepreneurship is seldom a pure rational process. It can also be emotional (Baron, 2008). Cardon and colleagues (2012) treated emotional issues in entrepreneurship as a "hot topic." Emotions can help people tolerate ambiguity and bear risk, thus encouraging entrepreneurial behavior and promoting venture

creation. We argue that experiential learning is necessary but not sufficient to shape entrepreneurial behavior. Students' emotions toward venture creation must be aroused. According to Biniari (2012), entrepreneurs' emotions are often socially embedded, which is consistent with Birch's argument: entrepreneurship is "deeply rooted in culture" (Aronsson, 2004: 291). The social embeddedness of emotions provide important implications for entrepreneurship education: an appropriate social context may affect students' intention toward entrepreneurship. In this study, we bring the role of the social context to the forefront of entrepreneurship education. We argue that the social context can play an important role in shaping students' entrepreneurial behavior and encouraging venture creation.

The reminder of the paper is organized as follows. First, we review the literature on entrepreneurship education, focusing on its effectiveness on venture creation. We demonstrate that entrepreneurship education needs to go beyond equipping students with basic knowledge and skills to address the "intention challenge." Second, we discuss the impact of affective states on venture creation and the implications for entrepreneurship education. Third, we establish the importance of the social context in entrepreneurship education. Finally, we discuss future directions for designing such a social context.

LITERATURE REVIEW

Researchers have assessed the impact of entrepreneurship education on venture creation. Because venture creation tends to take time, it is hard to measure it during or immediately after entrepreneurship education (Fayolle et al., 2006). Therefore, most studies have used surrogate variables. Entrepreneurship has been viewed as intentionally planned behavior (Bird, 1988). Planned behavior is intentional and thus is best predicted by observing individuals' intention toward the behavior. Two intentional models, Ajzen's theory of planned behavior and Shapero's model of the entrepreneurial event, have been used to predict the entrepreneurial intention. Ajzen (1991) argued that intentions are affected by attitude toward the behavior, subjective norms and perceived behavioral control, while Shapero (1982) contended that the entrepreneurial intention depends on perceived desirability, feasibility, and propensity to act. Krueger et al. (2000) compared the two intentional models and found strong statistical support for both of them.

Some studies suggest that entrepreneurship education has positive impact on venture creation. Souitaris and colleagues (2007) analyzed science and engineering students at two universities and found that entrepreneurship programs raised entrepreneurial attitude and intention. Using a sample of 374 graduates with a Master of Science in Business degree from a Norwegian business school during 1987-1994, Kolvereid and Moen (1997) found that entrepreneurship graduates had stronger entrepreneurial intention than other business graduates. Peterman and Kennedy (2003) showed that participation in the enterprise education program increased high school students' perception of desirability and feasibility of starting a

business. Based on an experiment on a group of students attending a one-day entrepreneurship program, Fayolle and colleagues (2006) concluded that entrepreneurship education had strong effects on students' entrepreneurial intention.

However, not all studies supported the positive effect of entrepreneurship education. Using a sample of 250 college students who participated in a leading entrepreneurship education program, Oosterbeek et al. (2010) found that the program had negative impact on students' intention to become an entrepreneur and did not improve self-assessed entrepreneurial skills significantly. They interpreted this result as students' more realistic perspectives on themselves and on what it takes to be an entrepreneur after completion of the program, indicating that entrepreneurship education may serve as a mechanism for sorting students. Based on ex-ante and ex-post-survey responses from college students who attended an entrepreneurship course, von Graevenitz and colleagues (2010) found that the course increased students' self-assessed entrepreneurial skills, but decreased their intention to create a new venture. Their finding provides support to the "entrepreneurship education as a sorting mechanism" argument. In a ten-year longitudinal study, Matlay (2008) reported that graduates' needs for entrepreneurship education did not match the actual outcomes in terms of entrepreneurial knowledge, skills, and attitude. In a study of teaching managers to be entrepreneurs, Thornberry (2003) noted that it is difficult to predict which trainees would emerge as most entrepreneurial. They may arrive motivated, become unmotivated, and finally quit the program.

If entrepreneurship education serves as a sorting mechanism, entrepreneurial behavior may be affected more by students' individual characteristics or traits. The trait approach proposes that entrepreneurship is a function of stable characteristics possessed by some people and not others. Though this approach has not gained strong support, empirical studies suggest that people may still need some traits to engage in entrepreneurial activities. Based on a survey of 512 students at the MIT School of Engineering, Luthje and Franke (2003) reported that risk taking propensity and internal locus of control had a strong impact on students' attitude toward self-employment. Gürol and Atsan (2006) compared the fourth year students with and without entrepreneurial inclinations at two Turkish universities and found that entrepreneurially inclined students had higher risk taking propensity, internal locus of control, need for achievement, and innovativeness. If students' entrepreneurial intention is largely affected by their personal characteristics, they probably already have an intention to start their own business when taking entrepreneurship courses. If it's true, students receiving entrepreneurship education would be seeking to gain knowledge and skills in the venture creation process in order to address the "implementation challenge."

The literature review above suggests that the impact of entrepreneurship education on venture creation is subject to further investigation. Arguments are conflicting; empirical results are not consistent. Despite the inconsistency, the contributions of entrepreneurial activities to the society cannot be denied. From this point of view, it may not be important to

identify whether or not entrepreneurship can be effectively taught. Instead, we shall address the following question, which, according to Ronstadt (1987), is more relevant: what should be taught and how should it be taught? Teaching contents and methods are decisive factors of success for entrepreneurship education in the twenty-first century (Volkmann, 2004). The "driving questions are no longer whether entrepreneurship can or should be taught, but rather how to continuously improve its content and delivery to meet the needs of our current students" (Gendron, 2004: 302).

What Should Be Taught?

Theoretically, all issues related to the entrepreneurial process and success should be taught. Existing entrepreneurship courses reflect this thought because they cover a wide range of topics (Fiet, 2001; Garavan & O'Cinne´ide, 1994). As discussed above, this approach makes entrepreneurship more like a general business course. As a result, entrepreneurship loses its distinctive features. Entrepreneurship education promotes venture creation. What helps students generate an intention to create their own business? Souitaris and colleagues' (2007) study provides implications for answering this question. They noted that entrepreneurship education brings three types of benefits to students: learning, inspiration and incubation resources. Learning is a fundamental purpose when students take entrepreneurship courses. They learn knowledge about entrepreneurship and develop skills in dealing with the process of venture creation. Entrepreneurial inspiration is "a change of hearts (emotion) and minds (motivation) evoked by events or inputs from the programme and directed towards considering becoming an entrepreneur" (p.573). It comes from "the emotional chemistry between individuals and particular opportunities" (p.586). It serves as a trigger of entrepreneurial activities. Incubation resources are all resources, including human, research, networking, and physical, that can provide support for entrepreneurship. They help students generate business ideas, evaluate them, and develop them into a venture.

How do these three benefits affect entrepreneurial behavior? Souitaris et al. (2007) employed the planned behavior model to examine their impact on students' entrepreneurial intention. They found that inspiration increased students' intention to become self-employed, but both learning and supporting resources did not have significant effects. They concluded that inspiration addresses the "intention challenge," while learning and resources address the "implementation challenge" at a later stage when students decide to pursue entrepreneurial opportunities. Other studies offer similar implications. von Graevenitz et al. (2010) showed that acquiring skills in the field of entrepreneurship might not make students more entrepreneurial. Wang and Wong (2004) reported that family financial resources did not increase students' entrepreneurial interest.

According to Garavan and O'Cinne´ide (1994b), many entrepreneurship programs focus on "about entrepreneurship" which conveys knowledge and procedures and develops

small business management skills, thus having "little to do with producing entrepreneurs in the strict sense" (p.18). To produce entrepreneurs, we need to inspire students: arousing their emotions and transforming their mindsets, as Souitaris et al. (2007) suggested. This is a behavioral aspect of entrepreneurship that should be taught, but is hard to teach.

How Should Entrepreneurship Be Taught?

Like teaching general business courses, instructors often use lectures, case studies, guest speakers, simulations, role plays, and field projects to teach entrepreneurship. Lectures are largely used to convey knowledge about entrepreneurship, so they have limited impact on motivating students to be entrepreneurs (Garavan & O'Cinne´ide, 1994a). McMullan and Boberg (1991) compared the case method and the project method and found the former helped develop analytical and synthetic skills, while the latter enhanced understanding of the subject field and improved the ability to evaluate it, thus more helpful to entrepreneurship students. Using entrepreneurs as guest speakers is based on the assumption that students can learn to be entrepreneurs by observing and studying their successful experiences. If entrepreneurship cannot be taught, entrepreneurs may serve as role models affecting students' behavior. Research suggests that role models have important effects on the entrepreneurial intention (Brockhaus & Horwitz 1986; Delmar & Davidsson, 2000).

Scholars have advocated experiential approaches to entrepreneurship education (e.g., Henry et al., 2004; Honig, 2004). Simulations and field projects are two basic forms. Students can experience entrepreneurship through simulations. Venture creation is characterized by uncertainty, so failures are unavoidable. Entrepreneurial simulations prepare students for ambiguity, help them learn from failures, and develop ability to tolerate risk (Honig, 2004). Honig also noted that simulations are based on convergent thinking in that solutions must be predesigned into the exercises. Students are encouraged to find a single precise answer. In reality, there are few best practices in the entrepreneurial process, so divergent thinking is often needed. As a result, the value of simulations in entrepreneurship education is limited. In addition, the impact of simulations on the entrepreneurial intention is unclear.

Experiencing entrepreneurship through real projects is often more helpful than simulations, but empirical studies suggest that learning by doing helps improve knowledge and skills, but may not change students' attitude and behavior toward entrepreneurship. Based on an analysis of partnerships between undergraduates and small and medium-sized enterprises (SMEs), Brindley and Ritchie (2000) reported a positive impact of participation in field projects on students' preparedness to work for an SME. However, only a small percentage of students expressed an intention to start their own business. A majority of them still preferred to seek employment in large organizations because they did not want exposure to personal risks as entrepreneurs. Westhead and colleagues (2000) studied the effect of the Shell Technology Enterprise program (STEP) on students' entrepreneurial behavior and

obtained a similar result. Prior to participating in the program, STEP students were more likely to view themselves as becoming self-employed in the future than non-STEP students. However, these STEP students' entrepreneurial interest decreased as actual employment opportunities emerged in large organizations.

Developing a business plan has been identified as being the most important feature of entrepreneurship courses (Honig, 2004). Many universities send their entrepreneurship student teams to participate in business plan competition around the world. Business planning can be based on a hypothetical case or a real project. The development of a business plan equips students with knowledge of venture creation process, gives them an opportunity to learn how to collect information, and helps them understand the complexity of starting a business. Though an increasing number of entrepreneurship programs have incorporated a business plan component, most new ventures are actually launched without the benefit of formal planning (Barringer & Gresock, 2008). It is hoped that business planning can motivate students to start their own business. In reality, people often have entrepreneurial intentions first and then write a business plan due to requests from their "friends, family, bankers, and investors" (Honig, 2004: 260), implying that the development of a business plan may not have important effects on entrepreneurial behavior.

Entrepreneurship education has used the traditional instructor-centered approach (Garavan & O'Cinneide, 1994a). This formal teaching in the classroom makes learning highly dependent on authority (Gibb, 1987). In the real world, however, entrepreneurs must rely upon their own knowledge and experience. They make decisions based on "gut feel" and limited information. According to Garavan and O'Cinneide (1994a), therefore, entrepreneurship education should be less structured and more flexible, giving students opportunities to learn by doing, explore new concepts, and use their own feelings and values. Entrepreneurship students need a new learning style involving "deeper aspects of self, emotions, and values" (p.8).

DISCUSSION

Much research has been done on the two questions regarding entrepreneurship education: what should be taught and how it should be taught. A review of the literature suggests that the existing entrepreneurship programs are more helpful in addressing the "implementation challenge" than addressing the "intention challenge." According to Souitaris et al. (2007), knowledge and skills and supporting resources have a limited impact on students' intention to start a new business. Learning by doing may not change students' behavior either (Westhead et al,, 2000). In order to trigger entrepreneurial intention, we need to inspire students. Inspiration is an emotional issue. The role of emotions in entrepreneurship has not been recognized until recently (Cardon et al., 2012). In the educational setting, there is little research on how students are inspired or motivated toward entrepreneurship.

In the next section, first, we argue that entrepreneurial behavior is shaped by students' emotions toward entrepreneurship, rather than their knowledge about entrepreneurship. Then, we establish the importance and effectiveness of the social context in generating entrepreneurial emotions and thus shaping students' entrepreneurial behavior. Emotions are embedded in social contexts (Keltner & Haidt, 1999). People can "mimic" and retain entrepreneurial emotions through social responses and interactions (Cardon, 2008). Scholars have noticed the importance of "affective socialization" (Curran & Stanworth, 1989) and "psycho-social forces" (Garavan & O'Cinneide, 1994a) in entrepreneurship education.

EMOTIONS, THE SOCIAL CONTEXT, AND VENTURE CREATION

Affective States and Venture Creation

Research suggests that decision behaviors are not only influenced by reasoning or logical thought, but also by affective states such as emotions or passions (Baron, 2008). According to Vallerand et al. (2003: 757), passion is "a strong inclination toward an activity that people like, that they find important, and in which they invest time and energy." It helps individuals internalize the activities into their identities. Affective states influence how information is received, processed, and retrieved for later use. They also exert impact on the perception of the external world. For example, people experiencing positive moods often perceive things around them more favorably than those experiencing neutral or negative moods (Bower, 1991). In contexts involving uncertainty, individuals cannot "follow well-learned scripts or prescribed sets of procedures" (p.329), so affect is particularly important in human decision making (Baron, 2008). It operates on both conscious and unconscious levels and leads to basic instinctive drives (Hayton & Cholakova, 2012). Entrepreneurship is characterized by high uncertainty and risk, so "affect may have especially important consequences" for entrepreneurial activities (Baron, 2008: 329). People need strong will to create ventures, which is "inherently emotional" (Goss, 2005: 209). This strong will is an intense positive feeling toward entrepreneurship, which has been described as entrepreneurial affect (Baron, 2008), entrepreneurial passion (Cardon et al., 2009), or entrepreneurial emotion (Cardon et al., 2012). According to Cardon et al., (2009), entrepreneurial passion or emotion is a key element of the entrepreneurial process. It is associated with "engagement in activities with identity meaning and salience to the entrepreneur" (p.515). People with this passion are motivated to maintain their self-meaning and confirm role expectations from the society: they are distinctive.

