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Co-Editors

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LETTER FROM THE EDITOR

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JoAnn and Jim Carland
Carland College

DESIGNING AN EXECUTIVE MBA AROUND ENTREPRENEURSHIP: CHANGING A MINDSET AND THE CREATION OF SMES

Joseph R. Bell, University of Arkansas at Little Rock

ABSTRACT

The faculty of the Executive MBA program ("EMBA") is investigating a change to the EMBA curriculum. The motivation for a change is to provide a unique, applicable and experiential-learning opportunity. The intent of the program is two-fold. First, participants will experience a threaded, experiential-learning component to the overall curriculum, and second, to provide an opportunity to advance regional technological research from laboratory to marketplace. In that process a new course focusing on technology assessment and product/service commercialization will be added to the curriculum. In addition, each course offered in the EMBA cohort program, where appropriate, will offer a discipline-specific "thread" to support each team's commercialization project. Each EMBA class will be expected to assess 3-5 technologies over the course of the 18-month program. Every 12 months a new class is introduced therefore, as many as 10 projects maybe active at any time.

INTRODUCTION

As the workplace and our drivers for our economy continue to evolve, so must how we approach the education of our students. "The modern workplace no longer resembles the factory assembly line but rather the design studio, where the core values are collaboration and innovation..." (Mandel, 2007, p. 45).

EXECUTIVE EDUCATION

Executive education is the "hottest product in the growing MBA market" and is forcing universities to heighten their focus on the quality of their executive MBA programs (Tyler 2004, p. 105; Page et al 2004; Filbeck and Webb, 2000). In 2004, 53% of executive MBA programs around the globe showed an increase in interest from perspective students, while traditional MBA programs, reported a decline in applications. (Logue, 2005) Sihler (1993) found that students of executive education are more demanding and critical and value experiential learning more than other students. Cason (1993) asserted that executive education students prefer a results oriented program.

Filbeck and Webb, (2000) interestingly found that executive MBAs are more interested in seeing linkages between different materials and the big picture and also have a desire for eclectic pedagogical style. In adopting an eclectic approach may encourage executive MBAs to stretch themselves personally in less developed areas and assist in their overall professional development. They found that the entire class, regardless of learning styles, is best challenged by mixing a lecture format with active learning techniques and should be exposed to complexities and ambiguities. They concluded that it is valuable for all executive MBAs to work in groups that are outside their preferred dimensions and by doing so will again, assist in their professional development.

Executive MBAs are collaborative exchanges and provide for hands-on projects with many students using actual projects related to their employer with some even contributing to new product development. (Tyler 2004; Logue 2005)

Because of the continued interest in executive MBA programs, universities are looking at different possibilities for positioning their executive MBA products in the marketplace. It appears that even in the top ranked executive MBA programs that the schools position themselves to address the student constituents, and to a far lesser degree, their employing organizations even though estimates show as high as 84% of executive MBA students have their programs funded by their employer. (Page, et al, 2004)

The research of Page, et al, (2004) lists a number of criteria programs need to address to better serve the needs of the employer. Listed first on the criteria list is "maximize the organization's competitive advantage" (p.8) and specifically addresses problem solving and strategic thinking while also listing a proficiency across a number of selected business disciplines.

ENTREPRENEURSHIP EDUCATION

Attributes usually associated with entrepreneurship include innovative approaches to problem solving, high readiness for change, self confidence and creativity uniquely contributes across all economic systems. It is now recognized that entrepreneurship is not exclusive to the creation of new businesses that it also offers opportunities within existing organizations and is often termed intrapreneurship or corporate entrepreneurship. (Heinonen, et al 2007)

Traditional teaching methods, such as lectures and examinations, are not the most effective means of encouraging entrepreneurial skills set development. (Gibb, 2002; Sogunro, 2004) In entrepreneurial learning, traditional teaching methods need to complemented (Gibb, 1993; 1996; 2002) by activities such as learning by doing and engaging students in active learning or that participate in the control and mold the learning situation (Gorman et al, 1997; Fiet, 2000).

In the Heinonen, et al (2007) study, which focused upon entrepreneurial course work for bioscience researchers, they recognized and divided class participants into groups with inclinations toward intrapreneurship, and others in entrepreneurship. They found that by dividing the class into two groups, and not forcing everyone along the path of starting a business changed the attitudes of

the intrapreneurship-oriented students, some of whom even became more positive toward the overall course.

INTRAPRENEURSHIP

Intrapreneurship is the practice of creating new business products and opportunities in an organization through proactive empowerment. Intrapreneurship focuses upon an individual's or team's willingness to take calculated risks and act to create business opportunities. A cognitive decision to embrace intrapreneurship needs to start at the top and be communicated throughout the organization. Employees need to be presented with opportunities to apply their knowledge and develop new skill sets and create intrapreneurial opportunities for organization. (Eesley and Longnecker, 2006)

A recent editorial in U.S. Business Review (Kurkowski, 2007), in quoting Damian McKinney of McKinney Rogers consulting, suggested that large organizations need to nurture entrepreneurial qualities in existing employees and create a culture that supports innovation, risk taking and flexibility. And, because of rapidly growing globalization and competition, and rate of technological changes, intrapreneurship provides a vehicle for organizational renewal and competitive positioning (Seshadri and Tripathy, 2006).

Organizations face increasing competition and are under tremendous pressure to find competitive advantages and places innovation at the forefront to be a determining factor in the organizational success (Eesley and Longnecker, 2006)

From the standpoint of the employer fostering intrapreneurship allows employers to attract and retain the best talent. A survey of young professionals in 2004 by Common Purpose, showed that 44% of those young professionals claimed to be given little opportunity to be creative or innovative and 57% were searching for new employment. The article goes on to suggest that the company should send people to training courses, bring in entrepreneurs, and help create a culture of lifelong learning. (Hanson, 2005)

JUSTIFICATION

Kuratko and Montagno (1989), suggest that intrapreneurship training requires more than activities that engage innovators but needs to create new managerial practices. Their model relies upon a mix of lecture, discussion, videotaped case studies, small group activities, project team development, individual assessment, and presentations. Zahra, Nielsen and Bogner (1999) suggest that there are important consequences of intrapreneurship activities for building organizational competency while it contributes significantly to organizational learning and knowledge.

Marcus and Zimmerer (2003), identify that there is a noticeable absence of intrapreneurial programs and that intrapreneurial activity has the potential to dramatically improve corporate

profitability. They go on to state that intrapreneurship has broad implications for both manufacturing and educational organizations and needs to be integrated throughout educational and industrial organizations.

THE COURSE

The college has decided to incorporate a threaded, experiential-learning component to the overall curriculum into the EMBA program because of the high-caliber, mature and seasoned individuals recruited into the program. Historically, the EMBA program has attracted participants from diverse backgrounds including public and private sector leaders and represents such fields as science and engineering, healthcare, information technologies and others. (Filbeck and Webb, 2000; Logue, 2005)

Specifically, at the onset of the EMBA coursework, students will attend an overview session where they will gain an understanding of the technology assessment process and the components necessary to complete a feasibility analysis or business plan. Support materials like Abramo and Edmondson's "BioStory: Convincing Investors to Finance a Biotech Company" (2006) will be incorporated into the initial sessions. Student teams, comprised of 4-5 students, will work under the supervision of the faculty and in cooperation with, the SBDC, the College of Engineering, and the Medical (UAMS) and Law (Bowen) Schools. These "teams" will initially identify promising technologies, and over the course of the ensuing EMBA program of study, assess the technological viability and the business feasibility of each project. The EMBA coursework will assist in assessing market, financial, production, and other business-related issues. The result of this 18 month long project will be a professionally drafted technology and business assessment accompanied by a formal presentation to all interested parties.

The course points allocation (see, Appendix 1), scoring rubric (see, Appendix 2), and presentation criteria (see, Appendix 3) have been included in the appendices.

THREADED

The students are required to complete a 48 hour curriculum over a period of 18 months. Course work includes traditional business curriculum of accounting, marketing, finance and others. The faculty has committed to utilize aspects of the student projects as examples within their specific course materials while it is anticipated that the students will engage the faculty, as subject matter experts, to support their projects. Some courses are better suited for some courses such as finance while less suited for others like Field Study in International Business.

In addition to "threading" through existing coursework, six-credit hours will be specifically designed to support the student project:

One two-credit hour segments will be delivered at the beginning the course. The initial meeting will set the ground work for the assessment of the technologies, introduce the students to the technologies available for study, and finally, map out the expectations for the overall project.

Two one-credit segments will be delivered one-third and two-thirds through the course. These will serve as formal checkpoints to determine progress on the projects and to map out future expectations.

A final two-credit hour segment will be delivered near the end of the 18-month EMBA program. This will provide for submissions of the completed project and presentation of the findings to the stakeholders.

Where appropriate, the projects will be further honed for entry into the Reynolds Governor's Cup Business Plan Competition each spring. The competition offers a total of $104,000 in prize money and unprecedented exposure to the Arkansas business community. The University already has a successful "proof of concept" where an EMBA team actually brought a product to market. This successful venture will serve as a model and inspiration to future projects.

The outcomes:

A real world application project for the students

A unique skill set developed through the process with direct application to other entrepreneurial startup opportunities

Assessment of Arkansas-based technologies

Potential for commercialization of those technologies

Collaborative development amongst institutions and academic disciplines

Actual product/service commercialization

CONCLUSION

The author suggests that widespread benefits may result from exposing ascending and top level corporate management to the principles of intrapreneurship. This program may well produce an opportunity to directly survey, on an ongoing basis, the results of such training. There also exists

a strong potential to create SMEs (Small and Medium-sized Enterprises) around the technologies. It must be noted that for intrapreneurship to be successful within a large organization there must be top down and broad based acceptance with in the organization.

AUTHOR'S NOTE

A work in progress version of this paper was presented at the 2008 Small Business Institute® conference in San Diego, CA.

Joseph R. Bell is an Associate Professor of Entrepreneurship at the University of Arkansas at Little Rock and also serves as the Associate Director for Business Development at BioVentures, the medical and biotechnology incubator and technology transfer office for the University of Arkansas for Medical Sciences. He also serves as an adjunct faculty member at the Bowen School of Law. The author wishes to thank Ildeniz Yayla, MBA candidate for his assistance.