Hayton and Cholakova (2012) noted that entrepreneurial action or venture creation is preceded by generation, development, and exploitation of entrepreneurial ideas. In a similar way, Thornberry (2003: 336) contended that start-up entrepreneurs "identify opportunities, shape and develop these opportunities, and then they create a business structure to turn these

opportunities into successful business ventures." Affective states can influence all three stages of the venture creation process. The generation of entrepreneurial ideas begins with opportunity recognition. Though knowledge and education (Ardichvili et al., 2003) and social capital (Davidsson and Honig, 2003) help people identify new opportunities, affect influences opportunity recognition in different ways. First, if affect is positive, it helps expand the scope of attention (Fredrickson, 2001), thus increasing the probability that information stimulating entrepreneurial ideas will be perceived (Hayton & Cholakova, 2012). Second, positive affect intensifies people's active search for opportunities (Baron, 2008). Third, affect exerts effect on creativity. People experiencing positive affect tend to be more creative due to an increased number and range of cognitive elements available (Estrada et al., 1997). Creativity facilitates the process of opportunity recognition (Hills et al., 1999).

When an entrepreneurial idea is just formed, it tends to be broad and vague. It is difficult to conceive a specific business based on the idea (Dimov, 2007). Therefore, the individual needs to further explore and develop the idea. This effort will involve investment of time and money, but whether the initial idea can turn into an actionable opportunity is unknown. According to Hayton and Cholakova (2012), uncertainty around the idea will limit the intention to further develop it. Positive affect helps reduce uncertainty by motivating the potential entrepreneur to perform information search and idea testing on a wider basis, thus having positive impact on further pursuit of the entrepreneurial idea. Baron (1990) found that positive affect led to higher levels of self-efficacy, which may also stimulate the individual to continuously develop the idea. An entrepreneurial idea may or may not turn into a business, even if it is well developed. The potential entrepreneur needs to possess an intention to create a venture and then take actions. Affective states can influence the final stage of the venture creation process. Based on a survey of 240 college students, Brannback et al. (2006) found that entrepreneurial passion had a strong effect on perceived feasibility and desirability, thus contributing to students' intention to start a venture.

The Embeddedness of Entrepreneurs' Affective States

Emotions are socially embedded (Keltner & Haidt, 1999). People are social by nature, so emotions are often viewed as a means of addressing or responding to social issues (Lutz & White, 1986). Two approaches, cognitive and constructionist, have been used to analyze and explain emotions (Goss, 2008). The cognitive approach focuses on information processing when individuals experience external events. The generation of emotions will depend on the appraisal of the events and their impacts. Therefore, this approach treats emotional experience as a rational process. The constructionist approach emphasizes the role of social relationships and interactions. Emotions are viewed as "constructed by individuals or groups in social contexts" and are the "cultural products" (Keltner & Haidt, 1999: 508). Though the cognitive approach is internal-focused, it recognizes the role of the social context in the generation of

emotions (Goss, 2008). People produce emotions to respond to specific social events, fit with social structures, or conform to social expectations, cultural norms and practices.

Stake's (2006) study illustrates the motivational role of social expectations. Facing the situation that students in the United States lacked interest and participation in science, Stake explored how to improve science motivation and confidence among high school girls and boys. Based on a sample of 184 senior high school students, she found that social encouragement from family, teachers, and peers was a stronger predictor of science attitudes than student status variables (gender, ability, and parent education). She also found that the social influence was equally important to both boys and girls and to both highly capable, advanced science students and less capable, beginning science students.

Entrepreneurial emotions can motivate people to create new ventures. Scholars have examined entrepreneurs' emotions and their effects mainly at the intrapersonal level (e.g., Baron, 2008; Cardon et al., 2009). According to Goss (2005), the crucial aspects of the entrepreneurial process are inherently social. Biniari (2012) suggested an emotional embeddedness perspective on entrepreneurship: the social context generates entrepreneurial emotions which in turn trigger entrepreneurial behaviors. The social influence on entrepreneurship takes different forms. First, entrepreneurial emotions are thought to be contagious. According to Cardon (2008), contagion occurs through emotional mimicry. The entrepreneur's emotional display can evoke emotions in non-entrepreneurs who are likely to internalize the emotions and make them part of their own feelings for some time. Biniari (2012) argued that entrepreneurial emotions are contagious through social interactions, so non-entrepreneurs in the same social setting can develop and display emotions toward entrepreneurship and become more entrepreneurial.

Second, it has long been noticed that role models can shape entrepreneurial behavior (e.g., Brockhaus & Horwitz 1986; Delmar & Davidsson, 2000; Krueger 1993; Shapero & Sokol, 1982; Wang & Wong, 2004). Role models exert influence through motivating and inspiring others in the same social setting (Lockwood & Kunda, 1999). Brockhaus and Horwitz (1986) asserted that ". . . from an environmental perspective, most entrepreneurs have a successful role model, either in their family or the work place" (p.43). Based on a sample of 436 students from the US, UK, and Ireland, Scott and Twomey (1988) found that students showed the highest preference for self-employment if their parents owned a small business. Matthews and Moser (1996) performed a longitudinal investigation of business graduates during a five-year period of time and found that individuals with a family business background were more likely to show an interest in owning a business. Wang and Wong (2004) conducted a survey of 5326 undergraduates in Singapore and reported that respondents whose families ran a business were more interested in entrepreneurship. In the Netherlands, De Wit and Van Winden (1989) found that self-employed fathers had a decisive impact on the choice whether to become self-employed. The positive impact of family business on entrepreneurial behavior may also be explained by the family's financial or social support

(Wang & Wong, 2004). However, empirical studies confirmed the role model and rejected the support model (De Wit & Van Winden, 1989; Wang & Wong, 2004).

Role models may not always perform well. Research suggests that even low-performing role models are likely to increase entrepreneurial interest (Matthews & Moser, 1996; Scherer et al., 1989). Scherer and colleagues (1989) argued, therefore, that role model performance was not as important as having a role model. The life entrepreneurial role models live may not be encouraging. Zellweger et al. (2011) noted that students with a family business background often experience the constraints and personal sacrifices imposed on their parents, so they tend to be pessimistic about controlling an entrepreneurial career. However, they are still optimistic about their efficacy to pursue an entrepreneurial career.

Third, entrepreneurial behavior can also be explained by cultural norms, values, and practices (Liñán & Chen, 2009; Moriano et al., 2012). Based on Markus and Kitayama (1991), culture plays a central role in shaping people's emotions. It guides individuals' affective reactions needed to function in the social world and motivates culturally appropriate behaviors (Keltner & Haidt, 1999). In a culture supportive of entrepreneurship, people are likely to perceive social pressure and are thus motivated to start a firm.

Finally, entrepreneurship can be derived from social feelings. Facing the dominant individualistic theories of entrepreneurship, Goss (2005) offered an alternative explanation: two types of emotions, shame and pride which are socially formed, can lead to entrepreneurial behavior. When employees have to show deference to and obey orders from their superiors, they may feel "discredited" or "losing face." If they are their own boss, they possess rights of power and control over others, which leads to pride. A propensity to bypass shame and obtain pride would stimulate convention-breaking conduct like starting one's own business. Begley and Tan (2001) found that in East Asian countries, social status of entrepreneurship had positive impact on entrepreneurial interest, while shame from business failure discouraged entrepreneurship.

TEACHING ENTREPRENEURSHIP: THE SOCIAL CONTEXT

Scholars have long recognized the importance of social aspect in shaping students' attitude and behavior toward an entrepreneurial career. Curran and Stanworth (1989) argued that the mental preparation represents a major weakness when would-be owner-managers are trained. They suggested that entrepreneurship education include an "affective socialization element." Socialization inculcates attitudes, values and psychological sets necessary for the entrepreneurial process. Many business schools have already incorporated a social component into their entrepreneurship programs. A common practice is to invite entrepreneurs as guest speakers who can stimulate students' entrepreneurial interest through role models. Scott and Twomey (1998) asserted that it is important to integrate entrepreneurial role models into the educational programs.

As a role model, the entrepreneur can inspire students in the classroom. According to Cardon (2008), the effect of such a kind of inspiration on entrepreneurship is limited. Students may get affected through "emotional mimicry," but it is not enough to form a passion for a new venture. The short intervention by the guest speaker can only generate momentary emotions. Students may feel excited about an entrepreneurial career introduced by the entrepreneur, "but such emotions will likely not last once the trigger that produced the emotion is removed" (P.81). A true passion toward entrepreneurship is enduring rather than momentary. Entrepreneurs are passionate about venture-related activities not because they are inherently disposed to the endeavor but because they are doing something that relates to a meaningful self-identity for them (Cardon et al., 2009). The momentary emotions hardly lead to an identity connection between the student and the entrepreneur role.

Entrepreneurs' passion is contagious, but the aroused emotions in non-entrepreneurs resulting from emotional mimicry are likely to diminish quickly. However, if non-entrepreneurs have "social comparison" opportunities, that is, connecting themselves to situations entrepreneurs face, they are able to experience identity meaningfulness that will strengthen and maintain their entrepreneurial emotions (Cardon, 2008). Cardon's theory helps explain the strong influence of family business background on entrepreneurship because both emotional mimicry and social comparison are present. The concept of social comparison can also apply to the educational setting. Curran and Stanworth (1989) argued that in career education, the socialization process of the would-be owner-manager should reflect the exceptional demands the role makes on its occupants. In his entrepreneurship education policy report, Gibb (2005) suggested that students should clearly empathize with, understand and "feel" the life world of the entrepreneur. Van Auken and Spephens (2006) examined the relative importance of specific types of interactions between role models and students, including personal involvement, mentoring, observation, and discussion. They found that relationship-oriented activities had the greatest likelihood of influencing students' career choices. These activities help students connect to the entrepreneur's role in a meaningful way and establish entrepreneurial identities.

Scholars have also recognized the role of culture in entrepreneurship education (Klofsten, 2000). Luthje and Franke's (2003) study suggests that creative university atmosphere can affect students' entrepreneurial intent positively. In entrepreneurship education, Gibb (2002) urged to create a culture that promotes empathy with entrepreneurial ways of seeing, feeling, doing, thinking, and learning. In this culture, entrepreneurs are not viewed as objective, rational decision-makers, but as holistic human beings with emotions, feelings, and motivation. A central challenge is to "stimulate the way of life of those who live with high levels of uncertainty and complexity, provide a culture … that reinforce[s] this way of life …" (p.258).

DISCUSSION AND CONCLUSION

Entrepreneurship education promotes entrepreneurial success through addressing both "intention challenge" and "implementation challenge." However, not all aspects of entrepreneurship can be taught (Fiet, 2001). Existing programs tend to do better in helping students implement their intentions to create a venture. It's not clear whether education can generate the entrepreneurial intention and make students more entrepreneurial. This is a behavioral aspect that is hard to teach. In this study, we argue that shaping entrepreneurial behavior goes beyond equipping students with knowledge and skills and providing them with supporting resources. Students need to be inspired. They need entrepreneurial emotions to change their attitude and take actions to create their own business. We demonstrate the importance of the social context in generating emotions toward venture creation. We also propose important criteria for designing the social context in entrepreneurship education.

Future research may be directed toward how to design the social context in an educational setting. For example, it is important to use entrepreneurial role models to inspire students, but the entrepreneurial emotions generated may diminish quickly so as not to motivate students to take actions. In order to sustain the emotional drive, students need to identify with entrepreneurs, find meanings in playing the entrepreneurial role, and establish self-identity. How can a social context help students establish connections with an entrepreneurial identity in a meaningful way? Scholars have also suggested that an entrepreneurial culture be created to promote students' empathy with entrepreneurs' life (Gibb, 2002). What cultural practices should be established in order to generate this empathic feeling? Entrepreneurship courses are embedded in the cultural context. If a social component is incorporated into individual courses, how should it be linked to the cultural environment needed for motivating entrepreneurial behavior?

David Birch asserted that students cannot be taught to be entrepreneurial because entrepreneurship is essentially a cultural product (Aronsson, 2004). If the "intention challenge" is a main concern, education may need to shift attention away from teaching entrepreneurship. Establishing an appropriate social context may be a solution to the concern because it is likely to trigger entrepreneurial emotions.

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THE COMPLEX RELATIONSHIP OF THE SOCIAL CONTRACT AND SOCIAL ENTREPRENEURISM IN HIGHER EDUCATION

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ABSTRACT

This paper presents the distinction between commercial and social entrepreneurism in higher education and provides a historic framework to examine the social contract as it relates to higher education. This paper explores how this charter still exists and introduces a social entrepreneurship pedagogy through which this charter is met. This pedagogy maximizes added value to the students participating in programs and facilitates reciprocal, shared-value relationships between students and the communities in which they are a part, thus resulting in a new social contract.

INTRODUCTION

Evidence of commercial entrepreneurship in the academy is hard to overlook. Faculty members and medical professionals spend valuable time applying for grants and carrying out grant or contract funded research. Coke machines line the hallways, books are purchased from a Barnes and Noble bookstore, and students and staff alike get their caffeine fix from Starbucks. These are just some of the ways in which the university has embraced the entrepreneurial way in order to endure difficult financial situations or increase their rankings and prestige. Consequently, some scholars have questioned the purpose of institutions of higher learning; are they primarily looking to increase prestige and rankings, or do they have a responsibility to maintain the academic heartland as coined by Clark (1998). Institutions interested in maintaining this heartland and giving back to the society of which they are a part may participate in social entrepreneurial practices to fund these activities.

This paper has four main goals: to provide a historic framework to examine the social contract or charter between institutions and society, to define social entrepreneurism in higher education, to demonstrate how current social entrepreneurial activities provide support that a charter still exists; and finally, to introduce a social entrepreneurship pedagogy. This pedagogy maximizes added value to the students participating in programs, facilitates reciprocal, shared-value relationships between students and the communities in which they are a part. This paper is guided not by a naiveté that social entrepreneurial activities are completely altruistic, or that they may not mirror in many ways commercial entrepreneurial

activities, but by the belief that institutions are still responsible to their community and are contributing to the public good.

J. Gregory Dees, a noted scholar on the topic of entrepreneurship, notes that "being an entrepreneur is associated with starting a business" (Dees, 1998, p. 1). Thus, a clear definition of entrepreneurship and how this idea fits into higher education is difficult to construct. In thinking of entrepreneurship, the words "risk," "innovation," "market-driven," and "opportunity" among others come to mind. These terms may be more closely associated with the commercial ideal of entrepreneurship where the end goal is financial gain, development of a product, or a new best practice. This paper operates on the premise that commercial and social entrepreneurship are not necessarily mutual exclusive, rather they are part of the same schema.

To put entrepreneurship in a theoretical framework, we look to Schumpeter, who according to Mars and Metcalfe (2009), authored the most widely recognized theoretical approach to entrepreneurism. Schumpeter views entrepreneurs as change agents who operate in or create a chaotic environment. Another prospective is presented by T.W. Schultz, who saw entrepreneurship as the ability to adjust, or reallocate resources in response to the changing environment, thus making the entrepreneur a proactive agent of change (Mars & Metcalfe, 2009). This is particularly relevant to social entrepreneurship as it often looks to create innovative solutions for social problems.

Several definitions of social entrepreneurship have been offered, including a commonly accepted definition within the context of higher education provided by Dees. Dees suggests that any definition of this term "should reflect the need for a substitute for the market discipline that works for business entrepreneurs" (Dees, 1998, p. 4). He described social entrepreneurship in five parts: change agents in the social sector, adopting a mission to create and sustain social value, recognizing and relentlessly pursuing new opportunities, engaging in a process of continuous innovation, adaptation, and learning, acting bolding without being limited by resources, and exhibiting a heightened sense of accountability to those they serve and for their outcomes (Dees, 1998). The author admits that those qualities lend itself to an idealized view of social entrepreneurship, and that those who can most closely identify with and carry out these qualities, the closer he or she will be to a social entrepreneur. Additionally, Dees (1998), highlights the work of Schumpeter and challenges social entrepreneurs to follow Schumpeter's example to "significantly reform or revolutionize their industries" (p. 4).

Austin, Stevenson, and Wei-Skillern (2006) write that social entrepreneurship is an "innovative, social value creating activity that can occur within or across the nonprofit, business, or government sectors" (p. 2). The authors note that the mission of social entrepreneurship is to create "social value for the public good" (Austin, Stevenson, & Wei-Skillern, 2006, p. 3). Both definitions seem to fit in line with what constituents may typically think of as the purpose of higher education and its "social contract" with society. The social

contract is a historic agreement that individuals enter into with their society by willingly giving up some of their personal liberties in return for civil rights within a system of laws.

THE SOCIAL CONTRACT- PAST AND PRESENT

Placing the social contract in a historic context allows stakeholders to understand how the relationship between institutions and their communities have evolved, where the relationship stands for some institutions presently, as well critiques put forth about these relationships.

John Locke held that the natural state of society meant that individuals possessed individual freedom as well as the right to enjoy it. He also believed in moral laws which were discoverable through human reason, [and] are sufficient to govern many relations among people of good will. People guided only by moral laws, for example, can exchange things with one another for mutual benefit . . . in judging violations of the moral law, people may derive additional benefit by additional benefit by agreeing to positive laws and responsible judges to enforce them. (Keeley, 1995, p. 243)

According to Keeley, this mutual agreement on law is what Locke meant by a social contract. Building on the work of Locke, Rousseau's 1762 treatise On the Social Contract, lays out an influential framework for the social contract. He posits that individuals enter into a mutual agreement with each other with the understanding that it can be amended in the future. This treatise is more commonly associated with the design and role of government. For example, by proposing a social contract, Rousseau hoped to secure a civil freedom that he believed should accompany life in society. This freedom is restricted by an agreement not to harm other citizens. This system leads people to be moral and rational according to Rousseau (1976).

Subsequently, Rousseau's writing was used as a framework for the contemporary work of John Rawls. Rawls posited the principles of justice: justice and equality, arguing that equality would be agreed upon; thereby ensuring justice was carried out. These principles would lead to a "well ordered society ... designed to advance the good of its members and effectively regulated by a public conception of justice" (Rawls, 1971, p. 397). In return, individuals would be required to give up some of their personal liberties such as taking justice into their own hands without the construct of law.

Early evidence of a social contract between institutions and higher education appears in the colonial colleges when individuals were trained in the fields of law, medicine, divinity, and business. Education allowed for the growth and sustainability of the young nation (Chambers, 2005). The Wisconsin idea in the early 20th century brought forth a model for campus based research that would help to advance the local economy as well as the political and social needs of the time (Kezar, 2005). More recently, civil rights movements in the United States required that institutions of higher education be responsive to the growing call

for equity and access by allowing women, and people of color. Additionally, throughout the history of the United States, young men, and more recently women, have looked to the University for additional training and as a way to reenter society as a civilian once they return from their military service.

Institutions have received financial assistance from the citizenry for providing these services, even early on in the history of the national when "giving general federal assistance to higher education without federal control gained favor" (Brubacher & Rudy, 1997, p. 227). The financial assistance in the early years often came in the form of land. Given by the federal government, states received land that could be sold and the profit used for building a college, thus giving way to "land grant" institutions under the Morrill Act of 1862. In return, colleges established programs in agriculture and mechanics as well as other programs considered useful to society. The Servicemen's Readjustment Act of 1944, also known as the G.I. Bill, provided federal assistance to veterans who were returning from war. Present day provisions continue to be made to assist students wishing to attend college. This give and take of resources between institutions and society at the local, state, and federal level give clear evidence of a social contract.

Furthermore, colleges and universities have served a "long standing and stable missions for society and have a core set of values to support such a mission" (Gumport, 2000, as cited in Kezar, 2004, p. 429). This becomes a social contract whereby institutions civically engage the community, preserve knowledge, collaborate with community organizations, find solutions to complex problems, and create leaders. In return for this, individuals are expected to support the institution through taxes or by direct donations and philanthropic practices. This is true for both public and private institutions. Though this link may seem more evident in public institutions, private colleges and universities are supported by public money which results in financial aid for students as well as program funding through federal research grants and contracts. These may serve broader public interests such as community service programs or outreach initiatives to vulnerable populations.

ACADEMIC CAPITALISM

Critics have asserted that the reciprocal relationship described above as the social contract between colleges and universities and the greater community is weakening because institutions are placing a greater value on economic goals and returns rather than engaging the community and providing a service. This is often due to budget deficits. Entrepreneurial activities undertaken by institutions of higher education to close funding gaps have given way to a term coined by Slaughter and Rhoades (2004) as academic capitalism. Slaughter and Rhoades have written extensively on academic capitalism and point to evidence that institutions are increasing their market-like behaviors. Faced with a major decline in public funding, public colleges and universities for example must find ways to make up the lack of

funding (Breneman, 2005; Slaughter & Rhoades, 2004) they receive from their state governments.

According to Breneman (2005), during the 1960's and 1970's, state governments spent a great deal of money on public colleges and universities, while also keeping their tuition low. This paired with limited financial aid made it difficult for many to justify the cost of a private education. During this time, private colleges "made an effective case … that they were instruments of public purpose, therefore states should assist residents in attending them without need-based financial aid" (Breneman, 2005, p. 5). The new financial aid schema allowed students to more easily afford a private education. Private institutions also became better at attracting students through reducing the net cost of an education through financial aid packaging comprised of work- study, loans, and grants. This market-like behavior has only increased to what we now consider entrepreneurial behavior.

The criticisms of academic capitalistic practices steam from a perception that institutions are primarily concerned with increasing their prestige and gaining a higher placement on rankings lists rather than maintaining the academic heartland. Additionally, academic capitalism assumes, in part, that institutions will generate excess revenue that can be used for in ways that will influence prestige rather than advancing programs that are tied to the perceived public good. The mission that emerges in this case is not one that is tied to a broad education, free expression, critical thought, and life-long learning, but one that is self-serving and self-sustaining.

Understanding the criticisms of entrepreneurialism and the social contract in higher education is important because social entrepreneurial activities are more mission centric in the traditional sense verses the money making ventures of corporate entrepreneurship (Entrepreneur in Residence, personal communication, March 22, 2011). If colleges and universities are not valued as contributing to society, funding may decrease even further and resources will be diverted elsewhere. Decreased funding may put more stress on the welfare state, deepen the divide among social classes, limit the country's gains in technology, and decrease community and civic engagement (Kezar, 2004). Kezar (2004) continues by writing, "society and higher education mutually set the parameters for this relationship. To be intentional, societal and higher education leaders need information about the state of the charter" (p. 431). Decreased funding may force institutions, or units of institutions to seek external funding to support their mission centric activities, thus becoming social entrepreneurs.

As this paper has discussed, Kezar (2004), posits that the social charter in higher education operates much like the three branches of the US federal government to balance the expectations and responsibilities that society and institutions have for one another. For example, as the United States gave rights to African Americans and women, institutions responded accordingly by becoming co-educational and providing more equal access to traditionally underrepresented groups of students. According to Rousseau, the common good,

or social contract, was mutually agreed upon. This is also true for higher education, as institutions and society have a reciprocal relationship. Society provides human capital and financial resources while colleges and universities educate, store knowledge, and contribute to the economy (Kezar, 2004).

Entrepreneurial activities undertaken by colleges and universities lead some to question the role of institutions of higher education within society and ask whether the social contract has been broken. While both public and private institutions serve a greater purpose to the society with which they are a part, public colleges and universities pursuing revenue has been strongly criticized for eroding the social contract between higher education and society (Anderseck, 2004; Kwiek, 2005). Critics of academic capitalism and commercial entrepreneurism suggest that these practices may lead to the erosion of the social contract; however, these practices also help institution close financial deficits. Some argue that institutions of higher education in "recent years have been forced by economic pressures to become more entrepreneurial in style and substance … colleges and universities are being forced to behave ever more aggressively in the competition for financial resources and for students and faculty" (Breneman, 2005, pp. 3-4). Additionally, the public good (in this case students) has been negatively affected because faculty have less time to spend advising or giving other types of service to their institution (Kezar, 2004). Kezar (2004) writes that working toward economic goals has allowed the number of institutions to grow and increase funding and research. Some major universities for example, act as major employers, participate in technology transfer, and engage in research, thereby contributing to the local economy (Kezar, 2004).

So far, this paper has primarily looked at entrepreneurship in commercial, market-orientated terms and its relationship to the idea of the social contract. With some critics making the case that these practices may erode the social contract, this paper now shifts to examine social entrepreneurship as a means to continuing the tradition of a reciprocal, shared-value relationship in the form of a social contract. Social entrepreneurial practices may appear to a greater degree in some institutions, but there is clear evidence that there is a desire to engage students through civic engagement, community service, and leadership opportunities and that engaging in social entrepreneurial practices may be necessary to carry them out.

SOCIAL ENTREPRENEURSHIP DEFINED

Unlike commercial entrepreneurship, social entrepreneurial initiatives are a response to the market's inability to meet social demands. Thus, these initiatives are linked to a particular socially driven mission. In the case of institutions of higher education, the mission for carrying out community and civic orientated activities is often the result of a desire to meet the social contract and is the driving force behind such undertakings. For example, the market-drive entrepreneurial approach may not alleviate the effects of poverty for children

who are born into it. A social entrepreneurial venture on the other hand, may have the ability to provide the framework and necessary tools to empower these children to change their environment. This relationship will be explored further in the paper by looking at a specific unit within a medium sized research university.

Once a social problem has been identified, the challenge becomes whether the necessary resources can be marshaled for the social entrepreneur's innovation that addresses the identified need (Austin, Stevenson, & Wei-Skillern, 2006). Unlike commercial enterprises, social entrepreneurs engage in resource mobilization to defray program costs rather than to make a profit. Grants, particularly in the start-up phase of a program, often become the main source of program support, and some funders place restrictions on how funds are spent. One way funds may be restricted is not to allow they money to cover staff salary. This prevents social entrepreneurs from hiring qualified staff members at salaries that are competitive with those in a commercial market. Due to the mission driven focus of programs, staff may find value in employment beyond their salary through the opportunity to help others in their community. This is an example of a shared-value, reciprocal relationship that is a defining characteristic of the historic social contact. Reciprocity is also advanced by identifying learning outcomes for all program stakeholders including students, community organizations, and the university as a whole as exhibited in the case study that follows.

The final characteristic of social entrepreneurship is the ability to measure the outcome of the social value produced. This can be a somewhat daunting task. Austin, Stevenson, & Wei-Skillern (2006) suggest that this factor will continue to be a main difference between social and commercial entrepreneurship and one that will complicate "accountability and stakeholder relations (p.3). A mixed methods approach employing quantitative surveys and pre-and post-tests, and qualitative data including participant journals, presentations, site visits, and interviews should all be considered.

Thorp and Goldstein (2010) clearly identify the relationship between social entrepreneurs and institutions of higher education, stating "social entrepreneurs will play a central role in responding to the challenges of the modern world, and we believe their presence will vastly increase the impact research universities have in addressing these problems" (p. 56). This paper suggests that this is a new social contract. According to Thorp and Goldstein, several factors contribute to the sustainability of social entrepreneurship on college campuses. One is that idealism is still prevalent on many campuses though programs in civic engagement and community service. Because measurable results are important, particularly for programs that receive governmental funding, social entrepreneurs believe they can employ for- profit models and tools in order to create positive social change (Thorp & Goldstein, 2010). Thorp & Goldstein (2010) submit that one of the challenges at research universities is continuing with programs that are disconnected to other programs once funding runs out, particularly if a structure does not exist to sustain it through other funding sources. The authors argue that developing a culture of social entrepreneurship will provide a better

foundation for these types of programs since they will be part of the language and culture of an institution.

SOCIAL ENTREPRENEURSHIP PEDAGOGY IN ACTION: A PRELIMINARY CASE STUDY

To look at social entrepreneurism in a higher education context, this paper will explore a specific institution broadly, as well as a specific Center that is easily accessible to the author. This Center resides in the undergraduate college of a medium-sized research university in the northeast. It is evident through the University's motto that the institution seeks to provide a supportive environment for learning, research, and teaching at the undergraduate, graduate, and professional levels. To accomplish this, the institution brings together a highly qualified group of faculty, staff and students. The university is home to a teaching hospital and is a leader in the field of music and optics. It also houses a center for entrepreneurship and values commercial entrepreneurial practices. The language in institution-wide publications and on the website regarding community outreach is more limited, and the institution provides about 40 percent of funding for the activities and programs carried out through the Center.

This Center is dedicated to providing leadership, community service and civic engagement opportunities for undergraduate students. The mission statement of this office is to: educate students to become engaged citizens and leaders capable of effecting positive social change in their communities. Through sustainable university and community partnerships, the Center develops initiatives that cultivate the skills, experiences and resources necessary to achieve innovative solutions to complex societal issues. (Director, personal communication, 2011).

The unit was established in January 2005 as a result of a larger grant that allowed for the consolidation of existing programs and the opportunity to create new initiatives. Due to the limited resources, the Center depends on grants and community relationships to carry out its mission, which parallels the historic social contract.

The dependence on external funding may lead some to question whether the institution believes in the social contract and its responsibility to the community. Others may see this Center as advancing the public good in an isolated area. Rather than coming down on one side of this argument, the analysis below attempts to explore this issue further, and also suggests that state and federal funding results in an investment in higher education, thus more easily allowing the institution to continue to adhere to the social contract.

The institution has a rich tradition of community service and created the first program in the nation that integrated community service into freshman orientation. Over 1,000 students spend a day volunteering with over 60 agencies throughout the city. Over half of undergraduate students report being involved in community service as an undergraduate,

beyond their freshman orientation experience. According to internal peer benchmarking, this is twice the national average. Beyond this day of service, students contribute upwards of 30,000 hours annually, volunteering at large and small agencies, with community clean-ups and through fundraisers.