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APPENDIX 1 ASSIGNMENTS			
	ASSIGNMENT	Max. Pages	Points
1	Concept/Patent Search	1	25
2	WOW Statement	3 sentences	25
3	Company/Product Description	1	25
4	Industry Analysis	2	50
5	Market Research/Target Market/Competitor Analysis	3	50
6	Marketing Plan and Pricing Strategy	2	25
7	Technology Application	1	20
8	Operations Plan	2	25
9	Strategy/Risk	1	25
10	Financials*	4+	100
11	Executive Summary	1	25
12	Presentation		100
	Total	17+	495+
* Financials are not page length restricted and will include:			
Income statement – 3 years, monthly year 1 and ¼'ly years 2-3			
Statement of Cash Flows - 3 years, monthly year 1 and ¼'ly years 2-3			
Balance Sheet – 3 years, year-end			
Timeline			
Assumptions/research support			
Breakeven analysis (graph)			

APPENDIX 2
SCORING RUBRIC

Assignment		Strong	Satisfactory	Weak
1	*Concept*	External partner technology idea or self generated exceptional growth business model	Self generated high-growth business model	Self generated business model
	Patent Search	Detailed search report from USPTO.gov along with multiple internet and industry/trade-based searches and utilization of professional interviews	Detailed search report from USPTO.gov along with multiple internet searches	Detailed search report from USPTO.gov
2	*WOW Statement*	Clearly articulate in 3 or fewer sentences the business model and quantitative potential of the business	Clearly articulate in 3 or fewer sentences the business model	Articulate in 3 or fewer sentences the business model
3	*Company*	Company name, form of business, logo, specific location and founders		
	Product Description	Detailed description of the product or service including but not limited to dimensions, colors, packaging, production, warranty, etc.	A description of the product or service including but not limited to dimensions, colors, packaging, production, warranty, etc.	A description of the product or service
4	*Industry Analysis*	10+ credible and timely primary and secondary sources analyzed and applied with citations and sourcing throughout the document including but not limited to stage of the industry, trends, technology, competitors, outlook, etc.	5-10 credible and timely sources with citations and sourcing throughout the document including but not limited to stage of the industry, trends, technology, competitors, outlook, etc.	Multiple sources with citations and sourcing throughout the document including but not limited to stage of the industry, trends, technology, competitors, outlook, etc.
5	*Market Analysis*	Develop a deep understanding of the retail market including primary and secondary cited sources with very large market potential	Develop a deep understanding of the retail market including secondary cited sources with large market potential	Develop an understanding of the retail market including secondary cited sources
	Target Market	Develop a deep understanding of the target customer including primary and secondary cited sources analyzed and applied that results in a reasonably defined and quantified target market	Develop a deep understanding of the target customer including primary and secondary cited sources that results in a defined and quantified target market	Develop a deep understanding of the target customer including primary and secondary cited sources that results in a defined target market
	Competitor Analysis	Create a competitor matrix based upon strategic differences between your venture and the competitors, defining who the competitors are and your competitive advantage(s)	Create a competitor matrix based upon strategic differences between your venture and the competitors and defining who the competitors are	Create a competitor matrix and define who the competitors are

APPENDIX 2 SCORING RUBRIC				
Assignment		**Strong**	**Satisfactory**	**Weak**
6	*Marketing Plan*	Tie together the market characteristics of the product/service to the educational and motivational mediums for the reasons the customer buys within a strategic budget	Tie together the market characteristics of the product/service to the educational and motivational mediums for the reasons the customer buys	List a series of marketing mediums
	Pricing Strategy	Provide cited research supporting production cost, wholesale price and retail price	Provide cited research supporting production cost, wholesale price or retail price	List a production cost, wholesale price or retail price
7	*Technology Application*	Provide a detailed and well researched depiction of the technology needed to operate the business	Provide a detailed depiction of the technology needed to operate the business	Provide a list of the technology needed to operate the business
8	*Operations Plan*	Provide a detailed and well researched depiction of the operational issues associated with the business including but not limited to facilities, equipment, logistics, production and all corresponding costs	Provide a detailed and well researched depiction of the operational issues associated with the business including but not limited to facilities, equipment, logistics, production	Provide a depiction of the operational issues associated with the business including but not limited to facilities, equipment, logistics, production
9	*Strategy*	Create a concise paragraph describing the business model and how the venture makes money	Create a paragraph describing the business model and how the venture makes money	Create a paragraph describing how the venture makes money
	Risks	Evaluate potential risks the venture faces through primary and secondary research including but not limited to sec.gov/edgar filings	Evaluate potential risks the venture faces through secondary research including but not limited to sec.gov/edgar filings	Evaluate potential risks the venture faces through secondary research
10	*Financials*	Create the requisite documents supported by primary and secondary research and build the documents using formulation tables and full citations	Create the requisite documents supported by primary and secondary research and full citations	Create the requisite documents supported by secondary research and full citations
11	*Executive Summary*	A single page, concise and compelling overview of the venture	A single page and compelling overview of the venture	An overview of the venture
12	*Presentation**			
	Justify the Product/Service			
	Research	Depth, appropriateness and well cited	Appropriateness and well cited	Appropriateness
	Reasonableness	Makes sense to everyone	Makes sense to the market	Does not seem to make market sense
	Justify the Opportunity	It is a very large opportunity in the market	It is a large opportunity in the market	It is not a large opportunity

APPENDIX 2
SCORING RUBRIC

Assignment		Strong	Satisfactory	Weak
	Justify the Price	Provide cited research supporting production cost, wholesale price and retail price	Provide cited research supporting production cost, wholesale price or retail price	List a production cost, wholesale price or retail price
	Justify the Target Market	Develop a deep understanding of the target customer including primary and secondary cited sources that results in a reasonably defined and quantified target market	Develop a deep understanding of the target customer including primary and secondary cited sources that results in a defined and quantified target market	Develop a deep understanding of the target customer including primary and secondary cited sources that results in a defined target market
	Justify the Marketing Plan	Tie together the market characteristics of the product/service to the educational and motivational mediums for the reasons the customer buys within a strategic budget	Tie together the market characteristics of the product/service to the educational and motivational mediums for the reasons the customer buys	List a series of marketing mediums
	Do the Financials tie to the plan?	Demonstrated a clear understanding of how the market tied to their financials	Demonstrated an understanding of how the market tied to their financials	Presented their financials
	Why Will They Buy?	Demonstrated a clear understanding of their product and why the customer has a need or strong desire to buy	Demonstrated an understanding of their product and why the customer has a desire to buy	Suggested the customer has a desire to buy
	Quality of the Presentation	Well rehearsed, not reading from slides or cards, good contact with the audience, team effort	Well rehearsed, not reading from slides, good contact with the audience, team effort	Not well rehearsed
	Overheads/Props/ Product/Demo, Etc.	Slides of good quality with additional props/beta/etc.	Slides of good quality	Slides
	Q and A	Responded well to all questions asked	Responded well to most questions asked	Poor overall responses
	* see appendix 3			

APPENDIX 3 PRESENTATION GRADING		
Time:		
Names:		
Product/Company:		
	Points	Grade
Justify the Product/Service		
Research	5	
Reasonableness	5	
Justify the Opportunity	10	
Justify the Price	5	
Justify the Target Market and Marketing	10	
Do the Financials tie to the plan?	20	
Why Will They Buy?	5	
Quality of the Presentation	10	
Overheads/Props/Product/Demo,Etc.	10	
Q and A	20	
Total	100	

STUDENT-GENERATED INTELLECTUAL PROPERTY: PERCEPTIONS OF OWNERSHIP BY FACULTY AND STUDENTS

Craig Silvernagel, University of North Dakota
Richard R. Schultz, University of North Dakota
Steven B. Moser, University of North Dakota
Marie Aune, North Dakota Department of Transportation

ABSTRACT

An area of great interest within academia is the ownership of student-generated intellectual property (IP). Students involved in engineering capstone design projects, business plan courses and competitions, and research activities have immense potential to conceive and prototype product, process, system, and service concepts within the university classroom and laboratory environment. Faculty members serving as mentors and liaisons to corporate partners generally facilitate the innovation process in the context of their employment as university professionals. The research questions addressed in this paper focus on who actually owns the intellectual property generated in the many possible partnership scenarios that arise among the students, faculty, and outside entities associated with a particular project, as well as whether students and faculty have a working understanding and appreciation of IP ownership. Results from this survey suggest that students feel they own their classroom and laboratory ideas, and that they are somewhat reluctant to share this ownership with their faculty mentors. Student respondents consistently assigned more IP ownership to students compared to faculty, and ascribed less ownership to faculty compared to company management when a corporate entity was involved in a joint university-industry project. Implications of these findings and future research are discussed.

INTRODUCTION

Many campuses across the country are home to entrepreneurship and innovation programs, as well as capstone design classes in a variety of disciplines. In these courses, students are typically asked to create a business plan or technical report based on an idea they have or to collaborate with local and regional private industry to solve a specific problem in the corporate world. What is the protocol for intellectual property (IP) ownership in these situations? Does an instructor who assists with major parts of the business plan have any claim to future revenues? If a private company decides to use a student group's ideas, do those students have any financial claim to their efforts?

Without formal IP ownership policies in place for students who are not employees of an institution, it becomes rather difficult to arrive at acceptable answers to these vitally important questions.

Given that minimal research is currently available in the literature on the topic of student-generated IP emanating from the classroom and the laboratory, the authors developed a survey to gain a better understanding of attitudes and expectations related to student-generated IP ownership and how to best manage the interaction of students, faculty, university administrators, and private sector partners related to product, process, system, and service commercialization. The primary purpose of this survey was to determine faculty and student attitudes and expectations regarding student-generated intellectual property. The survey also addresses the level of IP knowledge on university campuses and asks if students are sharing or holding back their "best" ideas in the classroom. The research instrument was designed to gain access to opinions on the intrinsic value of patents, trademarks, copyrights, and other branding materials such as logos, taglines, jingles, and Web addresses. It is hoped that these research findings will assist in the creation of future policies regarding issues of student-generated intellectual property while still fostering student creativity.

This paper is organized as follows. We begin with a presentation of the background surrounding student-generated intellectual property generation, followed by arguments both for and against the creation of policies in this arena. Next, we describe the design of the research instrument, as well as the sample design and its administration. Potential survey recipients included students, faculty, staff, and other researchers and administrators, although this paper concentrates on the opinions of faculty and students exclusively. An elementary data analysis on faculty and student responses is presented in the results section, as well as a multivariate analysis of the data to study significant differences between faculty and student responses. Finally, a summary is provided, along with future plans for refining this research instrument and administering it on a more national scale.

BACKGROUND ON UNIVERSITY INTELLECTUAL PROPERTY PROTECTION

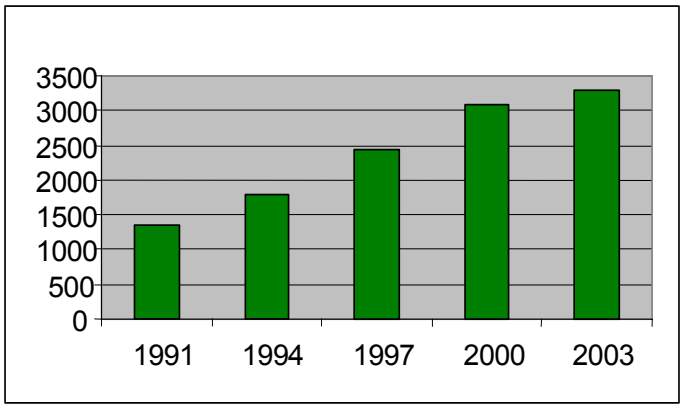
The phrase "intellectual property" may not have been very familiar 25 years ago in U.S. universities. Now, most research universities in the U.S. have some form of intellectual property policy or technology transfer office. Intellectual property is referred to as the legal entitlement of some form of an idea or product of the mind that may be protected by law in the same way as physical property. The new emergence of intellectual property in academia reflects a changing view of the relationships of research universities to the surrounding society (Nelsen, 1998). One trend that has contributed to this shift in research focus comes from the decline of federal research funds allocated to universities and the need for support from private industry and revenues from commercially-viable projects. This shift has created an arena where numerous university stakeholders enter collaborative agreements on research and product development. The stakeholders

in these arrangements often include faculty, professional research staff, private industry interests, and students.