The Center facilitates a 10-week paid summer fellow for area college students and natives of the city attending college elsewhere through external grant funds. During the summer, students work with area non-profits on substantial projects and meet weekly with faculty and community leaders to study urban issues. To participate in this program, students give up their summer, live on campus, and attend seminar once a week. A final set of examples providing evidence of a social contract are the formal and informal tutoring programs that college students participate in. Students give of their time and expertise to help city school district students in early grades to increase literacy, math, and social skills; and in the advanced grades, to gain subject specific knowledge and an opportunity to immerse in college life. In addition, this institution serves as the largest employer in the city and has developed a vast number of partnerships with area schools, community non-profit agencies, local businesses, and local government officials.

These activities are primarily carried out through this Center are only possible through the hard work of a small, yet dedicated number of staff, student coordinators, and volunteers who participate in social entrepreneurism through proactively searching for external funding. Outside funds and community partnerships ensure that students have opportunities to engage in leadership, civic engagement, and community service projects tied to the mission of the Center. The link between these activities and the Center's mission characterize it as social entrepreneurship rather than commercial because the grants do not result in excess revenue, rather, they help to defray the costs associated with such activities and programs.

Making the case as to why a particular entity should be awarded funding is often founded by the ability to mobilize existing resources, or find the appropriate staff members who are driven by the mission of advancing the public good. The Center utilizes an innovative fellowship and leadership model that has proven successful. In addition, through its annual day of community service, this Center has extensive experience in mobilizing large numbers of students on a single day, and has a proven track record of effective collaboration with area colleges and community partners. As previously mentioned, it is important to consider the economic realities as they relate to social entrepreneurship. For example, this unit may seek funding to start new programs rather than sustain existing ones because grantors are more likely to fund new initiatives. Unfortunately, none of the programs coordinated by this center as described above are fully institutionally or systematically supported.

Social entrepreneurship allows students to benefit from the programs without the promise that those programs will remain the following year or even the following semester. For this reason, and to continue to hold themselves to the new social contract, social

entrepreneurs must engage in a pedagogy that facilitates reciprocal, shared-value relationships between students and the communities. The following outcomes are based on the stakeholder:

Table 1. Program Learning Outcomes

Beneficiary	Outcome	Timeframe for Achievement	Monitoring Mechanism
Participating students	Students will increase their knowledge of the City.	By end of program	Fellow survey; journal entries; symposium presentations
	Students' attitudes toward the City will improve.	By end of program	Fellow survey; journal entries; symposium presentations
	Students will learn skills that will help them navigate the City.	By end of program	Fellow survey; Site visits
	Students will become more tolerant of diverse populations.	Within one year of program completion	Fellow survey; journal entries
	Students will increase their level of civic engagement during the academic year.	Within one year of program completion	Longitudinal survey
	Students will increase their knowledge of community members through direct and personal contact.	Within one year of program completion	Fellow survey; Longitudinal survey
	Students will display increased interest in public service and advocacy.	Within 1-5 years of program completion.	Longitudinal survey
	Students learn new work-related skills.	By end of program	Fellow survey
	Students will remain in the City post-graduation	One-year post graduation	Longitudinal survey
University	The University will form new partnerships in the community.	Within one year of program	Annual report partnership inventory
	University faculty and staff gain increased knowledge of diverse populations and neighborhoods in the City.	By end of the program	Faculty/staff survey
	The University, specific Unit, will be competitive for additional grants based on measurable results	Ongoing	Grants awarded
Host organizations	Host organizations will expand their capacity to meet the needs of the community	By end of program	Site visits
Community Members	Community members will gain a more positive impression of college students' level of involvement	Within one year of program	Supervisor survey; Site visits; Program events

Table 1. Program Learning Outcomes			
Beneficiary	**Outcome**	**Timeframe for Achievement**	**Monitoring Mechanism**
	Community members will share their social capital and financial resources	Ongoing	Program Support

The Center also acts as host to a program funded by the Corporation for National and Community Service (CNCS). This program mobilizes recent graduates of the bachelor's-degree-granting institutions in an urban city in the northeast to expand the capacity of community organizations to empower youth to strengthen communities, to promote civic engagement and community-centered leadership.

Funding from CNCS allows VISTA (Volunteers in Service to America) members address community needs in the areas of education and health and wellness as they relate to youth poverty in a rust-belt city in the northeast. Based on the first five years of this program, data has shown that it strengthens the community's capacity to address youth poverty in three ways. First, it enables community-based organizations to further their work by providing them additional support and resources in the form of a trained VISTA volunteer, to begin or enhance specific projects related to the populations they serve. Secondly, the program aims to increase the depth of the relationship between these community organizations and the local colleges and universities, many of whom are looking for substantial and strategic ways to positively impact this urban community. Finally, this program utilizes an asset-based (rather than needs-based) perspective that believes youth and families should feel empowered to take an active role in improving their own neighborhoods.

As a grantee, the Center is then responsible for providing the human capital to community organizations. Through meeting performance milestones and completing extensive reporting mechanisms such as the ones required for this program, social entrepreneurs can lobby for continued support from the federal program. In this example, the federal government is in fact, an investment into the social contract.

SUMMARY AND FUTURE IMPLICATIONS

This paper examines the historic charter between institutions of higher education and their surrounding community as well as suggests a new social contract through social entrepreneurial pedagogy. Higher education's social contract has already gone through numerous iterations. The neoliberal, or commercial, approach to closing gaps in funding for higher education has led some to claim that institutions have diverted their attention to financial gain rather than promoting the public good.

Collective support by way of external funding to mission-drive programs is an investment into the entrepreneurial spirit and a vehicle through which institutions meet the

social contract to society in times of economic hardship. Social entrepreneurial ventures often need start up funding that is layered on top of the mission, skills, and vision of the intermediary entity, in the case of this study, the center housed in the undergraduate college of a research university. These entities engage in acts of social entrepreneurship as a necessity of limited resources and as a way to maximize the value of the programs. The resulting pedagogy is a two-way conversation of stakeholders informing one another of their needs through various monitoring mechanisms and creating shared-value. This allows institutions to be more intentional in how their programs are advance the intended mission.

Centers in colleges and universities across the country that offer programs in civic engagement, community service, service-learning, public service, citizenship, and social justice engage in social entrepreneurship. Through grants at the federal, state, or local level and through matching resources of volunteer hours and other in-kind donations, these centers look for resources to carry out mutual beneficial programs and activities in the community and give meaningful experiences of students. An increasing number of colleges and universities across the country utilize a service-learning approach that is described as "a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility, and strengthen communities" (National Service Learning Clearinghouse, 2012, para. 1). However, this pedagogy does not facilitate a reciprocal, shared-value relationships between students and their communities. Additional research is needed to determine the extent to which institutions rely on social entrepreneurial practices to carry out the social contract. In the case of centers housed in institutions, particular attention should be paid to what percentage of their annual operating budget comes from their institution, and what percentage comes from grants and cost-share payments.

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THE DIGITAL FACTORY: A HANDS-ON LEARNING PROJECT IN DIGITAL ENTREPRENEURSHIP

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ABSTRACT

Digital entrepreneurship is the sale of digital products or services across electronic networks. It offers a number of advantages for aspiring entrepreneurs over other online ventures and represents a real career opportunity for those with an expertise, passion or talent in a particular field. While there is an increasing interest in hands-on entrepreneurship education, no work has directly addressed the teaching of digital entrepreneurship. We present a learning project used in an e-commerce major in a European business school that involved launching a form of digital dot com, the specialist blog. Our results confirm student's interest in the real life application of classroom instruction as well as the importance of entrepreneurial apprenticeships in a digital environment.

INTRODUCTION

The growth in demand for digital content in various forms such as video, blogs, music, podcasts or ebooks is an exciting opportunity for entrepreneurial content producers. According to a recent study, thirty-three percent of Americans would rather access books, magazines and news content on their laptops, smartphones and tablets than their traditional hard copies. This represents a substantial increase in digital content consumption, up from 23% in 2007 (Deloitte, 2012).

The changes in digital media consumption habits and the economics of digital goods favor the development of digital entrepreneurship. Digital entrepreneurs produce and sell digital goods based on personal knowledge, experience or talent using ubiquitous multimedia tools and distribute them across inexpensive online platforms.

Venturing in digital content or digital entrepreneurship has received surprisingly little attention in the entrepreneurship and education literatures (Lahm & Stowe, 2011). Much of the academic and professional discussion surrounding digital products has focused on the shift from traditional product forms, such as paper books and CDs to a digitized form. E-commerce education research has mainly focused on the creation of physical dot coms. Yet digital entrepreneurship requires a specific skill set: digital entrepreneurs must be at once content creators, producers, programmers and marketers (Dvorkin, 2011).

We argue that these skills can be readily developed in the class-room through a hands-on approach to learning that is advocated elsewhere in the entrepreneurship (Okudan &

Rzasa, 2006; Rasmussen & Sorheim, 2006) and marketing (Kennedy, Lawton, & Walker, 2001; Walker et al., 2009) literatures. Preparing students to be active in this new digital environment is a particularly pressing challenge for today's educators (Evans, Nancarrow, Tapp, & Stone, 2002; Toit, 2000; Wind, 2008).

In the first part of our paper we define digital entrepreneurship and identify the implications for education. The second part of our paper presents a hands-on project that was successfully run in an AACSB accredited business school to train future digital entrepreneurs and marketers.

DEFINING DIGITAL ENTREPRENEURSHIP

A large number of terms have been used to refer to the creation of Internet based businesses or dot coms such as e-entrepreneurship, Internet entrepreneurship, web entrepreneurship, netpreneurship, infopreneuship and digital entrepreneurship.

As in a physical world, not all online ventures are alike. Dot coms that sell digital goods operate differently to physical dot coms. While both operate through the Internet, physical dot coms are engaged in an "import/output" relationship with the physical economy selling, stocking and shipping physical products such as books, CDs and toys to buyers (Barua, Whinston, & Yin, 2000) whereas digital products are made up of bytes and inventory flows are managed through web sites and back-office applications (Barua et al., 2004).

Digital goods include tools and utilities such as software, content-based digital products including video, music and electronic books, and online services such as search engines (Hui & Chau, 2002). Entrepreneurial digital producers use information and communication technologies to digitize a product or service together with its means of marketing, sale and distribution.

We use the term digital entrepreneurship to describe the creation of a venture to produce and generate revenue from digital goods across electronic networks. We prefer "digital entrepreneurship" to that of "infopreneurniship" (Lahm & Stowe, 2010, 2011), defined simply as an entrepreneur who makes money selling information (Lahm & Stowe, 2010) as we believe it better captures the digital transformation both to the product itself and to the production, marketing and distribution processes. Digital entrepreneurship also better evokes the new opportunities digital technologies offer enterprising individuals to self-publish or produce their own content.

Multimedia and network technologies have enabled a "new media landscape" (Jensen, 2008) to emerge where "content is created by the masses for the masses" (Regner, Barria, Pitt, & Neville, 2009). The economics of information goods, changing digital consumption habits and the availability of low cost production tools and distribution platforms have all favored the emergence of small scale digital production and distribution.

In industries where the products and services have been digitized, small and medium sized companies can "compete more effectively with large corporations based on new business models and cost structures made possible by Web 2.0. These business models offer quick monetization of website traffic, large scale reductions in major cost centers of production (digital) and distribution, and the ability to connect niche demand with niche supply profitably" (Boyles, 2011). The main difficulty for digital entrepreneurs both large and small is the access to skilled personnel.

We now present the necessary set of skills for digital entrepreneurs and an approach to learning them that has proved successful in an AACSB accredited European business school.

TEACHING DIGITAL ENTREPRENEURSHIP

Digital entrepreneurs must be at once content creators, producers, programmers and marketers (Dvorkin, 2011), trained to move through the different phases of the digital product life cycle. Table 1 resumes the skill set digital entrepreneurs need.

Table 1: Digital Entrepreneurship Skill Set

PRODUCTION	DISTRIBUTION	PROMOTION
Identify a niche Design a product that fits the niche and is adapted to online consumption Use creation software and techniques Edit and structure content to keep reader attention Re-use third party content Interact with digital consumers to improve the product	Manage content through a distribution platform Use statistics software for traffic management Share content and promote its re-use	Build an online brand Employ search engine optimization and marketing techniques Communicate through parallel channels (e.g. Twitter, Facebook) to raise product awareness and generate traffic Participate in community spaces (e.g. social networks, forums, online groups and communities, blogs) to raise product awareness and generate traffic

There are several implications for entrepreneurship education. The first involves learning how to identify a product opportunity that can leverage personal knowledge, experience or talent. Using personal intellectual capital is a way of reducing the investment cost necessary to develop a digital product. Intellectual capital can be leveraged using multiple media forms, multiple outlets and multiple platforms for monetizing.

Creating a product requires hands-on knowledge of multimedia development tools. The difficulty depends on the type of media. Video and audio creation is technically more challenging than writing, although the digital genre of writing requires some training. Creation also involves learning to combine and embed third party content.

Promotion involves electronic marketing techniques such as search engine optimization and promotion through specialized portals and social networks. This is an iterative process. Students need to learn how to regularly measure and question the success of their online ventures and adapt their product and promotion strategies accordingly. Promotion implies generating traffic but also creating and maintaining an online brand.

Managing digital products involves maintaining attention, understanding consumer consumption behaviors and preferences and developing additional information goods as necessary. This involves remaining in touch with the community. Students need to build a network of relationships to produce, distribute and promote their goods. Ecosystems for digital content include not only the content creators, but also the end users, content owners, advertisers, content distributors, content aggregators, third-party operational support providers, and network and device manufacturers (Geppert, 2007).

USING THEMED BLOGS AS AN INTRODUCTION TO DIGITAL ENTREPRENEURSHIP

Hands-on training can help students better understand the realities of entrepreneurship in an online environment (Daly, 2001; Dhamija, Heller, & Hoffman, 1999; Edelman, Manolova, & Brush, 2008; Jiwa, Lavelle, & Rose, 2005), learn to identify opportunities (Hulbert, Brown, & Adams, 1997) and develop marketing techniques and strategies (Harker & Brennan, 2003). Practical experience run in parallel to classroom instruction encourages experiential learning and mentoring by experienced entrepreneurs (Aronsson, 2004).

A number of real-world e-commerce projects have been reported in the education literature over the past decade, although none exclusively concern the teaching of digital entrepreneurship. This paper reports on the use of student blogs to put a number of digital entrepreneurship concepts and techniques to use.

A blog, or weblog is the equivalent of an online diary where a web page is periodically updated with short entries open to comments by readers. Blogs are the web technology most frequently cited in the education literature ahead of wikis, podcasts, virtual environments, and social networks (Liu, Kalk, Kinney, & Orr, 2010).

Blogs have mainly been used in higher education as a tool to support reflection, community building, online discussion, digital portfolios, and class management (Lin, 2008). We use them as an accessible way for students to experience the creation and running of a digital venture. Blogging is a form of digital entrepreneurship. While bloggers do not directly sell any physical or digital good, they can indirectly sell their digital content by monetizing traffic through advertising and the sale of related products. A blogger has to identify an opportunity for publication, design and develop content to attract and build readership, market and promote his or her digital dot com and in some cases monetize traffic. Blogging is a new form of entrepreneurial activity, particularly appealing “to individuals who have little or no

collateral, little or no cash, little or no entrepreneurial experience, little or no training, and little or no choice but to pursue an entrepreneurial dream without the benefit of resources which would ordinarily be nice to have" (Lahm, 2005 cited in Lahm, 2006, p. 33).