Although much policy and procedure has been developed for the commercialization of intellectual property created by faculty and staff, little work has been done on the development of policy related to student-generated IP. University management of intellectual property is a relatively new phenomenon, and both policy-makers and technology transfer offices are more or less "learning by doing" (Nelsen, 1998). Most policies have been formed ad hoc, with modifications made as problems arise (Nelsen, 1998).

Since the early 1980s, research universities in the United States have substantially expanded their R&D mission to include much more active involvement with the commercial sector (Powers, 2004). Today, academic research is increasingly being pursued for its commercial potential and value, as intellectual property that can be exploited for financial gain (Slaughter & Leslie, 1997). Not surprisingly, there are two views on this topic. One perspective is that this type of activity is needed for regional and possibly national economic development. On the other hand, it is argued that university research concentrating on commercializable IP undermines the core of what has made this country a technology leader: research aimed toward breakthrough scientific discoveries. Regardless of one's view on the topic, it is evident from Figure 1 that this research revolution will stay its course. The first reason for this focus on university IP is, like never before, economic development has become a legitimate purpose for higher education, traceable to the passage of the Bayh-Dole Act (Powers, 2004). Congress came to believe that changing the incentive system for academic R&D could lead to substantial increases in patenting and, by extension, the licensing of those technologies to industry for exploitation (Powers, 2004). As a result of this particular act and a series of subsequent acts, patenting of technologies in higher education almost immediately accelerated, and continues to do so today (Powers, 2004).

Figure 1: Total number of patents issued to U.S. universities over a 22 year period



(United States Patent & Trademark Office, 2005).

Passed in 1980, the Bayh-Dole Act is named after its sponsors, Birch Bayh and Bob Dole, both members of the U.S. Senate at the time (Economist, 2005). It was billed as a minor tweak – encouraging universities to patent and license the results of federally-funded research – but it has had significant and long-term impacts, both good and ill (Economist, 2005). Opponents of this act, including scientists and attorneys, see the act as distorting the mission of universities from serving as creators of free, basic knowledge to a focal point on practices that emphasize commercial use. Clearly a valid concern, numerous people inside and outside of academia see this concept as a red-flag, based on the concern that if there is a focus to make a profit on basic academic functions, then these innovations may lead to a disregard for the original values of an academic institution. The fear is that technology transfer might stifle the free exchange of knowledge in the academic community, and in time, universities will resemble nothing more than commercial research centers (Blumberg, 1996).

Proponents of the Bayh-Dole Act feel that it has created some of the most successful innovations and inventions in U.S history. The general view is that the act originally focused on one thing – promoting innovation by allowing university ownership of discoveries made using public funds (Mamudi, 2006). Before the act, there were very low rates of patented inventions supported by federal funding, and this was attributed to a lack of reward for working on developing such innovations. The act is credited by some with helping pull America out of its economic doldrums by pushing technologies quickly into the hands of industry (Economist, 2005). Other arguments for the Bayh-Dole Act's success are that, before the act, patents might be stored away in some government agency collecting dust, separated from the researcher actually working on the project. There is a general feeling that the researchers who actually work on developing innovations are the best qualified to see that these projects make it to the marketplace. Since the passage of the act, many institutions have realized the benefits of managing their patents and have set up technology transfer offices to reflect that new activity (Mamudi, 2006). In 1980, there were fewer than 30 universities actively patenting and licensing their research; by 2006, that figure was around 300 (Mamudi, 2006). A final argument is that, while there are only a few institutions that have been highly successful with filing patents and licensing them to corporate partners, in a highly-competitive environment for securing federal funds in order to conduct basic and applied research, the addition of income, limited as it may be, still provides additional dollars for the university.

POLICIES ON STUDENT-GENERATED INTELLECTUAL PROPERTY

While many policies exist for faculty, staff, and grant-supported graduate research students at institutions of higher learning, administrators are just beginning to look at a more general policy related to student-generated intellectual property. To date, discussions have focused on allocating intellectual property rights to faculty and staff who participate in research, the university who provides the laboratory space, and external funding entities (Nordheden & Hoeflich, 1999). Quite

often, a faculty and staff manual will include information on the university's IP policy, and many times it is simply integrated into the employment agreement. In recent years, these policies have been applied to graduate students who receive financial support as graduate research assistants. With more undergraduate students contributing to research and design projects, it is clear that policy will need to address the undergraduate population as well.

A potential problem is that by *not* having students sign an agreement before participating in research, legal costs could be incurred in the future, and the technology might be delayed in its entrance into the marketplace. A prevailing point of view is that student policy should reflect faculty policy on rights within each institution, because if there are differences, one party may be less inclined to participate in the research. One school of thought is that faculty and researchers should make the student aware of her/his rights from the start and bind them to these written agreements up front (Nordheden & Hoeflich, 1999). Another competing school of thought is that IP policies as they pertain to students who are not being supported by federal, state, or corporate research funding should not have a policy imposed upon them, as this could stifle their creativity. Typically, faculty mentors want their students to bring their best ideas into the classroom and laboratory environment, but students may become reluctant to do so if draconian university ownership policies are created and enforced.

Today, most campuses do not have formal policies in place regarding the ownership of intellectual property by students who are not employees of their respective institutions. The following examples of successful programs illustrate why such policies may be quite important.

A program at Johns Hopkins University focuses on the interaction among the Department of Entrepreneurship, the Schools of Engineering and Public Health, the licensing and development offices at the university, and regional federal laboratories. Specifically, multi-disciplinary teams of undergraduate students develop commercialization plans for technologies emanating from these institutions (Aronhime, 2005). An additional component of this program helps teams of students who have developed a business plan commercialize that technology through the use of an incubator supported by the university.

Another example of training students regarding the possibilities of commercialization is found in a program at Florida Tech. The "Senior Design Commercialization and Entrepreneurship Program" is designed for the subset of the College of Engineering undergraduates who desire to leverage their design course experience by commercializing their innovative products or technologies and creating startup companies (D'Cruz, Ports & Shaikh, 2004). Not only is this program an avenue to developing marketable technologies, but it also provides a means for networking with inventors, investors, and technology transfer specialists who can assist with the startup of a venture. A number of talented engineers have innovative ideas and the necessary technical background, but they do not have the knowledge or network to commercialize and start a business around these opportunities (D'Cruz, Ports & Shaikh, 2004).

A similar example is the University of Florida Integrated Technology Ventures (ITV) Program. This program for engineering and business students is a partnership of the Integrated Product and Process Design program, the Center for Entrepreneurship and Innovation, and the Office of Technology and Licensing. In this program, the students are members of a virtual company and receive direction from volunteer CEOs. The end result of the program is for the groups to enter their projects into business plan competitions. In the pilot implementation of the ITV program, three virtual companies were formed (Stanfill, Sander & Rossi, 2004).

Adding to the list of programs is a course developed by the Penn State Technology Transfer Office and the Hershey Medical Center, which accepts students from engineering, business, science, and liberal arts disciplines. The course is entitled "Market-Pull Technology Commercialization." Originally, the objective of the four student teams was to understand inventions and related patents, licenses, and option agreements, and then to suggest methods to bridge the chasm between these key elements in the technology commercialization process (Kisenwether, Warren & Parekh, 2004).

Inarguably, with the many programs across the country focusing on student-generated intellectual property and product/service commercialization, it is only a matter of time before students and other stakeholders find themselves asking the question "Who owns what?" In particular, a clear and fair policy on student-generated intellectual property may need to be created at institutions across the country. On the other hand, should we restrict student creativity through the formation of IP policy, which will undoubtedly favor the university and its employees? This is a challenging issue with no right or wrong answer, having passionate proponents on both sides. From this dilemma, a new research avenue was inspired to determine the attitudes and expectations of faculty and students who potentially generate marketable IP in a university educational and research setting.

RESEARCH INSTRUMENT

While the concepts of ownership, recognition, and reward are central to any discussion on intellectual property, they do not tell the whole story. Dr. Steven P. Nichols, the Clint W. Murchison Chair of Free Enterprise and Professor of Mechanical Engineering at The University of Texas at Austin, is a leader in the areas of intellectual property and conflict of interest/commitment as they relate to university research activities. According to Dr. Nichols, three fundamental questions must be answered to equitably determine ownership within a student, faculty mentor, and government or corporate partnership (Nichols, 2005):

1. Who formulated the problem statement?
2. Who actually solved the problem?
3. Who provided the resources to accomplish the work?

The research instrument design process began with an in-depth interview of Dr. Nichols. Using his background information and philosophies as guideposts, the authors began enumerating and organizing the many partnering relationship combinations based on these three fundamental questions that might be encountered in a university commercialization environment. The Nichols interview helped set the framework and focus for the survey design, leading the authors to pursue respondent attitudes and expectations regarding IP ownership.

The research instrument was originally designed, tested, and then modified prior to the distribution and data collection of the current survey, which took place in April 2006. The final research instrument contains four sections, related to (1) demographics, (2) IP ownership scenarios, (3) perceived value of various forms of IP ownership, and (4) open-ended questions. The instrument begins with a preamble, explaining the purpose and goals of the survey, and it lists the target audience for distribution. The preamble is given in Table 1 as follows:

Table 1: Student-generated IP ownership research instrument preamble.

Claims to Intellectual Property (IP) ownership are really based on three fundamental tenets:	
1.	Who formulated the problem statement (e.g., "We need to develop a more efficient fuel cell for zero-emission vehicles")?
1.	Who solved the problem (e.g., students and/or faculty who reduced the idea to practice in a university laboratory)?
2.	Significant use of resources on the part of either the people formulating the problem or the people solving the problem (i.e., Human Resources, Facilities and/or Equipment, Financial Resources).
Primary Goal: To capture the philosophies of respondents on issues related to joint intellectual property ownership based on university student-generated intellectual property.	
Secondary Goal: To capture the philosophies of respondents on issues related to joint intellectual property ownership among partnering institutions and people.	

A description of the four survey sections is provided as follows.

Section 1 – Demographics

This section provides questions on self-perception of knowledge on intellectual property issues, gender, ethnicity, what type of university the respondent attends (if a full-time student) or is employed by (if a faculty member), and whether the respondent is a company owner or employee (if involved in a company full-time).

Section 2 – Joint Intellectual Property (IP) Ownership Scenarios

This is the most important section of the research instrument. The intent is to determine the respondents' attitudes on joint IP ownership in a variety of partnership combinations. The respondents are told to assume that the party on the left-hand side initiated the idea for the project and formulated the problem statement (e.g., "We need to develop a more efficient fuel cell for zero-emission vehicles"), and they may or may not have provided tools, financial, and/or human resources to the party on the right-hand side. University students, university faculty, and company management are all considered idea sources for projects. The party on the right-hand side actually solved the problem (e.g., students and/or faculty who reduce the idea to practice in a university laboratory) and delivered that solution to the party on the left-hand side.

Stakeholder attitudes were measured on a "shifted" Likert scale in Table 2, using -3 to +3 instead of 1 to 7. The respondents were instructed to select one number that best represents their viewpoint on which partner has a greater claim to ownership. A value of 0 represents equal ownership between the two parties. A value of -3 designates that the party on the left-hand side (i.e., the idea generator/problem statement formulator) has exclusive ownership, while a value of +3 denotes that the party on the right-hand side (i.e., the problem solver) has exclusive ownership.

Table 2: Partnership combinations contained in the joint IP ownership survey.

Question Number	-3 -2 -1	0	1 2 3
Q9	Univ. Students		Univ. Faculty
Q10	Univ. Faculty		Univ. Students in class project (not financially supported)
Q11	Univ. Faculty		Univ. Students in class project (financially supported)
Q12	Univ. Faculty		Univ. Students in extracurricular project (not financially supported)
Q13	Univ. Faculty		Univ. Students in extracurricular project (financially supported)
Q14	Univ. Faculty		Univ. Students as Research Assistants (not financially supported)
Q15	Univ. Faculty		Univ. Students as Research Assistants (financially supported)
Q16	Company Management		Univ. Faculty (not financially supported by Company)

Table 2: Partnership combinations contained in the joint IP ownership survey.

Question Number	-3 -2 -1	0	1 2 3
Q17	Company Management		Univ. Faculty (financially supported)
Q18	Company Management		Students supervised by Univ. Faculty (not financially supported by Company)
Q19	Company Management		Univ. Students (financially supported)
Q20	Company Management		Private Consultants (financially supported by Company)
Q21	Company Management		Company Employees (salaries paid by Company)

Note: The party on the left initiated the idea for a project and formulated the problem statement, and they may or may not have provided tools, financial, and/or human resources to the party on the right. The party on the right actually solved the problem and delivered that solution to the party on the left.

Section 3 – Perceived Value of Various Forms of IP Ownership

This section asks respondents to weigh the relative perceived value of various IP tools against one another, including patents, copyrights, trademarks, and branding materials (i.e., logos, taglines, jingles, Web addresses, etc.). Table 3 outlines the six questions for the respondents regarding IP ownership.

Once again, perceived value was measured on a shifted Likert scale of -3 to 3, in which the respondents were instructed to select one number that best represented their viewpoint on which form of IP protection represents greater potential value. A response of 0 represents equal value between the two forms of IP protection.

Table 3: Comparisons between various forms of IP ownership.

Question Number	-3 -2 -1	0	1 2 3
Q22	Patent		Trademark
Q23	Patent		Copyright
Q24	Patent		Branding materials (logos/slogans/jingles/Web addresses)
Q25	Trademark		Copyright

Table 3: Comparisons between various forms of IP ownership.							
Question Number	-3	-2	-1	0	1	2	3
Q26	Trademark						Branding materials (logos/slogans/jingles/Web addresses)
Q27	Copyright						Branding materials (logos/slogans/jingles/Web addresses)

Section 4 – Open-Ended Questions

This section asks respondents to address several IP and branding-related concepts, and it provides an opportunity for respondents to provide any additional comments concerning the survey. Open-ended questions included:

1. If you identified a problem and had an idea of a way to financially benefit from developing a solution, what are your general thoughts on sharing those "best" ideas in a classroom setting?
2. Can you explain the difference between owning a company name and owning a national trademark?
3. Share your thoughts on the advantages and disadvantages of patents versus trademarks.
4. Please provide your general comments on this intellectual property ownership survey.

Next, we will discuss how the research instrument was administered, including the sample design and an elementary analysis of the data.

SAMPLE DESIGN

The original sample for this research project included participants from various campuses in a Midwestern public university system. A letter was sent to the Institutional Research Office at each of the 11 campuses within this higher education system. The letter asked the research officials to provide a random sample of e-mail addresses for 20% of the students, 20% of the faculty, and 20% of the staff at their respective campuses. Although four of the 11 campuses agreed to be involved in this study, only two campuses were included in the results presented in this paper. These two campuses have by far the largest student enrollments within the university system, with the most significant research expenditures and the highest potential for creating wealth through

protected intellectual property. These institutions are the only two in the 11-campus system designated as "high research activity" institutions by the Carnegie classification system.

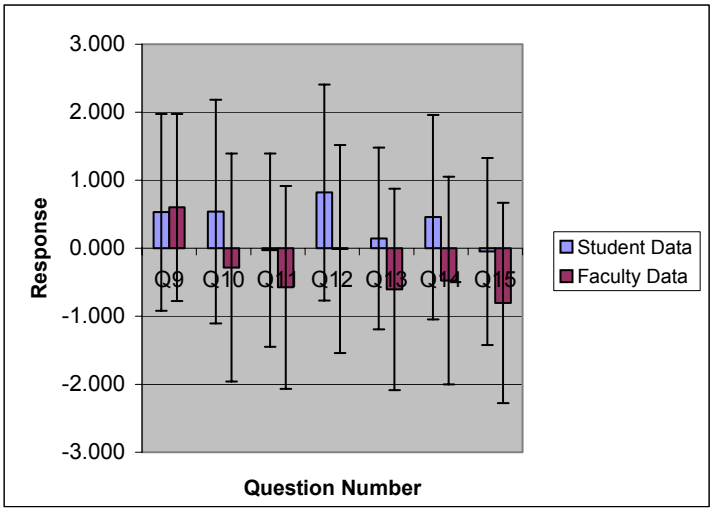
The survey was administered in a Web-based delivery format, through use of the Survey Monkey (www.surveymonkey.com) online tool. The overall response rate for the survey was approximately 7%, based on the original, overall sample across multiple campuses. The primary focus in this research project is to compare the responses from faculty and students to the survey intellectual property questions. First, we will analyze the first- and second-order statistics collected by the survey. To better compare these two groups, a multivariate statistical analysis is conducted. The original sample also included university administrators, professional researchers, and staff that are not included in the comparisons that follow.

RESULTS OF ELEMENTARY ANALYSIS: COMPARISON BETWEEN FACULTY AND STUDENT RESPONSES

In this section, first- and second-order statistics will be visualized and interpreted for the faculty and student stakeholders who participated in the survey. The final comparison group included a sample of between 184 and 206 students (depending on missing data) and between 71 and 82 faculty members. The intellectual property questions included 19 scenarios for students and faculty to consider in making decisions regarding intellectual property ownership. Each of these questions includes a seven-point scale for the responses, with a range from -3 to +3. The numerical means and standard deviations for these comparisons can be found in their entirety in the Appendix, with a visualization of the first- and second-order statistics shown in Figures 2, 3, and 4. Given the large number of responses at the zero point (evenly shared ownership), the averages were between -1 and +1 in almost all cases. By observing the means, some of the differences are pronounced, especially for Question 10, Univ. Faculty versus Students in class project (not financially supported).

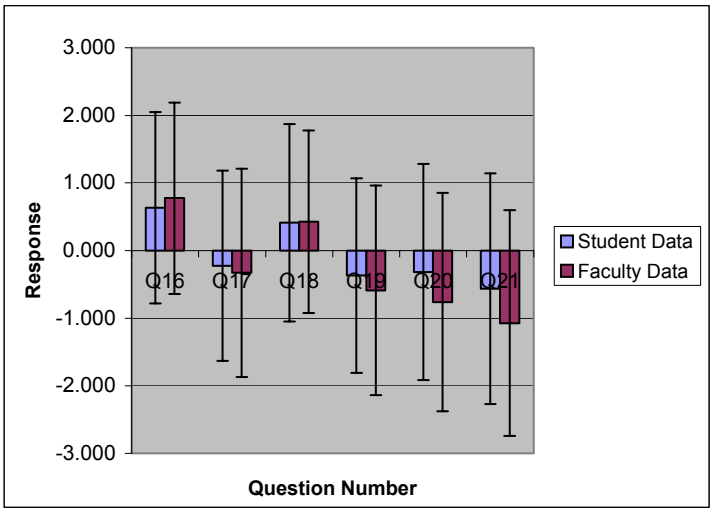
Before we interpret these results, it must be noted that participants were asked to self-assess their level of intellectual property knowledge in the demographics section of the survey, with the most frequent response being "Not at all knowledgeable." Nearly 95% of respondents from the complete survey including all four institutions stated that they were "Not at All" or "Somewhat" knowledgeable about legal issues related to IP ownership. Only 0.5% of the respondents considered themselves experts. Additionally, university faculty members, graduate students, and senior undergraduates had the highest response rate, which is not surprising since they most likely would also have the highest interest in intellectual property creation and ownership.

Figure 2: Means and standard deviation bars for faculty and students on Questions 9 through 15
(student-generated IP partnership combinations involving university faculty
as idea generators/problem statement formulators).



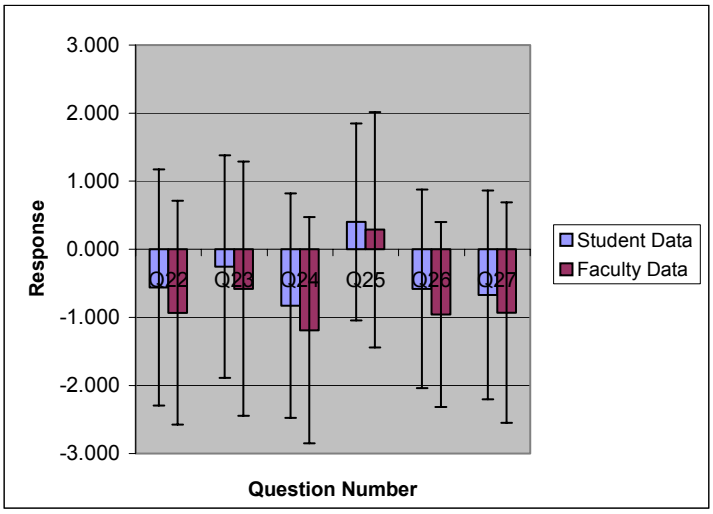
Q9 = Univ. Students versus Univ. Faculty
Q10 = Univ. Faculty versus Univ. Students in class project (not financially supported)
Q11 = Univ. Faculty versus Univ. Students in class project (financially supported)
Q12 = Univ. Faculty versus Univ. Students in extracurricular project (not financially supported)
Q13 = Univ. Faculty versus Univ. Students in extracurricular project (financially supported)
Q14 = Univ. Faculty versus Univ. Students as Research Assistants (not financially supported)
Q15 = Univ. Faculty versus Univ. Students as Research Assistants (financially supported)

Figure 3: Means and standard deviation bars for faculty and students on Questions 16 through 21
(student-generated IP partnership combinations involving company management).