Our project goes beyond the use of blogs previously reported in the marketing (e.g. Kaplan, Piskin, & Bol, 2009) and information systems (e.g. Wagner, 2003) education literatures. The project design corresponds to Wind's (2008) criteria for building learning projects to prepare students for the new realities of digital business: It "bridges the disciplinary silos" by drawing on information systems, journalism, marketing and entrepreneurship skills. It represents a "shift from traditional management to network orchestration" by requiring students to understand their place in a digital ecosystem and work within a network of relationships. The use of blog statistics tools to follow progress means that students must "use analytics and metrics as glue" for their ventures. Blogging also develops an "adaptive experimentation philosophy" as students adapt to community reactions and comments and seek to maintain attention by improving the readability of posts, writing on popular subjects and adapting their writing style.

We will now present the project that was deployed to develop these digital entrepreneurship skills.

THE TEACHING EXPERIENCE: THE DIGITAL FACTORY PROJECT

The Digital Factory project (the "project") has been used in a final year e-commerce major at the AACSB accredited Toulouse Business School since 2009. The subjects taught in the major include web and mobile marketing, electronic commerce, and the logistics, legal, organizational, technical and administrative issues involved in online business. The data presented in this article was collected over the 2010-2011 school year.

Fourteen final year students took the class, including twelve male and five female students. The average age was 22 years old. Six students had previous work experience in an online environment.

The class involves 150 hours of instruction over a ten week period (October-December) followed by a sixth month internship (January-June). Students undertake their internships in web agencies, consultancies, pure players and click and mortar companies. At the end of their studies, a small number of students start their own company. A final grade for the major is awarded at the end of the internship period.

PROJECT DESIGN

The project was designed so that students would put into application several digital entrepreneurship activities. These activities are presented below.

Table 2: Digital Entrepreneurship Activities Required by the Project	
PHASE	ACTIVITY APPLIED VIA THE PROJECT
Production	Choosing a niche topic using online tools such as Google trends Online writing and media creation skills: Write appropriately to be readable online and keep readership; choice of appropriate media such as images and videos.
Distribution	Web site development: Choosing between a rented server, shared server and blogging platform. Setting up content management software.
	Content management: Administering content management software to structure the blog and add content; study connection statistics to improve traffic.
Promotion	Search engine optimization: Domain naming and optimization of blog for referencing (Google and Bing) along selected keywords.
	Digital branding and e-reputation: Choose keywords and develop content in line with the chosen blog theme.

The students were instructed to start a blog by the end of week four of class and maintain it for a period of five to six months. Students used the final six weeks of classroom teaching (November to mid-December) to seek guidance and advice in setting up and positioning their blog.

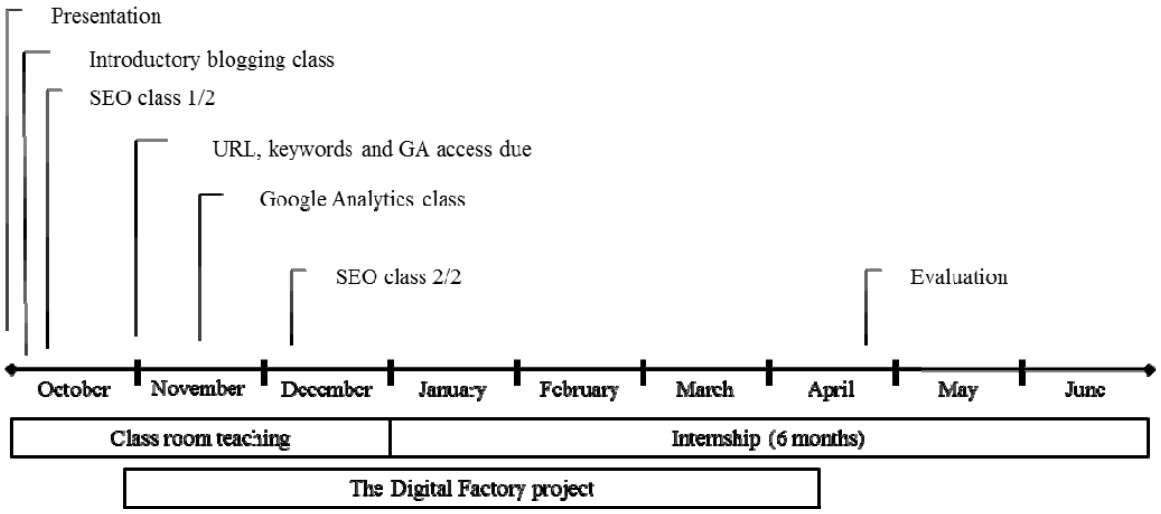
The three objectives for the project were:

1. Develop a themed blog and a loyal readership;
2. Rank the blog on two identified keywords or strings of keywords in France's three major search engines: google.fr, yahoo.fr and bing.fr;
3. Develop traffic and the quality of visits to the blog over the blogging period.

A long blogging period of five to six months was chosen so that students could move through several iterations of the digital product life cycle. This meant they had time to develop a readership, adapt their product offer, promote their blog through parallel channels, rank their blog in the major search engines and test different search engine optimization techniques.

The planning is presented in figure 1 below.

Figure 1: Planning of the e-commerce major and the project



THE CHOICE OF TOPIC AND KEYWORDS

The blog could be about any subject. Students were encouraged to choose a topic of interest that they could blog about for a 6 month period. Students chose to blog about such subjects as martial arts and mangas, scouting, action films, travelling around London on a shoestring and rumors surrounding American football clubs and players. At the end of the blogging period, students were asked to explain their choice of blogging topic. The majority chose a theme they had knowledge or passion about (62%). The remaining students chose a subject that they considered opportune (23%) or where content was readily available (15%).

Keyword selection was another important activity for students. Keywords have to be faithful to the blog's theme and content. They help bring traffic to a website, yet should not be too competitive as to make search engine optimization efforts too difficult. Students were asked to evaluate the "attractiveness" and "feasibility" of the different keywords they considered relevant for their blog. Attractiveness was defined as the average monthly traffic the keyword generates on Google. This value was estimated using the Google Adwords Keyword tool (https://adwords.google.com/o/KeywordTool). Feasibility was the likelihood of being well ranked on the keyword in the search engines. It was calculated based on the number of hits the keyword generates through a standard search on google.fr.

Students were encouraged to choose a keyword or a set of keywords high in both attractiveness and feasibility. A set of decision criteria was provided by the web services professional that ran the search engine optimization class to help students choose their keywords (see table 3).

Table 3: Keyword Decision Criteria		
LEVEL Low to high	ATTRACTIVENESS Keyword queries	FEASIBILITY Keyword hits
1 (low)	< 100	> 1,000,000
2	< 1,000	> 500,000
3	< 5,000	> 300,000
4	< 10,000	> 200,000
5 (high)	≥ 10,000	≤ 200,000

The following example illustrates these calculations. A student who had decided to write a blog about London and its many hidden pleasures (mybeautifullondres.com/) tested three keyword strings and came up with the results reported in table 4.

Table 4: Keyword Hits and Queries on Google.FR			
Nº	KEYWORD STRING	KEYWORD QUERIES	KEYWORD HITS
1	visiter londres	8,100	1,040,000
2	brunch londres	140	78,300
3	londres bonnes adresses	170	304,000

The keyword string "visiter londres" has a high attractiveness score (4/5) but a low feasibility score (1/5). There were over 1 million hits on google.fr for this keyword string. The second and third keyword strings were chosen as they had higher feasibility scores (5/5), even though attractiveness was lower (2/5). The objective of the blog was not to attract thousands of hits but rather be well placed on search engines to become a reference on a narrow subject and attract a regular readership.

The blog URL, keywords and access to their Google Analytics statistics were required of students for the end of week 4.

SUPPORTING CLASSES AND RESOURCES

The start of the project was timed to fit with classroom instruction. The different skills needed to develop, rank and manage the blogs were presented either directly or indirectly in different classes. The project motivated students to ask questions and seek knowledge in class to improve the quality of their blog, increase traffic and improve search engine rankings.

The project was presented on the first day of class. The objectives, means and evaluation criteria were also outlined during the introductory session. Three classes were then run on blog creation, analysis of blog traffic and search engine optimization to help students set up and begin managing their blogs. All classes were taught by professionals to give students hands on, practical working skills.

Blog creation

An introductory three hour blogging class was given by a young, local blogger during the first week of class. Two approaches to blog development were presented: (i) the use of content management software on a rented server and (ii) the use of a blogging platform such as blogspot.com. The Wordpress (www.wordpress.com) content management system was used in class to illustrate how to set up and administer a blog. Most students (88%) chose to use a content management system on a rented server.

Blog statistics analysis

A six hour class was run in week 6 by an experienced blogger from an e-commerce firm to teach students how to use Google Analytics to study the flow of web traffic to their blog. The topics covered included interpreting and improving blog traffic statistics such as the average time spent by visitors on the site and the bounce rate. The bounce rate is the percentage of visitors who arrive on a site and then leave it (or "bounce") without visiting any other pages.

Search engine optimization

Two three hour classes on search engine optimization (SEO) were given in week 2 and week 9 of class. The first class introduced the SEO concepts and techniques and answered student questions about the project. The second class was used to give feedback and improvement tips based on the SEO quality of student blogs. These classes were given by a web services professional.

Other classes run throughout the major were also found by students to be useful for their blogging, in particular the sessions on consumer behavior online, authoring and product write-ups, and website ergonomics and usability.

Throughout the blogging period, students were sent a monthly summary report of the ranking of all fourteen blogs on the three major search engines. The report allowed students to compare their positions to those of their classmates. An example report is presented in figure 2 below.

Figure 2: Extract from month 7 of the project search engine ranking report

URL	1st position	Top 3	Top 10	Top 20	Top 50
filmsdeouf.com	1	4	10	13	15
- Bing.fr	0	1	2	3	5
- Google.fr	0	2	6	8	8
- Yahoo.fr	1	1	2	2	2

Figure 2: Extract from month 7 of the project search engine ranking report					
URL	**1st position**	**Top 3**	**Top 10**	**Top 20**	**Top 50**
groupescout.blogspot.com	3	5	9	14	17
- Bing.fr	2	3	5	5	6
- Google.fr	1	2	4	9	11
- Yahoo.fr	0	0	0	0	0

The column "1st position" lists the number of times the blog appeared first in the results for any of the chosen keywords. For example, the cinema blog filmsdeouf.com appeared first in the search results of yahoo.fr in month 7 when one of the student's chosen keywords was entered. The scouting blog groupescout.blogspot.com is ranked first on bing.fr for two keywords and for one keyword on google.fr. As students chose two keywords or keyword strings as well as their full name, the highest possible score for a given search engine in this column is 3.

The column "Top 3" lists the number of times a blog is in the top three results of a search for any of the three keywords. As a blog can appear several times in the results for any keyword search, the maximum score in this column in 9.

The columns "Top 10", "Top 20" and Top 50" report the number of times the blog appears in the results for all three keywords amongst the first ten, twenty and fifty results respectively. These columns correspond to the first, the first two and the first five pages of search results. There is no realistic maximum score in these columns as a blog can appear several times in the results for any keyword search.

EVALUATION

Blogs were evaluated along three criteria: their search engine ranking, the number and quality of the entries made and the quantity and quality of traffic generated.

Search engine rankings were scored according to the ranking level achieved (1st position being the best), the progression and the student's ability to remain well positioned.

The number and quality of entries were evaluated every month. Quality was assessed based on the pertinence of the topic to the blog's theme, the use of media (ie. video, photos and other third party content) and the write-up. Students were encouraged to show a teaser of their blog entry on the home page to encourage readers to click to read more. The effectiveness of this teaser was also taken into account to assess the quality of a blog entry. To make reading blog entries easier, the instructor subscribed to each blog's RSS feed and read them in Google Reader.

The traffic was evaluated using statistics available through Google analytics such as the number of visits, the percentage change in the number of visits, the average time spent on the site and the bounce rate.

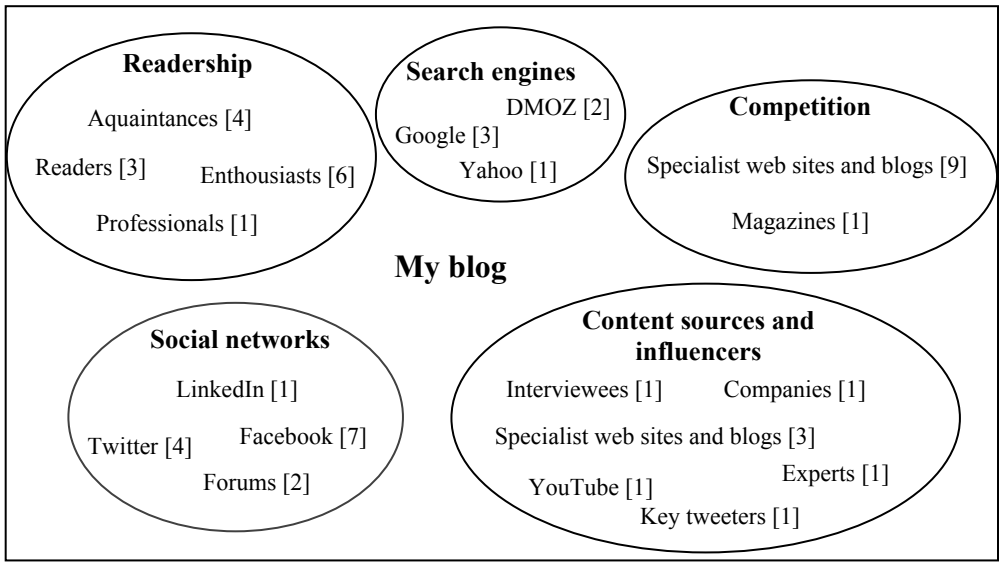
RESULTS

Overall the results of the project were excellent. Students effectively positioned their blog and adapted their writing activity to significantly improve and defend their search engine rankings over the course of the project. We will examine the results of the project in light of the objectives outlined previously (see section 4.1).

Develop a themed blog and a loyal readership

In order to develop a themed blog and a loyal readership, students had to build a network of relationships around their new digital activity. As we noted previously, these relationships are necessary for production, distribution and promotion activities. At the end of the blogging period students identified five main groups of elements: readers, social networks, content sources and influencers, competition and search engines. A summary of student responses is provided in figure 3. The citation frequencies are in brackets.