Q16 = Company Management versus Univ. Faculty (not financially supported by Company)
Q17 = Company Management versus Univ. Faculty (financially supported)
Q18 = Company Management versus Students supervised by Univ. Faculty (not financially supported by Company)
Q19 = Company Management versus Univ. Students (financially supported)
Q20 = Company Management versus Private Consultants (financially supported by Company)
Q21 = Company Management versus Company Employees (salaries paid by Company)

Figure 4: Means and standard deviation bars for faculty and students on Questions 22 through 27 (perceived value of various forms of IP ownership).



Q22 = Patent versus Trademark
Q23 = Patent versus Copyright
Q24 = Patent versus Branding materials (logos/slogans/jingles/Web addresses)
Q25 = Trademark versus Copyright
Q26 = Trademark versus Branding materials (logos/slogans/jingles/Web addresses)
Q27 = Copyright versus Branding materials (logos/slogans/jingles/Web addresses)

DISCUSSION DERIVED FROM FIRST- AND SECOND-ORDER STATISTICS

Some general interpretations inferred from the elementary data analysis follow:

- In all cases, the mean was bounded to a fairly narrow range of approximately [-1.0, 1.0], which signifies that both faculty and students believe in joint ownership. A larger skew towards ±3.0 would represent a more significant differentiation in ownership.
- In general, the students seem to believe that they own the intellectual property related to a class or research project, even if they simply solved the problem rather than came up with the original idea or problem statement.

- Faculty also tend to believe that they own the intellectual property generated by students, in particular if they came up with the problem statement that was solved by the students.
- Indeed, financial support does make a difference, although much less than expected. In a scenario where university faculty formulate a problem that is solved by students, financial support reduces the perceived level of student IP ownership indicated, but for the most part, the students still believe that they are the majority owners.
- The student respondents seem to believe that faculty do not bring significant ideas, expertise, or experience to the table. These results seem to indicate that students feel their tuition dollars are sufficient for providing institutional resources that can be used to refine their ideas.
- When a company is involved in idea generation and problem formulation, the respondents seem to have the opinion that the company's financial support does imply company ownership, but certainly not to the degree expected by a company. Students in particular are probably not aware that when they sign IP transfer, confidentiality, and noncompete clauses as company employees, they essentially give up all ownership of their ideas to the company.
- Overall, respondents believe that they own their ideas, even when significant support is provided in terms of problem definition, problem solution, and financial resources.
- Overall, respondents had an overwhelming attitude that patents are the most valuable form of IP, with Patents > Copyrights > Trademarks >> Branding Materials. Branding materials include logos, taglines, jingles, Web addresses, etc., related to the company marketing materials and public image. Many respondents cited in the open-ended question section that they had no clear idea of the difference between the various types of IP protection. Conversely, the results show that respondents placed the lowest value on branding materials. In practice, for student-generated intellectual property, service-oriented innovations that require a professional branding approach may have the highest value over the short duration of a college education.

This last concept runs counter to how most university technology transfer and commercialization offices operate today. Most tech transfer offices strongly emphasize helping faculty patent their innovations and either start companies to manufacture the invention or license the technology to established businesses in appropriate market channels with the resources necessary for further development. All innovations that emanate from a university environment do not necessarily have the potential to be protected through patents, however. In fact, the authors conjecture that service-oriented innovations resulting in new retail establishments or business processes actually have a greater potential to generate positive cash flow in the timeframe of an undergraduate or graduate education. The upside might not be as high as patentable and commercializable intellectual property, but the cost, risk, and barriers to entry are often much lower. These types of service innovations require the development of branding materials that may or may

not have the ability to be protected through trademarks, but which help create unique selling positions for the business concepts. For this reason, educating faculty and students on the merits of all forms of intellectual property – not just patents – can prove to be beneficial to all stakeholders. The authors also believe that the faculty member and the university should share in the profits and harvest of a successful student-initiated venture when it was created with university resources, which often includes a substantial portion of a faculty member's time, expertise, and professional network. According to the results of this survey, however, students tend to have a much different opinion on this particular issue.

OPEN-ENDED QUESTION RESPONSES RELATED TO SHARING "BEST" IDEAS

The first open-ended question generated a number of responses that are certainly worth sharing. Recall that the question was stated as follows: "If you identified a problem and had an idea of a way to financially benefit from developing a solution, what are your general thoughts on sharing those 'best' ideas in a classroom setting?"

Based on their responses to this question, the overwhelming majority of students said they would not share an idea in class, especially if they thought there was potential for financial gain from the idea. A few students commented that they would share their ideas because they felt they could get much-needed feedback. Those same students also felt that sharing ideas in the classroom might lead to a peer making a suggestion to enhance the idea. Some respondents indicated that they would possibly bring their idea to a faculty member, but not necessarily the entire class. Some students who said they would involve faculty also indicated that they expected assistance from the faculty member if they shared their idea.

A number of faculty responding to this open-ended question alluded to the fact that they would mention their ideas in class to possibly recruit students who might be interested in working as research assistants. Many faculty members suggested that they value the sharing of information and educating students. However, those faculty members stated that they would only share in a general sense, not with details. Many faculty members mentioned that it depends on the class level. They feel they would not worry about sharing their ideas in an undergraduate class, but would possibly be more concerned in a graduate-level class where students have more resources and time to do the work. In general, faculty members feel that they would share ideas in the classroom, but in a case where the faculty members anticipate financial gain, they would typically not bring their ideas to the classroom. Rather, they would approach select students to work on the projects as research assistants.

RESULTS OF MULTIVARIATE ANALYSIS: DIFFERENCES BETWEEN FACULTY AND STUDENT RESPONSES

To better compare the differences between the faculty and student responses, a multivariate analysis using the General Linear Model in SPSS was conducted and presented in Table 4. There are significant difference between the faculty and student groups on Questions 10 through 15, 20, 21, and 26. The Wilks' Lambda of 0.824 is equivalent to an R^2 of 17.6% for the overall model. In looking at intellectual property ownership in a number of partnership scenarios, faculty were more likely to assign more ownership to faculty members than to students, and students were more likely to assign more ownership to students. Similarly, this was the case with students working as research assistants. Significant differences were also found when comparing company management intellectual property ownership rights with employees and consultants. Faculty were more likely to assign more ownership to company management than to employees or consultants. Students favored company management as well, but not to the level of the faculty ratings. Faculty also favored trademarks over branding materials to a greater degree as compared to the students.

To further explore these differences, a stepwise analysis of the two groups was conducted to determine the limited number of variables that most concisely explain the differences between the faculty and student groups. Results of this stepwise analysis are reported in Table 5. There were a total of 19 variables under consideration. As the stepwise analysis suggests, only three variables represent the majority of the variance explained by all 19 variables. In fact, all 19 variables explained 17.6 % of the variation, and three variables explained 13% of the variation (based on the Wilks' Lambda). It should be noted that this variable list differs by one variable in comparison to the elementary analysis. This is a result of the search for explaining unique variance, which was not the purpose of the elementary analysis. The three variables all included partnership scenarios where students and faculty were not being compensated for their work, and included both comparisons between faculty and students in extracurricular or research assistant roles as well as a comparison between company management and faculty. Students consistently assigned more ownership to students compared to faculty, and ascribed less ownership to faculty when compared to company management.

Table 4: Multivariate comparison of faculty and student responses on all dependent variables.

Effect		Value	F	Hypothesis df	Error df	Sig.
Intercept	Wilks' Lambda	0.463	11.914	19	195	0.000
facvsstudent	Wilks' Lambda	0.824	2.186	19	195	0.000

Table 4: Multivariate comparison of faculty and student responses on all dependent variables.						
Tests of Between-Subject Effects						
Source	Dependent Variable	Type III SS	df	Mean Square	F	Sig.
Corrected Model	Q9	0.860	1	0.086	0.041	0.840
	Q10	33.300	1	33.300	11.591	0.001*
	Q11	12.060	1	12.060	5.887	0.016*
	Q12	38.586	1	38.586	15.267	0.000*
	Q13	30.398	1	30.398	15.129	0.000*
	Q14	37.545	1	37.545	16.141	0.000*
	Q15	17.178	1	17.178	8.659	0.004*
	Q16	1.034	1	1.034	0.555	0.457
	Q17	0.930	1	0.930	0.446	0.505
	Q18	0.285	1	0.285	0.133	0.715
	Q19	2.304	1	2.304	1.047	0.307
	Q20	11.710	1	11.710	4.524	0.035*
	Q21	14.321	1	14.321	4.960	0.027*
	Q22	4.695	1	4.695	1.662	0.199
	Q23	4.758	1	4.758	1.702	0.193
	Q24	4.971	1	4.971	1.884	0.171
	Q25	2.816	1	2.816	1.134	0.288
	Q26	8.868	1	8.868	4.247	0.041*
	Q27	3.084	1	3.084	1.209	0.273

Table 5: Stepwise multivariate statistical analysis.									
Step	**Variable Entered**	**Wilks' Lambda Statistic**	**df1**	**df2**	**df3**	**Exact F Statistic**	**df1**	**df2**	**Sig.**
1	Q14	0.930	1	1	213	16.141	1	213	0.000
2	Q16	0.901	2	1	213	11.677	2	212	0.000
3	Q12	0.870	3	1	213	10.537	3	211	0.000

At each step, the variable that minimizes the overall Wilks' Lambda is entered.
Q14 = Univ. Faculty versus Univ. Students as Research Assistants (not financially supported)
Q16 = Company Management versus Univ. Faculty (not financially supported)
Q12 = Univ. Faculty versus Univ. Students in extracurricular project (not financially supported)

DISCUSSION DERIVED FROM MULTIVARIATE ANALYSIS

In reviewing these analyses, it is clear that significant differences were present between students and faculty across all variables. These differences were more pronounced on the faculty and student comparisons when there was ownership to be shared between faculty and students. Moreover, the greatest difference of opinion between faculty and students surrounds financial support. If students are not supported financially on a class project, they feel that they own the resultant intellectual property, regardless of faculty input. Likewise, faculty do not like to work for free, and they believe that they own the intellectual property generated from unsupported corporate collaborations.

To further consider the implications of these findings, as intellectual property discussions become more and more common in university settings, it is likely that differences of opinion between faculty and students may result in less valuable and collaborative discussions taking place. While the authors would recommend that flexible student-generated intellectual property policies be developed and that students and faculty should become knowledgeable regarding these policies, there are certainly potentially negative implications for learning that will take place. This is why care must be taken in the development of these policies in collaboration with student stakeholders, and wide-spread discussion should take place as they are implemented.

SUMMARY AND FUTURE DIRECTIONS

A research instrument was designed and administered to gather information on faculty and student attitudes and expectations regarding student-generated intellectual property to better understand their attitudes and expectations surrounding jointly generated intellectual property. A statistical analysis of the survey data has resulted in four interesting – although not entirely unexpected – observations:

1. Most faculty and students believe they have very little knowledge of the various forms of intellectual property and IP ownership issues.
2. A majority of students believe they should own the work that they do, even if a faculty member defined a particular problem statement and the students utilized the resources of others to accomplish their tasks. In general, students seem to place little value on faculty input and refinement in the context of concept development, believing that the faculty members are simply "doing their jobs."
3. Financial support tends to significantly impact IP ownership attitudes. Financial support as a research assistant does indeed reduce the perception of student ownership, but not as much as one would expect.

4. In comparing the perceived value of the various forms of IP, it was determined that the student and faculty groups both felt that Patents > Copyrights > Trademarks >> Branding Materials. In this case, branding materials include logos, taglines, jingles, Web addresses, etc., for marketing a business opportunity.

Probably the most important findings are that many respondents feel that financial support plays heavily on IP ownership distribution, and students are somewhat reluctant to share their information while faculty feel otherwise. There is no question that extensive education on intellectual property issues is required for both faculty and students, in order to help them better understand the various forms of IP and ownership issues, as well as to stimulate the commercialization of marketable products and services invented within a university setting.

The survey results raise important implications for faculty, individual students and student teams, and universities at large. The authors believe that the crux of the issue does not simply lie in "who owns what," but in how all parties involved can agree on the fair disbursement and management of joint IP ownership. It is hoped that these research findings will assist in the creation of future policies regarding issues of student-generated intellectual property, particularly for students who are not employed as research assistants by their faculty supervisors. However, these policies should be created with great care, since we do not want to stifle innovation and the creativity of our students, which may very well be the most important resources that U.S. institutions of higher learning have to offer.

Further development will take place on the research instrument, as student-generated intellectual property is a fruitful area for discovery. An important consideration involves taking into account the amount of resources that have been contributed to the problem solvers by the idea generators/problem statement formulators. Some questions related to the level of financial support from the sponsor would certainly be useful, because this could also affect the level of IP ownership by both partners.

Universities in regions of the country that are already hotbeds of student-generated intellectual property and business startups, such as Silicon Valley in Northern California, Route 128 in Boston, and Research Triangle Park in North Carolina, will be targeted for future surveys. Furthermore, it would be very interesting to compare faculty and student responses among a variety of universities on a national scale, including both public and private institutions and comparisons among universities based on enrollment, research expenditures, and size of endowment.

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APPENDIX

Figure 6: Means and standard deviations for faculty and students on all variables.									
	Students			Faculty			Total		
	Mean	N	Std. Dev.	Mean	N	Std. Dev.	Mean	N	Std. Dev.
Q9	**0.529**	204	1.447	**0.600**	80	1.374	**0.549**	284	1.425
Q10	**0.540**	202	1.645	**-0.284**	81	1.675	**0.304**	283	1.693
Q11	**-0.030**	203	1.421	**-0.575**	80	1.491	**-0.184**	283	1.459
Q12	**0.820**	205	1.588	**-0.012**	82	1.527	**0.582**	287	1.613
Q13	**0.143**	203	1.337	**-0.605**	81	1.481	**-0.070**	284	1.417
Q14	**0.457**	199	1.503	**-0.476**	82	1.525	**0.185**	281	1.566
Q15	**-0.049**	203	1.374	**-0.805**	82	1.469	**-0.267**	285	1.441
Q16	**0.634**	202	1.416	**0.775**	80	1.414	**0.674**	282	1.414
Q17	**-0.225**	204	1.407	**-0.329**	82	1.540	**-0.255**	286	1.444
Q18	**0.414**	203	1.461	**0.427**	82	1.352	**0.418**	285	1.428
Q19	**-0.369**	203	1.437	**-0.588**	80	1.548	**-0.431**	283	1.470
Q20	**-0.317**	205	1.597	**-0.763**	80	1.617	**-0.442**	285	1.612
Q21	**-0.563**	206	1.703	**-1.073**	82	1.669	**-0.708**	288	1.706
Q22	**-0.560**	184	1.733	**-0.932**	74	1.641	**-0.667**	258	1.712
Q23	**-0.255**	184	1.631	**-0.581**	74	1.865	**-0.349**	258	1.704
Q24	**-0.827**	185	1.649	**-1.189**	74	1.661	**-0.931**	259	1.657
Q25	**0.403**	186	1.446	**0.288**	73	1.728	**0.371**	259	1.528
Q26	**-0.581**	186	1.454	**-0.958**	71	1.357	**-0.685**	257	1.435
Q27	**-0.670**	185	1.530	**-0.932**	73	1.619	**-0.744**	258	1.557

MOTIVATING AT-RISK STUDENTS IN THE ARKANSAS DELTA: AN ENTREPRENEURSHIP SIMULATION

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ABSTRACT

The SIFE Team at an AACSB-accredited College of Business received a grant from Sam's Club to provide an entrepreneurship simulation for 53 at-risk students in the Arkansas Delta. The students were given a pre-test to assess their knowledge of business. Then, the SIFE team supplied the students' teachers with curriculum materials the teachers used to provide the students with a basic knowledge of entrepreneurship and the functions of business. The students divided into teams and created products or services, developed a business plan and marketing plan for their companies, and actually sold their products or services. The entrepreneurship program culminated with a Celebration Fair during which time the students presented and sold their products. The Celebration Fair was attended by other students, faculty, and the community. The students were also given a post-test. One of the most interesting results of the post-test was that 83% of the students indicated an interest in pursuing post-secondary education compared with 22% who had indicated that interest in the pre-test. Additional results of the comparison of the pre- and post-tests are explained in the article.

INTRODUCTION

SIFE (Students in Free Enterprise) is an organization that helps provide students an opportunity to learn the tools needed to succeed in a real working situation in a free enterprise system. SIFE Teams develop and implement community outreach programs designed to help teach these free enterprise concepts to others (SIFE website).

During the 2007-08 academic year, the SIFE Team at Arkansas State University, led by their faculty advisor Dr. Larry Dale, developed a program that was funded by a grant from the Sam's Club of Jonesboro, Arkansas. The SIFE team began by inviting 15 of the area school districts with a high percentage of at-risk children to participate in the program and asking the school districts to identify and contact children for the program. Although some of these students were in the Gifted and Talented programs, they were considered at risk in the sense that they were from lower-income families with 83% of the students qualifying for the free-lunch program and/or at-risk for dropping out of school and/or not pursuing post-secondary education.

The SIFE program was designed to provide an opportunity for these 53 at-risk students, 6-12th grades, to explore the role of entrepreneurship and technology in a free-market economic system and to help motivate these students attend post-secondary education and to pursue careers in the areas of math, science, business, entrepreneurship, and/or technology. As Hootstein (1996) wrote, one of the most effective ways to motivate at-risk students to learn is to make the learning relevant by connecting the learning activities to the students' lives, families, and future. The SIFE simulation was designed to do just this. The 53 student participants were from eight schools in the Arkansas Delta: Piggott, Rector, Pocahontas, Jonesboro, Paragould, Corning, Maynard, and Black Rock.

The Arkansas Delta includes some of the highest numbers of households living at or below the poverty level in Arkansas, a state with many low-income families. According to the most recent United States Census data, less than 17% of Arkansans have a Bachelor's degree or higher. This is significantly lower than the USA average of almost 25% (http://quickfacts.census.gov/qfd/states/05000.html). The Arkansas Delta was one of 13 regions to receive $65 million in grants from the U. S. Department of Labor in 2007 to help members of the workforce have better chances to succeed in the global economy of the 21st Century (PR Newswire, 2007). However, the methods used to motivate these at-risk students are suggested methods to motivate at-risk students in other locations as well.

The SIFE Team was excited about the opportunity to oversee a program that had the potential to encourage these students to complete high school and then pursue some type of post-secondary education which could help some of these students break the cycle of poverty. Some of the students on the SIFE Team had also grown up in the Arkansas Delta and saw this as an opportunity to give back in a way of helping others in that area.

ENTREPRENEURSHIP PROGRAM DETAILS

For the purposes of the program, the students were to form companies and design and create a product or service and actually sell these products or services. The other option was to design a product and create only a prototype. Either way, the students also prepared business plans along with various other marketing materials needed for their products or services. But first, the teachers would introduce the students to the concept of economics and the parts of the business plan. Then, the students would have an opportunity to actually use the information they had learned. The students were given a pre-test to determine their level of knowledge and interest in pursuing higher-education. The teachers taught either business, social studies (economics) or Gifted and Talented. Most of these teachers had taken the Economics Education workshops in the past, so SIFE had a relationship with them. The SIFE Team provided the teachers basic curriculum information to use in teaching the students about the free market system. The materials explored the basic concepts of the free market system where consumers and producers interact to determine prices and quantities through concepts called "dollar voting."

Next, students were introduced to the concepts of natural, capital, and human resources used to produce goods or services. They also learned about the mixed nature of the United States economy and its role in a global economy.

We made the cartoon "The Kingdom of Mocha" available to teachers in order to help the students review and remember the economic concepts they had been studying. Along with the cartoon, we provided materials that the teachers could use to enhance the information in the cartoon. This cartoon is generally available to K-12 through various web sites and is described as follows.

> The mythical Kingdom of Mocha and its inhabitants show us how much economics is a part of our daily lives. Concepts and sub-concepts featured include the barter system, medium of exchange, the market system, command economic system, capital investment, capital goods, scarcity of resources, opportunity costs, the business cycle, recession, inflation, factors of production, taxes and government regulations, international trade, supply and demand, and others (Stavros Center, 2008).

During the fall semester, teachers were also provided with teaching materials related to finance and entrepreneurship. Students learned about assets, liabilities and stockholder's equity as part of a balance sheet. The income statement included: revenue from sales, costs of goods sold, and operating items. This material was a series of presentations based on overheads developed by the team.

Students were also introduced to a basic Excel program to calculate budgets and create graphs that would appear in the student's company annual report.

A final program was developed that looked at the role of advertising in order to get consumers to notice products. Students were introduced to the basic concepts of marketing, including advertising, and the importance of advertising in the success of a product or service. Real-world examples of successful advertising were used to help the students understand these concepts.

Students were also given an opportunity to use the computer to create an advertising brochure or flyers to promote their company as well as their products or services. Throughout the semester, each unit of instruction was designed to emphasize the construction of a business plan and marketing plan.

With this project, the students were able to get an idea, at an age when they should begin thinking about their futures, of what goes into being an entrepreneur. Furthermore, by being the decision makes in the business simulation, they had an opportunity to apply first-hand, in a fun way, the economic and business concepts they had been learning as they created their companies, products or services, business plans, business cards, and marketing plans as they sought to sell their products or services at a profit.

A Celebration Fair was held on February 4, 2008, at which the students could sell their products or services. The districts provided chaperones and bus drivers to transport students to the fair; the community was also invited. Over 500 people from the schools and communities attended

the fair. By the end of the day, the 15 team projects had sold over $4,000! This amount included sales that the teams had done during the semester as well as the day of the fair.