Figure 3: The blogging ecosystem

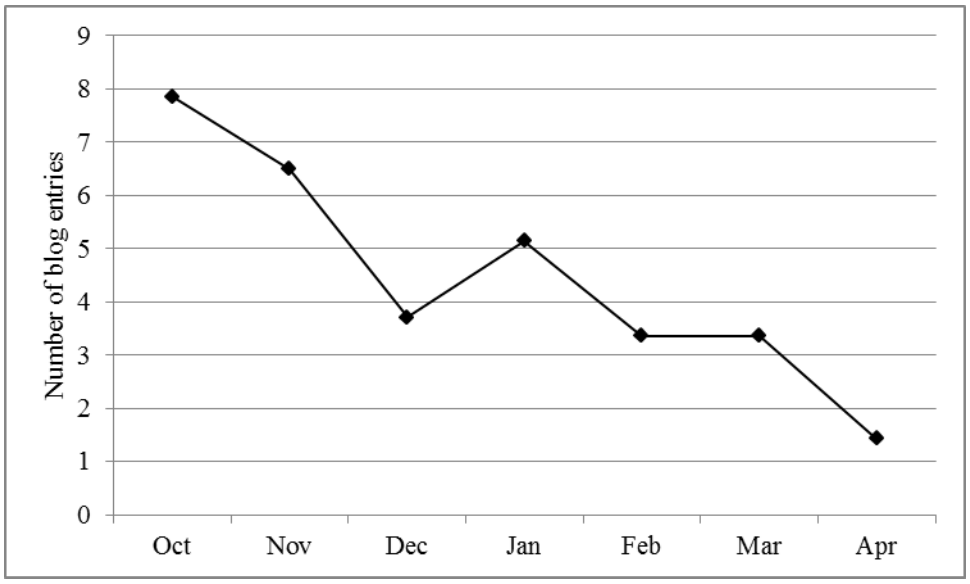


The above figure shows the types of relationships the fourteen students established and maintained throughout the blogging period. Their blogging ecosystems included actors and platforms necessary for the three digital entrepreneurship activities: production, distribution and production. The main focus was on the competition from other specialist blogs and websites (9 citations), their readership (10 citations) and the use of social networks

for self-promotion (12 citations). Content was sourced from diverse outlets including other specialist blogs and websites.

Students began posting regularly to their blog in the first week of the project. After an initial burst of editorial activity in the first few weeks, the average number of blog entries dropped from eight entries per month to around three (see figure 4). It would appear that students discovered the appropriate number of entries to maintain their positions in the search engines and keep traffic levels at satisfactory levels.

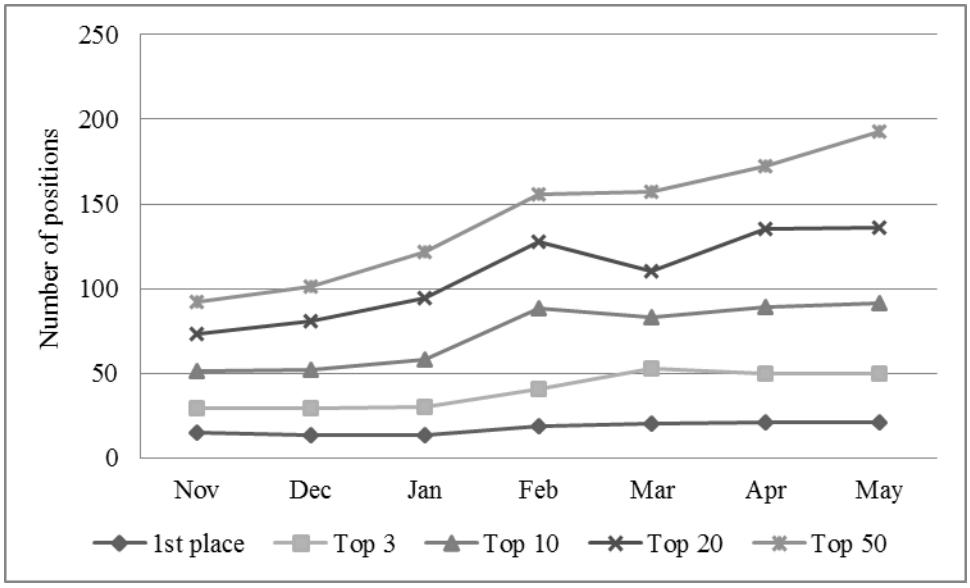
Figure 4: Blogging activity. Average number of blog entries per month



Search engine rankings

The second objective of the project was to rank the blog on two identified keywords or strings of keywords in France's three major search engines: google.fr, yahoo.fr and bing.fr. Figure 5 reports the monthly change in total search engine positions for the fourteen students that took the class.

Figure 5: Results on search engines. Rankings per month



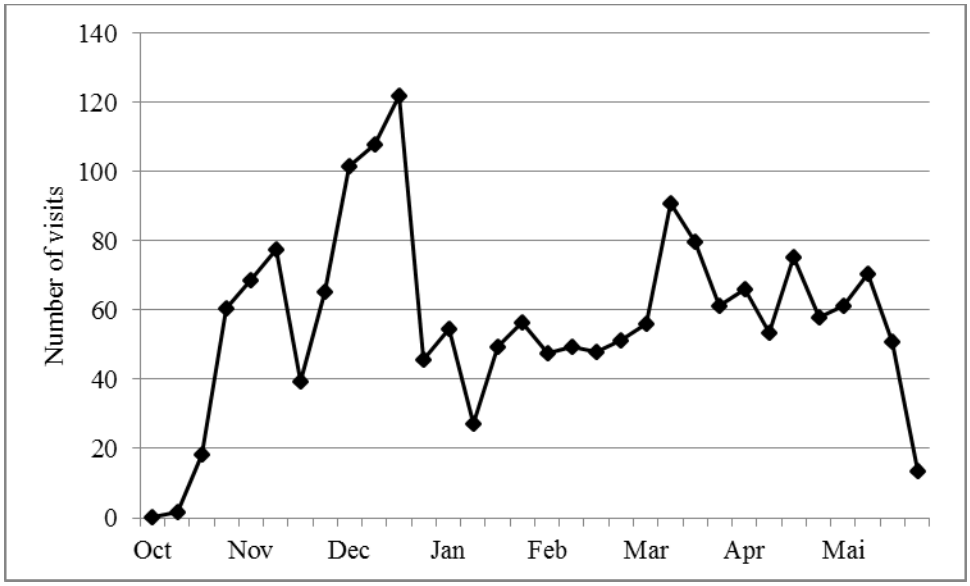
The majority of students improved and defended their blog's search engine ranking on chosen keywords over the blogging period. For example, the number of first place positions grew by 40% from 15 results to 21, whereas the number of top 50 positions grew by over 100% during the period.

Develop traffic and the quality of visits

A third objective of the project was to develop traffic to the blog as well as the quality of visits. The average number of visitors per week throughout the blogging period is charted in figure 6 below.

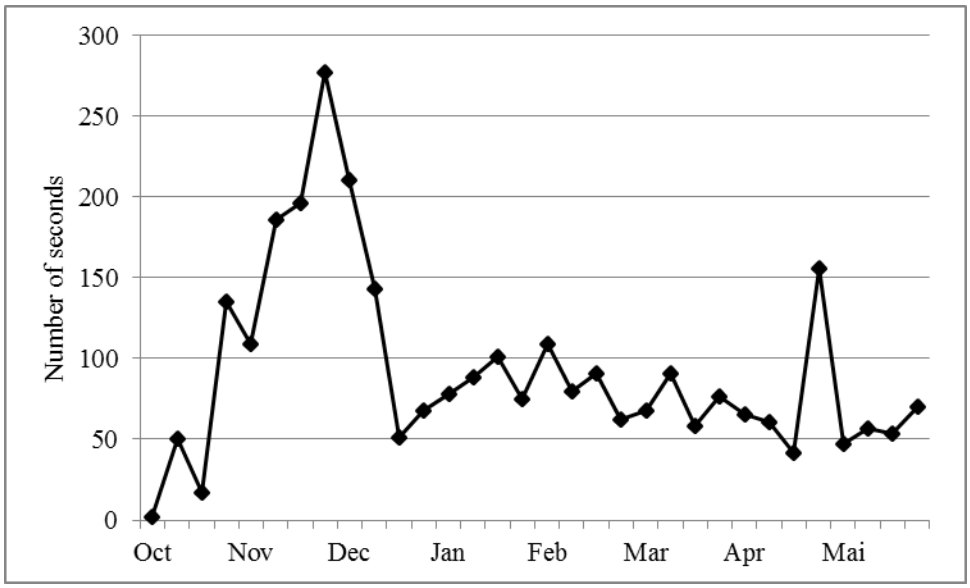
The number of weekly visitors peaked at the end of the instruction period. This may be explained by students promptly applying the techniques learned in class to promote their blog. Weekly visits then stabilized to an average of 57 (σ=27) throughout the internship period, indicating that students succeeded in developing and maintaining a loyal readership of their blog.

Figure 6: Weekly visitors



We can observe the same end of year peak in the average time spent on the blog per visit in figure 7.

Figure 7: Average time spent by each visitor on the blog



Average time per visit leveled off to a satisfactory 93 seconds over the blogging period. There were however large differences in average visit time between blogs (σ=59).

In summary, students used classroom instruction and project experience to position and promote their blog, and improve its visibility in search engines throughout the blogging period. On an average week, the fourteen students published 1.1 entries and attracted 57 visitors to their blog who stayed for one and one half minutes each.

IMPLICATIONS FOR LEARNING

Student feedback

Students were asked to evaluate the usefulness to their learning of the Digital Factory project on the class evaluation questionnaire. The blog scored an average of 4.4 (σ=0.9) out of a maximum of 5 points. Overall the blog was seen as an indispensable part of the program. One student commented:

I was hesitant to begin with, but now I love it. It enabled me to apply everything I learned in class.

While the majority of students acknowledged the "essential" nature of the subject, one student found it "difficult for generalist blogs" and another two would have appreciated more and earlier classes on search engine optimization.

In order to understand how well the project fitted with student learning preferences, students were asked to give their level of agreement with four questions along a scale of 1 to 5 ranging from "definitely not" (1) to "absolutely" (5). The results are presented in Table 5.

Table 5: Student Feedback
(n=14; standard deviations are given in brackets)

QUESTION (scored on a scale of 1 to 5)	AVERAGE
I get bored in class if I am not active	3.9 (1.0)
I like to learn by working on projects	4.4 (0.5)
I prefer that the teacher explains what to do before starting a project	4.4 (0.6)
I learn by working on a project. We can look at theory afterwards.	4.0 (0.9)

Students in the e-commerce major want to remain active in class (3.9, σ=1.0) and prefer to learn through projects (4.4, σ=0.5). This result confirms the importance of hands-on instruction in e-commerce and entrepreneurship education (Abrahams & Singh, 2013). Interestingly, students expressed a marked preference both for teachers to accompany them and explain how to undertake a project before starting (4.4, σ=0.6) and also to theorize from project experiences later on (4.0, σ=0.9).

This result confirms previous studies of project work, that found students needed a minimal of instructional guidance (Kirschner, Sweller, & Clark, 2006) from teaching staff and professional mentors. We believe that the organization of the project responds well to these preferences providing students with an "enjoyable, challenging, and real world" learning activity (Karns, 2005). Furthermore, working on a project that situates students within an online ecosystem, creating, producing and marketing to a readership of fellow enthusiasts may make them feel a part of a community and motivate students (Kraus & Sears, 2008).

Lessons learned

We believe that the Digital Factory project was a success. It allowed students to experience real digital entrepreneurship in a low risk, low cost and mentored environment. It also respects a curriculum design advocated by entrepreneurship educators, requiring students "to create a needed product or service, sell it, and work with people" (Aronsson, 2004, p. 290).

The project design overcomes a number of the pitfalls in traditional entrepreneurship education identified by Envick and Padmanabhan (2006) such as the relative isolation of students in a classroom environment, the limited expertise of instructors and cost concerns. Firstly, in order to make their blog visible, students built a web of relationships with a number of external actors and experts beyond the confines of the classroom. Secondly, the use of external instructors to run supporting classes meant that experts accompanied students during the early phases of the project thus overcoming the lack of expertise of the class coordinator in some areas. A third advantage of the project was its cost. Envick and Padmanabhan (2006) argue that "the cost of attaining significantly more education about a discipline is generally too great when other learning environments, besides the classroom, are incorporated into the students' education" (p.48). We found that students went beyond classroom instruction to learn more about and improve their online marketing and content production skills, requesting help from colleagues and seeking out information online. Student motivation to continue learning beyond the classroom period appears to have been driven by the pride they took in developing a blog on a theme important to them, showcasing their expertise online, and by the competitive nature of the project. As has been noted elsewhere in the entrepreneurship literature, students were comfortable with seeking out information on a need to know basis (Lane, Hunt, & Farris, 2011).

There are several key points to note before running such a project. Firstly, it is important to collaborate closely with professionals. While the advantages of collaborating with professionals on real world case studies and assignments has been reported elsewhere in the education literature (e.g. Elam & Spotts, 2004), we believe these learning partnerships are essential in a digital environment that is constantly evolving. They provided a hands-on approach and professional tools (such as the monthly dashboard) that students found useful

for their blogging and search engine optimization. Their guidance and mentoring allow students to enter an entrepreneurial apprenticeship (Aronsson, 2004).

Secondly, correct opportunity identification and product positioning facilitated blog management later on. The careful choice of a niche subject made it easier for students to regularly write about a subject over an extended period and also made keyword positioning and readership development easier.

Thirdly, it is important to explain all concepts as early as possible in class so that students have the time to apply them, make mistakes and take corrective actions. Regular feedback on individual and comparative performance can also be motivating and help students improve their understanding of digital entrepreneurship through their experiential learning cycle.

The main improvement planned for next year is to require students to leverage content elsewhere online in different formats and through multiple channels. Knowledge about the hidden pleasures of London could be leveraged in podcasts, online video or a short e-book.

CONCLUSIONS

Relatively little work has directly addressed digital entrepreneurship. This is surprising as the low start-up and running costs compared to other Web based and traditional ventures make it an appealing field for aspiring entrepreneurs. A digital entrepreneur can keep costs low by leveraging personal knowledge to create a product and using multimedia tools, networked technologies and Internet marketing skills to produce, distribute and promote it.

We have presented a learning project used in an e-commerce major that involved launching a form of digital dot com, the specialist blog. This form of blogging required students to work through the different stages of the digital entrepreneurship cycle: positioning and designing a digital product, organizing resources and producing the product, and then marketing, distributing and improving the product based on reader feedback.

Our results confirm student's interest in the real life application of classroom instruction as well as the importance of professional mentoring. For instructors the Digital Factory project is a low-cost, low-risk way of getting students connected and producing in an increasingly networked world.

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ASSESSING THE LEARNING GOAL OUTCOMES OF AN INTERDISCIPLINARY ENTREPRENEURSHIP COHORT PROGRAM: A COMPREHENSIVE SURVEY APPROACH

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ABSTRACT

The Association to Advance Collegiate Schools of Business (AACSB) states that the faculty is responsible for setting the learning goals of academic programs and monitoring their attainment, which can in part be accomplished through capturing insights from recent graduates. This paper follows this model by examining the learning goal outcomes of a unique cohort-based entrepreneurship scholar program at St. Mary's University. The program combines traditional classroom learning with extensive, practical out-of-class entrepreneurial experiences, both domestic and international. The underlying study in this paper encompasses a comprehensive survey of the entire program alumni population spanning nine years, capturing quantitative and qualitative data. The objectives of the study were twofold. First, the study set out to measure the achievement of the program's seven stated learning goals. Second, the study sought to determine the impact of the holistic program on the alumni's professional achievements. The study found very strong support of the achievement of the program's learning goals, particularly in the areas of leadership and communication abilities. The paper's contributions include the illustration of an innovative entrepreneurship education program and the provision of an approach to establish and assess learning goal outcomes.

INTRODUCTION

Consider the following three testimonials written in response to a survey by graduates of an interdisciplinary entrepreneurship cohort program, called the E-scholar Program:

> *"All activities included in the E-scholars Program unveiled talents and defined aspirations that vaguely existed; every opportunity acted as a catalyst for realizing these talents and aspirations. The educational program for detailing what entrepreneurship is was great and provided the framework to make such goals a reality."*

"The combined activities and opportunities that the E-scholar Program provided to me were beyond extraordinary. I was able to network with many local entrepreneurs and learn a great deal about success beyond the classroom."

"The opportunities provided by the E-scholar Program gave me the motivation I needed to believe in my education and business vision. Being exposed to a variety of interactions with foreign and domestic business leaders gave the group a sense of identity and purpose for those of us who believed intently that creating products and services were not so in our distant future. Before becoming an E-scholar, I questioned my entrepreneurial spirit and abilities as a business leader. After the completion of the program, I knew that being an entrepreneur takes education, motivation, vision, and most of all guts. It takes the proper amount of self-confidence to stop being a follower and take part in the select few who create."

These are three, among several testimonials received in the results of a survey completed by E-scholar Program graduates, who participated in the one-year certificate program. For a comprehensive approach to our methodology, all students who participated in the Program over its nine-year lifespan received surveys. The primary purpose of this paper is to demonstrate that the E-scholar Program model successfully achieves the learning goals and mission set-forth by our School. Secondly, we want to determine the impact the Program has had on graduates' professional achievements.

DESCRIPTION & HIGHLIGHTS OF THE E-SCHOLAR PROGRAM

The Entrepreneur Scholars Program at St. Mary's University in San Antonio, Texas, is a university-wide certificate program designed for all students, regardless of major. Beginning its 10th year of operation in the fall of 2013, the Program has included students from 18 different majors across campus: accounting, biochemistry, biology, corporate finance, criminal justice, electrical engineering, engineering management, English communication arts, entrepreneurial studies, general business, industrial engineering, international business, international relations, law, and marketing, along with multinational organizational studies in Spanish, political science, and psychology.

The curriculum consists of a carefully selected blend of traditional classroom learning with opportunities outside of the classroom that significantly enhance students' entrepreneurship education. They complete two courses. The fall course, *Building World Class Ideas & Organizations* focuses creating a business concept, developing an elevator pitch, and testing the feasibility of the business model. The spring course, *Global Entrepreneurship* is devoted to examining their business ideas in a foreign country by taking an international business trip designed to expose them to a different culture and business environment, as well as to fully develop their business plans. E-scholar students have traveled to China, Mongolia, Dubai, South Korea, Scotland, Russia, Taiwan, Panama, Hong Kong, the Czech Republic and Poland.

Students enrolled in the program are also required to use their entrepreneurial skills and knowledge in a social entrepreneurship project to fulfill civic-engagement and community service endeavors. For example, one year we partnered with City Year to develop a business plan for a free spring break camp for low-income children. We devoted approximately 400 hours of service to the project and provided City Year with a complete business plan for the camp, which was a huge success. The program has also completed community service projects to improve the lives of disadvantaged women re-entering the workforce and to help teach children about entrepreneurship and finance.

There are currently two other universities with E-Scholar Programs, the University of Portland, which initiated the first E-scholar Program in 1999 and the College of Saint Benedict/St. John's University. Each February we hold an E-scholar Student Consortium. The main event is an elevator pitch competition between the students. The students also engage in a collaborative 24-hour business plan project.

Each E-Scholar contributes $2,500 to participate in the program, which is supplemented by proceeds from an event called the Forum on Entrepreneurship Breakfast Series, which typically provides $25,000 per year to the cohort for domestic and international business trips. An E1 (first cohort) Program graduate states, "I realize how important the sponsorships are to the program, and how the program is such a vital part of the entrepreneurial community." We designate students by the year they participate in the program by the use of (E1)-(E10).

The true hallmark of the E-Scholar Program is that it overcomes common barriers to learning. These include the isolation of the classroom, limited expertise, cost, time, and rapid globalization (Envick & Padmanabhan, P., 2006; Anderson, Envick, & Padmanabhan, 2012). Students are exposed to other useful learning environments outside of the classroom; they are able to tap into the expertise of numerous business professionals besides their professors; the sponsorships provide the true means for them to engage in various educational business activities; linking two consecutive semesters together and utilizing the spring break for the international business trip provides more time for educational opportunities; and the international business trip allows students the chance to conduct business beyond their comfort zones, thus significantly strengthening their skills and confidence levels. One (E4) graduate asserts, "This program has opened my eyes to a whole new world and has related my degree to the business world."

Some of the E-scholar Program highlights are outlined below:

1) With the new cohort (E10s), 80 students will have participated in the program, representing 18 different majors from the Business School, the School of Science, Engineering, & Technology, the School of Humanities & Social Sciences and the Law School.
2) Faculty and students involved in the program have taken business trips to 10 different US cities and 11 countries outside the US.
3) Students have conducted five social entrepreneurship initiatives as a way to give back to the community, some projects spanning over two cohorts.

4) Some E-scholar students have or are currently providing executive leadership to our student-managed business, *Rattler Enterprises*. An (E5) student was CEO from 2008-2010,an (E7) student was CEO in 2011, an (E7) student acted as VP of Marketing in 2011, and an (E9) student served as CEO in 2012.
5) The E-scholar Program was featured in *The Texas Economy* on-line magazine for its unique approach to entrepreneurship education and its success.

The students, faculty, and the Program itself have achieved many national level accomplishments, as follows:

1) An (E6) and an (E7) student won 1st place in the Elevator Pitch competition at the *National Collegiate Entrepreneurs' Organization's* National Conference in 2008 and 2010 respectively. The (E6) student also won 1st place at the National E-Scholar Student Consortium in 2010. In 2011, an (E8) student took third place in the CEO's Elevator Pitch National Competition.
2) An (E3) won 1st place in the National E-Scholar Student Consortium Elevator Pitch Competition in 2007 and in 2008, with an (E1) student taking 2nd place in 2007.
3) Faculty members won the Distinguished Research Award from the *Academy of Entrepreneurship* for a pedagogical article they wrote about the hallmarks of the program.
4) Faculty members also received the *Douglass Award for Innovative Teaching* in recognition of the program from our university.
5) The University of Portland received the USASBE National Program Model Award in 2002 to expand the program to other universities (our university was part of this expansion), and in 2012, all three E-scholar Program universities were honored with this award.

LITERATURE REVIEW

Programs in entrepreneurial studies that have emerged over the last two decades are arguably the most potent economic force the world has ever experienced, Kuratko (2005) contends, as he further provides statistics regarding the growth-rates in the number of programs. While only a handful of entrepreneurship courses existed at universities in the 1970s, well over 2,200 courses in 1,600 schools offered courses and majors in 2005. And that number has likely grown since Kuratko's study. Kurtko'a challenge in this paper was for entrepreneurship educators to provide "*complete academic legitimacy"* in the field of study.

The study of entrepreneurship is now a part of the mainstream. The pedagogy is changing based on the broadening of entrepreneurship education by creating more interdisciplinary programs for non-business students, such as in the arts, engineering, and sciences. Kuratko (2005) further states that new and innovative approaches to teaching entrepreneurship must be developed. On a side-note, we began our E-scholar Program in the fall of 2004, open to all majors across campus and consisting of a significant number of out-of-class activities.

Evaluation of program effectiveness is not new. Deniston, Rosenstock, & Getting (1968) discuss this in the public health field, purporting that any program should have an overall objective with an end-result in mind, along with a combination of program activities that can be considered "sub-objectives." There must be several sub-objectives combined with resources to support the performance of those activities. Even in mentoring programs for students, there must be perceived program effectiveness through a variety of activities and commitments (Allen, Eby, & Lentz, 2006). In their article on student learning outside of the classroom, Kuh, Lund, and Ramin-Gyurnek (1994) state that students should learn and develop in a holistic, integrated way as they engage in both academic and non-academic activities inside and outside of the classroom. A few outcomes they mention include self-confidence, practical competence, and interpersonal competence.

Katz (2003) discusses the presence of entrepreneurship courses in AACSB (The Association to Advance Collegiate Schools of Business) schools. As these numbers grow, and entrepreneurship is seen as more mainstream, entrepreneurship programs must meet AACSB standards by demonstrating the academic legitimacy through the achievement of learning goal outcomes. The main objective of this paper is to demonstrate the success of the outcomes of the E-scholar Program's learning goals, not only as they relate to the program itself, but in support the mission of our Business School, where the program is housed.

AACSB Accreditation Standards state that, "Learning goals say how the program demonstrates the mission, translating a more general statement of the mission into the educational accomplishments of graduates." (www.aacsb.edu/accredication/business/ standards/aol/learning_goals.asp, accessed May 2013). It further states that, "Students and recent graduates of degree programs can provide their insights into the strengths and weaknesses of the educational experience provided by the programs." Since AACSB uses learning goals to translate the mission of a school to the educational accomplishments of graduates, we felt the best way to ascertain the learning goals for the E-Scholar Program was to survey all those who have completed the program. The focus of the survey was primarily aimed at our School's learning goals, but we also added a few questions regarding their general career and educational achievements. AACSB states that, "Student learning is the central activity of higher education," further stating that, "learning expectations derive from a balance of internal and external contributions to the definition of educational goals" (www.aacsb.edu/accredication/business/standards/aol/ learning_goals.asp, accessed May 2013). Therefore, we felt that these external contributions would serve as a good catalyst to help us improve the program.

THE E-SCHOLAR PROGRAM & LEARNING GOALS

The learning goals of the E-scholar Program are in-line with the themes and learning goals set by the Business School, where the E-scholar Program is housed and operated. The four themes of Ethical Leadership, Professional Orientation, Technical Excellence, and Global Awareness define our mission in the School. Not only do the activities the E-scholar students participate in outside the classroom provide the unique features of the Program, but they also serve to support the mission and learning goals of our School.

Table 1: E-scholar Learning Goals Outside-of-the-Classroom

Out-of-Class-Activities:	Mission Theme*:	Learning Goal**:
Forum on Entrepreneurship Breakfast Series (off-campus)	PO & TE	
help organize and coordinate each event		T; CA
network with 250+ business professionals		CA
hear advice and success stories from speakers		EBK
Goelz Speaker Series (on-campus)	PO & TE	
hear advice and success stories from speakers		EBK
Collegiate Entrepreneur Organization Conference	PO & TE	
over 80 workshops and seminars to attend		EBK
network with over 1,200 students, faculty, and entrepreneurs		CA
compete in the largest elevator pitch competition in the nation		CA; CTS
San Antonio Entrepreneurs' Organization Event	PO & TE	
interact with successful entrepreneurs in the local community		CA; EBK
Service Learning Project	EL, PO & TE	
use entrepreneurship skills to help local non-profit organizations		L; EA; CTS; CA; T; EBK
National E-scholar Student Consortium	PO & TE	
compete in an elevator pitch competition		CA; CTS
develop a business plan on a team with students from other schools		T; CA; EBK; CTS
International Business Trip	PO, TE & GA	
learn about business environment and culture of the destination		UNGA
test the business concept in that business environment		EBK; CTS; UNGA
hear advice and success stories from foreign entrepreneurs		EBK; UNGA
interact with students from foreign universities and business professionals		CA; UNGA
participate in business tours and cultural tours		EBK; UNGA

***Mission Theme Legend:**	**** Learning Goal Legend:**
PO = Professional Orientation	T = Teamwork
TE = Technical Excellence	CA = Communication Abilities
EL = Ethical Leadership	EBK = Essential Business Knowledge
GA = Global Awareness	CTS = Critical Thinking Skills
	L = Leadership
	EA = Ethical Awareness
	UNGA = Understand Nature of Global Economy

Table 1: E-scholar Learning Goals Outside-of-the-Classroom outlines these activities and ties them directly to our four-themed mission statement and seven learning goals for our School. These activities provide an important arena to synthesize and integrate material

introduced in the classroom. This is especially true on their domestic and international business trips, as they provide "real-world" ways to test their business plans in an unfamiliar environment, as well as develop a more sophisticated and pragmatic view on both professional and academic matters discussed in the classroom. The holistic nature of the program also allows students to earn an E-scholar Program Certificate by successfully fulfilling the obligations of both the in-class and out-of-class activities.

PROGRAM CERTIFICATION REQUIREMENTS & OUTSIDE-OF-THE-CLASSROOM ACTIVITIES

This section describes the requirements for the E-scholar certificate, the professional code of conduct, and the outside-of-the-classroom activities outlined in *Table 1*.

Certificate Program Requirements

All students admitted to the E-scholar Program are eligible to earn an E-scholar Certificate. This academic certification appears on their transcript, and they are distinguished at graduation with an E-scholar sash. To earn the certificate, an E-scholar must meet all the following requirements, along with abiding by the program's professional code of conduct (outlined in the next section).

1) Earn a B or higher in the fall course
2) Earn a B or higher in the spring course
3) Attend and participate in the Forum on Entrepreneurship Breakfast Series during the fall and spring semesters
4) Attend the Goelz Speaker Series during the fall semester
5) Attend and participate in the National CEO conference in the fall semester
6) Participate in and contribute to the E-scholar service learning project during the academic year
7) Attend the local EO24 event during the fall semester
8) Attend and participate in the National E-scholar Student Consortium during the spring semester
9) Attend and participate in the international business trip during the spring semester

Making the program an official certificate program truly enhances it by allowing us to incorporate rigor into the program as well as highlight the accomplishments of the students who excel the program by meeting all of the requirements both in and outside of the classroom. If they fail to complete the standards required, they do not earn the certificate, so it gives them something to work towards from the beginning of the fall semester to end of the spring semester.

Professional Code of Conduct

All E-scholars are expected to abide by the professional code of conduct (PCC), as it provides the foundation for all behavior in the program. It also provides a sense of unity and common vision. Furthermore, the PCC provides an image of the program and the university to others, such as other students, faculty, staff, and business professionals. The student agrees to abide by the program's PCC, which includes three components: interpersonal skills, initiative, and dependability. They are described below:

Interpersonal Skills:
This includes the attitudes, behaviors, attire, gestures, manners, words, and tone of voice used towards other people. Other people include, but are not limited to, professors, other students, staff, guest speakers, and/or other business professionals.