METHODOLOGY

We began the Fair by having students take a pretest version of a 45-question test of Marketing, Management, Entrepreneurship, and Economics [MMEE], which became the basic instrument for our study. After this was completed, the students set up their businesses in the auditorium. Later, the businesses were judged based on six different competitions. Competition I was Best Business Plan; Competition II was Best Product or Service; Competition III was Business Card and Commercial; Competition IV was Best Marketing Plan; Competition V was Most Profitable Business; and Competition VI was an Overall Best Award.

Students could win a monetary prize of $100 and a trophy for first place in each of the initial competitions I through V. Second place, third place, and Honorable Mention each received a ribbon. An overall team competition was also offered. The group with the most accumulated points overall received first place and was honored by receiving a trophy and $200. The second place team was awarded a trophy and $100 while the third place team was recognized with a trophy and $50. An honorable mention ribbon was given to the team recipients who placed fourth in the competition. Points were awarded as follows: first place = 5 points, second place = 4, third place = 3, and honorable mention = 2 points.

During the day of the Fair, at least one student from each team, which consisted of three to five members, was brought into a separate room to meet with judges and be interviewed concerning their team's business and marketing plans. The commercial and business card competition judges, along with those for the best product, visited the students at their booths. The most profitable award went to the team that earned the most money at the fair.

Finally, we examined the results of the MMEE given the morning of the Fair, to determine the effectiveness of the program using raw data, standard regression analysis, and log linear models and to determine the significance of 10 factors on success in the program. These 10 factors used as dependent variables were: gender, race, age, parental income, mother's education, father's education, hours spent with a computer and/or video games, school district size, student's teacher, and success in the competition. The independent variable was the score on the TMMEE (Test of Marketing, Management, Economics and Entrepreneurship), a nationally normed standardized test.

Of the factors tested, the following were all significant at the .01 level: success in the program, age, parental income, mother's education, hours spent with a computer, size of school district, and hours spent on computer video games. Only gender, race, and father's educational level were not significant at the .01 level of significance. See Table1 below.

We also ran a standard regression analysis and a log linear model to examine the following 10 independent variables to see which were significant predictors of success on the MMEE [y-

dependent variable]; gender [GEN], race [RC], age [AG], father's education [FE], mother's education [ME], hours spent at a home computer [HC], Parents Income [PI] , School District size [DS], teacher [T], and success in the competition [CS]. This is expressed in the functional relationship; Y = X1 GEN + X2 RC + X3 AG + X4 FE + X5 ME + X6 HC + X7 PI + X8 DS+ X9T + X10 A

Of the independent variables examined, we discovered that the following were significant at the .01 level of significance predictors of success on the MMEE; age, mother's education level, hours spent at a computer, School district size, teacher, parent's income, and most important success in the competition was use of a computer at school. Some of these elements were expected. Age should prove to be a factor with older students doing better on the test than younger students. The students ranged in age from 10 to 17. Hours spent at a computer related to improved scores on computer and technology questions. We pulled those and looked at them separately. Students who spent more time at a computer had a mean score on those questions of 83% as compared to 71% for those without a computer.

The students consisted of 51% female students and 49% male students. We discovered that gender was not a significant predictor of success in the program. Female students were as interested in business and economics as were males.

The student racial mix was 20.4% African-American, 68.1% Caucasian, and 11.5 % Hispanic and Asian. Again as expected, race was also not significant at the .01 level, and students from minority backgrounds were just as enthusiastic about making money as were whites.

Despite the fact that almost all of the children came from low-income families with 83% eligible for the free lunch program, 42% had and used a computer at home. This number is especially interesting because Arkansas is number 47 among the states as far as broadband connectivity is concerned. This has been such an issue that Connect Arkansas was begun in 2007 in an effort to raise the number of computers, particularly in rural areas such as the Arkasns Delta, that are connected via broadband (Hinkel, 2007).

In viewing parental education level, 18 % of the children's father and 35% of their mothers had a college education. Their parent's average education in years was: 14.5 years for mothers and 13 years for fathers. Surprisingly, the mother's educational level was significant at the .01 level and the father's educational level was not. One speculation is that the mother has more influence over a child's attitude toward education and therefore toward their achievement level. Another explanation may be because 34% of the children came from a single parent household usually headed by a mother. However, whether the children were in a single or double parent household, the mother's influence seems to be greater on these children than that of the father.

Table 1: Raw Data and Regression Statistics		
Factor	Raw Data	Correlation
Gender [Dummy Variable]	Female 61%	.135
	Male 39%	
Age	10-7.7%; 11-19.2%; 12-34.6%; 13-23%; 14-15.3%	*.002
Race	African-American 78.7%	.270
	White 18%	
	Hispanic 3.3%	
Mother's education in years	Mean 14.33 yrs	*.0016
	85% completed High School	
	35% College Graduate	
Father's education in years	Mean 13 yrs	.09
	82% completed high school	
	18% College Graduate	
Uses Computer at home	42% use home computer	*.0007
Hours spent on school computer per week	Less than 1- 38%	*.0023
	2-5 hrs. – 50%	
	More than 6 hrs -11%	
Play video games	More than 2 hrs per week—28%	*.004
	Less than 2 hrs. more than 1—24%	
Pretest Mean on MAME	58%	
Posttest Mean on MAME	72%	
Difference between pre- and post-test	+14%	
No significant difference exists between the data derived by using the standard correlation matrix or the F and T-tests and that derived from the log Linear model. *Significant at the .01 level		

SUMMARY

Motivating at-risk students to stay in school and to pursue post-secondary education is an on-going process in the Arkansas Delta as well as across our country. For example, the Connect Arkansas program designed to raise the number of broadband connections in Arkansas is based on a similar, successful program in Kentucky, Connect Kentucky (Hinkel, 2007). In Colorado, an interesting program designed to motivate at-risk students to stay in school and pursue higher education is the Ye$ Program designed by a local nonprofit agency and credit union. This program is designed to motivate students to save up to $2,000 for education purposes such as tuition, laptops,

textbooks; and students who do save $2,000 will receive a matching amount of $4,000 for a 2 to 1 match (Serra, 2007).

Our students showed a marked improvement that was statistically significant at the .01 level as compared to the national norm on the test. The pretest mean performance at the 62 percentile was well below the national norm of 72 percentile, but their performance was well above the national norm on the posttest performance at the 91th percentile.

The school district size was significant; this may be due to the fact that smaller districts did better in the competition than larger districts. The teacher was also significant; certain teachers seemed to do a better job of preparing and assisting their classes in the projects.

Most importantly, 83% of students overwhelming expressed interest in obtaining a higher education, and 77% surveyed communicated a willingness to study hard to make that dream possible. This was a marked improvement over the pre-Fair survey with only 22% saying they planned to go to college. Finally, success in the different competitions was also a significant factor in predicting success on the MMEE. We believe that our project succeeded in training students to be skilled entrepreneurs and taught them to appreciate the economic system that allows hard work, education, and willingness to achieve a dream possible.

According to the teachers and students, the experience was fun, profitable, and memorable. Students developed a formal business plan, a marketing plan, a commercial, a business card, and then produced a product or service for sale or show at the fair.

One of the participants expressed it this way. "I learned that business could be both exciting and rewarding" through participation in this Fair.

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CONSTRUCTING AN INNOVATIVE MODEL OF ENTREPRENEURSHIP EDUCATION THROUGH REGIONAL COLLABORATION

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ABSTRACT

The purpose of this article is to discuss a new self-funding model of collaborative, regional entrepreneurship education among colleges and universities called the Entrepreneurship Education Consortium (EEC). The article will discuss the following: (1) the development and objectives of a non-profit entity among seven colleges and universities; (2) initiatives to educate students about entrepreneurship; (3) stakeholders involved in the process; (4) funding issues; (5) empirical findings that support the success of the EEC; (6) a discussion on how the model can be replicated; and (7) lessons learned and limitations.

INTRODUCTION

This purpose of this article is to introduce others to a successful, innovative, self-funding model of entrepreneurship education through a collaborative effort among seven universities and colleges in Northeast Ohio. Ashland University, Baldwin-Wallace College, Case Western Reserve University, Cleveland State University, John Carroll University, Kent State University, and The University of Akron created a new 501(c) (3) non-profit corporation called the Entrepreneurship Education Consortium (EEC) http://www.eecneohio.com/acorn.php?page=home to stimulate entrepreneurial activity within the region.

The following article will discuss the history and process of developing the consortium and its objectives. We also describe the two primary initiatives that the consortium is involved with and the stakeholders that are involved in these activities. Finally, funding issues recognition, assessment, evaluation, and successes are discussed towards the end of the article.

It is the intent of the authors to have this serve as a benchmark model for others in the development of similar regional, collaborative, organizations to foster entrepreneurship education.

We review a number of lessons learned from starting and running this consortium And indicate some pitfalls to avoid in similar ventures.

IMPORTANCE

The U.S. is at war, gas, commodities, and inflation are skyrocketing, job losses are increasing, the dollar has depreciated enormously, and real estate is at its worst state since the Great Depression. All of these are having a significant negative impact on the funding of higher education all over the U.S. The economic environment of Northeast Ohio has been especially hard hit by the economic turmoil over the past few decades with the elimination of many manufacturing facilities. Hundreds of thousands of jobs have been lost. We are facing brain drain as well as the scarcity of quality high paying jobs in the region.

In the past few years, Northeast Ohio has suffered more job loss, less job creation, and higher unemployment rates than the national average. A recession in 2001 impacted Northeast Ohio more deeply and longer than other areas of the nation with a significant loss of jobs, especially in the manufacturing sector. Economic growth between the years of 1995–2004 in Northeast Ohio, as measured by per capita income, employment growth, gross metropolitan product (GMP) (GMP measures value-added output produced in a region and is a counterpart to the gross domestic product measure for national output) and per employee output, have all lagged behind national averages. Employment growth, GMP, and per employee production were all below national averages and ranked Northeast Ohio near the bottom against other Midwest metro areas.

Furthermore, recent data indicates that 35 percent of the students receiving college degrees from Ohio institutions left the state. In 2001 alone, Ohio lost nearly 17,000 graduates from Ohio schools. Ohio was well below the national average, ranking 25th among the other states in retaining college graduates (Charleston, 2003). This loss of students created a well publicized statewide concern over "brain drain" and certainly raised a concern among the entrepreneurship program directors.

In its 2006 Development Report Card (DRC), the Corporation for Enterprise Development (CFED) gave the State of Ohio a "C" for "entrepreneurial energy; ranking it 34th among the other states in the country (Corporation for Enterprise Development, 2006). This ranking in large part was driven by new company starts and job creation by startup companies in Ohio. When compared against a sample of other metropolitan areas in the country, most of the metropolitan areas in Northeast Ohio rank in the bottom third for the number of small businesses employing less than 20 employees.

All of these factors led up to entrepreneurship program directors meeting three years ago to examine opportunities to collaborate. After two meetings, we realized that we could accomplish much more together than individually. As a result we formed a separate non-profit entity away from our schools called the Entrepreneurship Education Consortium (EEC). The EEC was incorporated

to assist in the development of student entrepreneurs who will remain in the region after graduation. These students will form either new enterprises or work for existing businesses, create new jobs for the labor force, and generate new economic activity for the region. The economic future of our region will be shaped by students like these. In essence the EEC is planting the seeds for the future of Northeast Ohio and the backbone of the economic climate for the U.S.