Initiative:
This includes the energy, thought, and care put forth towards completing a task or project. Direct supervision may not always be available, and one must act independently to accomplish an objective. Without initiative, procrastination and missed opportunities occur, which ultimately lead to poor performance.

Dependability:
This includes being honest, reliable, and on time. People who are not dependable waste other peoples' time and can also waste other resources. In the workplace, behaviors related to being dishonest, unreliable, and late can be very expensive to the organization and can even lead to job loss.

Students are provided with specific behavioral examples related to the program that illustrate each of the three components of the PCC to ensure they understand them and agree to comply with the PCC. The outside-of-the-classroom activities outlined in *Table 1* are described below:

Forum on Entrepreneurship Breakfast Series

Students in the E-scholar program have the opportunity to hear the advice and success stories from several high-profile entrepreneurs and business executives through the Forum on Entrepreneurship Breakfast Series, which is a partnership between the university and the local business community. We host four breakfasts per academic year with an average of 280 business professionals attending each one. The purpose of the Entrepreneurship Breakfast Series is to advance entrepreneurial activities in the area and promote the development of student scholarships. Past speakers have included: Michael Dell, founder of Dell; Herb Kelleher founder of Southwest Airlines; and Ed Whitacre, former CEO of GM & ATT&T. The proceeds from the breakfasts provide scholarship money in the amount of $25,000 per year to the E-scholar Program to help fund domestic and international business trips.

Goelz Speaker Series

The Goelz Speaker Series occurs each fall semester. Twelve entrepreneurs and other business executives are invited to a reception each week where they interact with students. After the reception, they share their stories and words of advice with the students. Entrepreneurs and executives who have participated include Hope Andrade, Texas Secretary of State and entrepreneur; Bill Greehey, Chairman of the Board of NuStar Energy LP, and NuStar GP Holdings, LLC, and former Chairman of the Board for Valero Energy Corporation; and Red McCombs, founder of Red McCombs Automotive Group co-founder of Clear Channel Communications, and former owner of the San Antonio Spurs and Minnesota Vikings.

Collegiate Entrepreneurs' Organization' National Conference

The Collegiate Entrepreneurs' Organization (CEO) is a premier student entrepreneurship organization with chapters at over 200 colleges and universities. Their mission is to inform, support and inspire college students to be entrepreneurial and seek opportunity through enterprise creation. The E-scholars travel to the National Conference each fall. They participate in all required activities, which includes submitting an application for the Elevator Pitch Competition. The conference provides students the opportunity to network with approximately 1,200 other students, faculty, entrepreneurs and other business executives. Over 80 outstanding entrepreneurs and business leaders also share their advice and expertise with attendees during several concurrent sessions and keynote addresses on topics such as launching a new venture, technology, marketing, and finance, among several other topics relevant to nascent entrepreneurs.

San Antonio Entrepreneurs Organization Event

EO24 is an event held by the Entrepreneurs' Organization that celebrates and spreads entrepreneurship around the globe for 24 hours. Local chapters host events that focus on innovation, knowledge sharing, and real-time learning to help drive economic growth in 42 countries. From chapter to chapter, EO members share their entrepreneurial wisdom around the world to inspire and support the next generation of entrepreneurs. Each year this half-day event is held in November for our E-scholars. The event consists of a keynote speaker, a panel discussion, and round-table discussions with several EO members, so that the E-scholars can interact in a more informal manner with all of the entrepreneurs at the end of the event.

Service Learning Project

The E-scholars are required to use their entrepreneurial skills and knowledge in a service learning project to fulfill the community service requirement. For example, one year we partnered with City Year to develop a business plan for a free spring break camp for low-income children. We worked with Dress for Success to help them streamline their operations

to fulfill their mission to improve the lives of disadvantaged women re-entering the workforce. We have also partnered with KPMG for a camp to help teach children about entrepreneurship and finance. And this past year, the E-scholars engaged in a fundraising activity for the Wounded Warrior Project.

E-scholar National Consortium

Each spring we hold an E-scholar Student Consortium with two other universities that have E-scholar programs. The main event is an elevator pitch competition between all the students (approximately 40). They also engage in a collaborative 24-hour business plan project. Each team, which is comprised of students from all three universities, must choose a current trend and develop a business plan to address a need in the marketplace related to that trend. They only have one full-day to develop the plan and present it to a panel of judges the following day.

International Business Trip

During the spring semester, the E-scholars devote their spring break to test out their business ideas in a foreign country. We have traveled to China, Mongolia, Dubai, South Korea, Scotland, Russia, Taiwan, Panama, Hong Kong, the Czech Republic and Poland. Students conduct business meetings with industry professionals in their destination country including entrepreneurs, investors, and other business executives. The E-scholars also interact with students from colleges and universities in the area and take cultural tours to broaden their horizons. After they return from the trip, the must fully develop their business plans for their destination country by utilizing all of the information that they acquired during their trip, which spans approximately 10 days.

METHODOLOGY

The primary research objective of this study was to assess the learning goal outcomes of a unique cohort-based entrepreneurship program at St. Mary's University. The study's secondary objective was to determine the impact of the program on its alumni's professional achievements. In order to address these objectives we decided that a quantitative survey approach was the most optimal research design since it would best measure the outcomes of specific learning goals, while allowing for open-ended questions to be included to provide some qualitative data for a more in-depth understanding.

The survey was administered utilizing SurveyMonkey. The entire E-scholar alumni population (N=70) was subsequently contacted electronically and encouraged to participate. Prospective respondents were guaranteed anonymity in order to enhance the response rate and minimize bias (i.e., to encourage honest and accurate responses). We received 21 usable responses, which equates to a response rate of 30%. This response rate was deemed to be acceptable and representative of the entire population, as well as across the different cohorts.

The survey instrument consisted of eleven questions designed to measure the learning

goal outcomes of the E-scholar Program, as well as to collect pertinent demographic data. The questions included a series of 5 and 7-point Likert scales and open-ended questions.

RESULTS

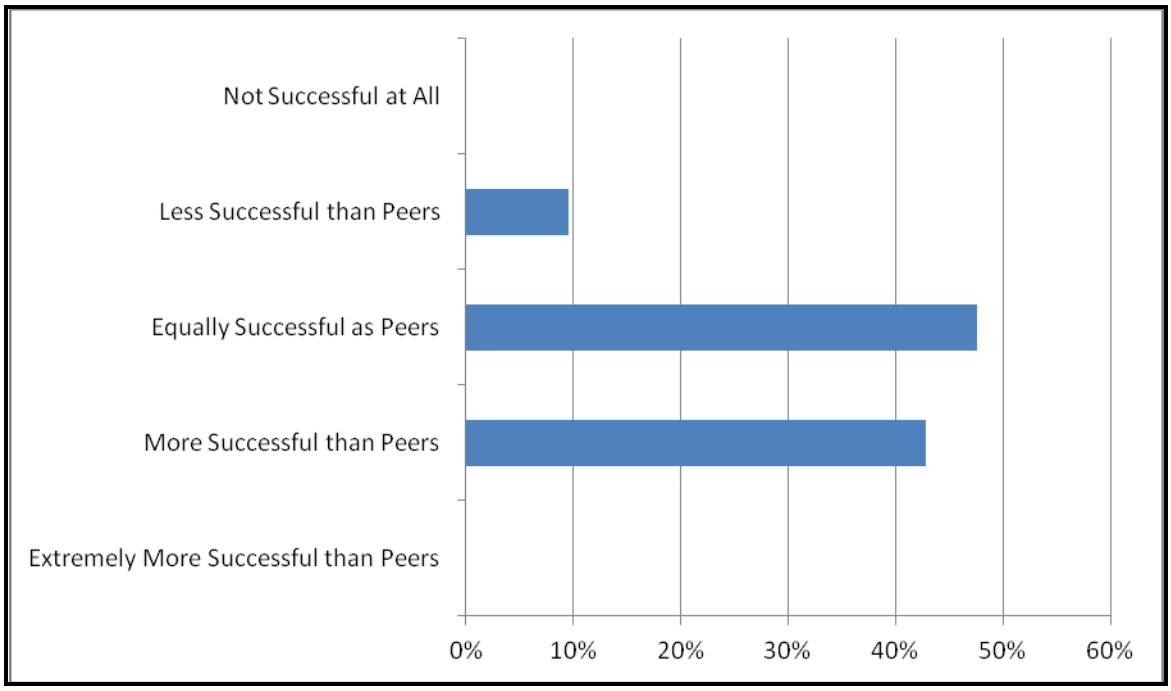
Before delineating our findings related to the study's primary research objective of assessing learning goal outcomes, it is insightful to first illustrate the key achievements of the alumni respondents, thereby addressing our secondary research objective. The survey asked the Program alumni to indicate their following accomplishments with six months of graduation (see Table 2). As can be seen in *Table 2: Accomplishments within Six Months of Graduation*, over 85% of the E-Scholar alumni respondents obtained a job, started a business or got accepted into graduate school within six months of graduation. The six respondents in the "other" category explained that they were still in school (n=2), in a full-time volunteer position, awaiting graduate school, searching for a job, or traveling.

Table 2: Accomplishments within Six Months of Graduation (n=21)

Accomplishment	Number of Responses	Percentage
Obtained a Job	11	52.38%
Started a Business	1	4.76%
Got Accepted into Graduate School	6	28.57%
Other	6	28.57%

A second indicator of the Program alumni's professional achievements was obtained through a survey question asking respondents to rate their success at this point in their career, entrepreneurial endeavor, or graduate schooling, utilizing a 5-point Likert scale. As can be seen in *Figure 1: Respondent Self-Assessment of Success*, over 90% of the Program alumni regard themselves as being equally or more successful than their peers.

Figure 1: Respondent Self-Assessment of Success (n=21)



The study's primary research objective of assessing the learning goal outcomes of the E-scholar Program was achieved by asking alumni to evaluate the impact of the program on the attainment of the seven learning goals (refer back to Table 1), through a series of 7-point Likert scales. Specifically, the survey asked the following question: *"In comparison to your peers, to what degree do you believe the E-scholar Program (disregarding other programs and courses) helped put you in a better position to understand and/or excel at each learning goal using the following scale:"*

1=Not at all
2=To a slight degree
3=To a somewhat stronger degree
4=To the same degree (neutral)
5=To a moderately better degree
6=To a much better degree
7=To an exceptionally better degree

Table 3: Assessment of Learning Goals illustrates the results of the question. The respondents strongly believed that the Program better prepared them to understand and excel at the seven learning goals relative to their peers, as evidenced by the high mean scores

ranging from 5.76 to 6.48. Thus, the findings suggest that the Program attributes and intrinsic experiences led to enhanced learning goal outcomes.

Table 3: Assessment of Learning Goals (n=21)

Learning Goal	Mean (scale of 1-7)
Teamwork	6.00
Communication Abilities	6.43
Essential Business Knowledge	6.38
Critical Thinking Skills	5.86
Leadership	6.48
Ethical Awareness	5.76
Understanding the Nature of the Global Economy	6.33

The respondents reported many success stories. Two graduates are currently operating their own companies, while two are planning to launch new ventures this coming year. Another is successfully expanding the family business after the death of the founder. Many are employed by companies such as Johnson Control, Inc., Bloomberg, AT&T, Hard Rock Café, Walt Disney Company, Ernst & Young, BP, Energy Solutions International, and Valero Energy Corporation. The Program's graduates are located from coast to coast, with two located in California and one in Washington D.C., while at least two others are living and working outside of the U.S., with one in South Korea and one in Tanzania. Some are currently advancing their education by being enrolled in Dental School, Pharmacy School, and Law School, while others have already earned advanced degrees, with one receiving a Masters Degree in Science in Biotechnology, one completing an MBA, and one receiving an MS in Accounting.

CONCLUSIONS

AACSB states that the faculty is ultimately responsible for defining and monitoring the learning goals of a program. Faculty members may incorporate the ideas and insights of students and recent graduates into the strengths and weaknesses of a program (www.aacsb.edu/accredication/business/standards/aol/learning_goals.asp, accessed May 2013). This was our goal with this study, along with demonstrating the overall achievements of those who have been through the E-scholar Program. While AACSB considers surveys as indirect measures, it states that "such surveys can alert the schools to validate curricular guidance and maintain external relationships," which we feel is very important with the E-scholar Program.

A few testimonials about the E-scholar Program were provided in the introduction section of this paper. Other testimonials from our qualitative data include:

"The exposure to business practices and individuals who operated successful businesses was paramount. It is difficult for a case study or a classroom application to show you how to be prepared for the 'real' business world. The E-scholar Program afforded me the opportunity to immerse myself in an entrepreneurial atmosphere and truly got my creative juices flowing, which allowed me to retain more information as a visual/hands-on learner."

"The E-scholar Program has provided me with the skills necessary to start my own business. I have even been recognized by the city due to the E-scholar Program."

"Public speaking gave me the chance to step out of my comfort zone, allowing me to gain a more confident attitude. Ultimately, that led me to network more often and more efficiently. Without this opportunity, I would have never reached out to my current employer."

"The E-scholar Program provided me many important experiences necessary to expand my professional networking skills. This has allowed me to meet the right people at the right time, who have opened doors for me."

In keeping with AACSB standards, "Learning goals should be set and revised at a level that encourages continuous improvement in educational programs." It further states that, "by measuring learning, you can evaluate students' success at achieving learning goals, which can be used for improvement efforts." (www.aacsb.edu/accredication/business/standards/aol/defining_aol.asp, accessed May 2013).

Based on the results of our study, the success stories, and the testimonials provided by the participants, we feel quite successful in achieving the learning goal outcomes, not only for the E-scholar Program, but in supporting the mission of our School. This study also shed light on a couple of learning goals we need to enhance in the program - Ethical Awareness and Critical Thinking Skills. By adding activities specifically related to these areas, we can strengthen the Program for future cohorts, such as the incoming 10th cohort starting in the fall of 2013. Each year, we work together to make improvements to the E-scholar Program. The results of this study not only prove that our continual efforts to make advancements to the program have been successful, but it also shows where we still need to make some progress.

As others before us have said (Pascerella, 1980; Endo & Harpel, 1983; Terenzi & Wright, 1987; and Kuh, 1995), and we also contend, contact between students and faculty, as well as others beyond the classroom is essential for student learning. Fostering feelings of affirmation, confidence, and self-worth contribute to knowledge-acquisition and overall career development for students. We have strong evidence that we are helping our students achieve these goals through the E-scholar Program model and beyond, and we plan to continue making improvements to the program each year. We also feel that we are living up to Kuratko's (2005) challenge to entrepreneurship educators to provide "*complete academic legitimacy"* in entrepreneurship education.

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