LITERATURE REVIEW

The importance of entrepreneurial activity to the economy is well founded, particularly in the areas of economic growth and job creation (Gibb, 1996; Reynolds, Camp, Bygrave, Autio, & Hay, 2001). Colleges and universities across the United States have been actively engaged in the study of entrepreneurship and the development of entrepreneurship curriculum in recent years (Vesper & Gartner, 1997; Klofsten, 2000; Solomon, Duffy, & Tarabishy, 2002; Katz, 2000; Henry, Hill, & Leitch, 2003; Steyaert, 2003).

The field of entrepreneurship has been one of the hottest areas of study in higher education at colleges and universities throughout the world. Several researchers (see Finkle & Deeds, 2001; Solomon et al., 2002; Katz, 2003; Finkle, 2005; Finkle, Kuratko, and Goldsby, 2006; Finkle, 2007; Solomon, 2007) have done research on various aspects of entrepreneurship education. Finkle & Deeds (2001), Finkle (2005), Finkle, (2007) examined the trends in the entire population of entrepreneurship positions and faculty in the world. Finkle, Kuratko, and Goldsby's (2006) research focused on the entire population (146) of U.S. centers of entrepreneurship. More recent evidence (see Finkle, Menzies, Goldsby, and Kuratko, 2008) shows that the number of U.S. Centers for entrepreneurship has grown from 146 in 2004 to 208 in 2008, a 36% increase.

Compared to many other disciplines, the discipline of entrepreneurship is in its infancy, with no standard framework or agreed upon best practices for entrepreneurial education (Solomon, 2007; Brockhaus, Hills, Klandt, & Welsch, 2001; Fiet, 2001a; Fiet, 2001b).

There is even some debate among scholars as to the wisdom of teaching students to become entrepreneurs in light of current teaching pedagogy (Adcroft, Willis, & Dhaliwal, 2004; Fiet, 2001; Sexton & Upton, 1987; Hynes, 1996). However, there is sufficient empirical data to conclude that students can be taught entrepreneurial competencies (Katz, 2003; Meyer, 2001; Gorman, Hanlon, & King, 1997; Anselm, 1997). Kuratko (2003) concludes that: "the question of whether entrepreneurship can be taught is obsolete".

Scholars have written much on what should be taught in entrepreneurial education. A review of the literature shows that entrepreneurial education should include skill-building courses in negotiations, leadership, new product development, creativity and innovation (McMullan & Long, 1987; Vesper & McMullen, 1988).

Opportunity identification has also been identified as a critical entrepreneurial skill that should be included in entrepreneurship curriculum. (Shane & Venkataraman, 2000; Long &

McMullan, 1984; Hills, Lumpkin, & Singh, 1997; Hindle, 2004). Educating students on entrepreneurship and how to become more entrepreneurial are also significant components of entrepreneurial education (Rae, 2000). Understanding the role of networks, clients, and other stakeholders has been identified as important entrepreneurial concepts (Gibb, 1993; Taylor & Thorpe, 2004).

Many entrepreneurship courses and curriculum are designed to encourage and stimulate new business start-ups (Vesper & Gartner, 1997; Leitch & Harrison, 1999; Peterman & Kennedy, 2003). Some of the more common teaching methods for teaching entrepreneurship courses in recent years include the creation of business plans, class discussions, case studies, feasibility studies, and guest lecturers (Solomon, 2007).

Gibb (2002) and Sogunro (2004) have found that traditional teaching methods such as lectures are less effective in teaching entrepreneurial principles. Learning by doing seems to be the new theme in entrepreneurship education (Gorman, 1997; Fiet, 2000a; Fiet, 2000b). Venkataraman (2004) argues that risk capital combined with commercial ideas, results in a few successful entrepreneurs who become role models for their peers. It is important to "hunt for" these entrepreneurs as they are driving forces in the market economy--the engine in the market economy (Steyaert & Katz, 2004: 187).

ENTREPRENEURSHIP EDUCATION CONSORTIUM

The Entrepreneurship Education Consortium (EEC) is a self-funded non-profit 501 (c) (3) entity that was incorporated by representatives of entrepreneurship programs at seven universities and colleges in Northeast Ohio (Ashland University, Baldwin-Wallace College, Case Western Reserve University, Cleveland State University, John Carroll University, Kent State University, and The University of Akron). Exhibit 1 shows the founding Board of Directors of the EEC.

The EEC was founded to promote both the concept and the reality of entrepreneurship among college students of all disciplines. Beyond imparting the necessary classroom fundamentals, it encourages student exploration of new business concepts. Where feasible, the EEC facilitates the entrepreneurial process up to the interface for project funding which leads to actual startup of new enterprises.

The EEC educates top students at our respective institutions who are most likely to become entrepreneurs and remain in the region after graduation. These students learn about entrepreneurship and choose to either create new enterprises, which will create new jobs and generate wealth for the region or become entrepreneurs within existing organizations. The economic future of our region will be shaped by the students we educate.

Exhibit 1: Founding Board of Directors of the Entrepreneurship Education Consortium
Phil Bessler, Baldwin Wallace College
Stephen Cook, The University of Akron
Scott Fine, Case Western Reserve University
Dr. Todd A. Finkle, The University of Akron
Dan Fox, Ashland University
Mark Hauserman, John Carroll University
Lee McMannis, Kent State University
Julie Messing, Kent State University
Jack Reece, Cleveland State University
Dr. John C. Soper, John Carroll University
Robert Stimpert, Ashland University

As the EEC began to develop its collaborative programs for the Northeast Ohio region, it sought programs that leveraged the strengths of each individual center while providing benefits to the unique culture of the entire region. An infusion of young entrepreneurs with new knowledge, skills and attitudes about entrepreneurial opportunities in Northeast Ohio will provide direct benefit to the region. With this as a guideline, the EEC began to establish its programs.

Exhibit 2: Objectives of the Entrepreneurship Education Consortium	
1.	Teach skills related to entrepreneurship education to students so they can learn how to think and act like entrepreneurs (including);
	Creativity, Innovation, and Idea Generation;
	Opportunity Seeking Behavior;
	Marketing Plan;
	Entrepreneurial Finance;
	Operations Management;
	Legal Issues & Intellectual Property Management;
	Ethics & Social Responsibility;
	New Product Development;
	Feasibility Analysis;
	Business Planning;
	Oral & Written Presentation Skills;
	Technology Licensure and Commercialization;
	Interdisciplinary Team Management & Teamwork skills.

Exhibit 2: Objectives of the Entrepreneurship Education Consortium	
2.	Create an innovative and collaborative model to teach entrepreneurship education that can be transferred to other regions throughout the world;
3.	Build an expanding network of young people interested in entrepreneurship in Northeast Ohio (NEO);
4.	Cultivate and encourage university students in NEO to create businesses and ideas in the NEO region, resulting in NEO job creation and wealth after student graduation. Teach the students to realize that they can make a difference in NEO by starting their own business;
5.	Build collaborative team experiences through group assignments and competitions;
6.	Build entrepreneurial competitiveness and an entrepreneurial passion within the student so they take this passion back to their respective universities;
7.	Inform the students of opportunities in NEO, bring down the barriers, and give them the ability to control the process and the knowledge needed;
8.	Attract investors to provide funding assistance for the entrepreneurial students to promote and build ideas;
9.	Assist the schools and the region in the development of opportunities, new ventures, jobs, and wealth;
10.	Integrate with business and government to further advance our communities;
11.	Increase the awareness of all schools and community stakeholders of the importance of entrepreneurship;
12.	Increase the regional and national visibility and success of the EEC and Northeast Ohio.

The primary objective of the Entrepreneurship Education Consortium is to assist students in the development of an in-depth understanding and knowledge of skills related to entrepreneurship so they can learn how to think and act like entrepreneurs. A complete list of the objectives of the EEC can be found in Exhibit 2.

INITIATIVES OF THE EEC

To accomplish its objectives, the EEC has developed and implemented two major initiatives: 1) An annual Entrepreneurship Immersion Week for undergraduates during the summer (see http://www.eecneohio.com/acorn.php?page=immersion_week); 2) A regional Business Idea Competition called *LaunchTown* (see http://www.launchtown.org/_index.php?page=award)

Entrepreneurship Immersion Week

Each spring, the EEC selects 35 students (5 from each school in any discipline throughout their universities) to participate in an intensive week-long entrepreneurship academy over the summer. The process of selection is very competitive. Resumes, transcripts, essays, and interviews

are all done before final selections are made. Students must state that they intend to stay in the region after graduation.

During the program, the students learn about various aspects of creativity, innovation, and entrepreneurship by attending two sessions a day on topics such as idea generation, opportunity recognition, marketing, legal and intellectual property issues, operations and production, finances, ethics, etc. Students are taught by both academics and practitioners (e.g., entrepreneurs, financiers, etc.). A wide variety of successful entrepreneurs are brought in to discuss their success and failures.

The students live in a dormitory during the week-long experience and immerse themselves in topics and share information with each other. Each school forms a team and creates a new product or service that has not been previously presented at any other competition. At the end of the week, the teams present their idea and plan to a panel of judges for prize money. During the week, students develop life-long friendships through social activities which include attending a Cleveland Indians game, a visit to the Cleveland Federal Reserve Bank, and the Rock and Roll Hall of Fame.

To be eligible, students must be entering their junior or senior year in any major. We limit it to this age because we want students to come back to their respective universities and work together on their projects. To stimulate connectivity, the EEC has a reunion with the previous attendees.

The first Entrepreneurship Immersion Week (EIW) was conducted at Cleveland State University in August 2007. The second EIW was held at John Carroll University, August 10-15, 2008. The third EIW is scheduled for August 2009 at Kent State University.

LaunchTown

EEC entered into collaboration with *LaunchTown*, an informal group of entrepreneurs, angels, and academics, to stimulate entrepreneurial activity in the region through a business idea competition (see http://www.launchtown.org/_index.php). The competition's purpose is to generate new ideas that will eventually lead to the creation of new ventures, jobs, and wealth for the region. It is not a business-plan competition, as we wanted to attract non-business students from a wide variety of colleges and majors.

The institutions associated with the EEC each held their own local business idea competition at their respective university. The competition was open to any student from any major. The best business idea from among all of the "local" applicants was selected for presentation at the regional competition.

The final round of the competition drew people from all over the country including our keynote speaker, John Osher, a serial entrepreneur who has developed literally hundreds of consumer products, from energy saving devices to baby products, toys and candy, and household appliances. He was most popularly known as the entrepreneur who brought the "five dollar electric toothbrush" to the world. Launched as the SpinBrush, in only fifteen months, it became the top

selling toothbrush in the U.S. He started Dr. John's toothbrush company in 1999 and sold the venture to Procter and Gamble only two years later for $460 million.

PREVIOUS MODELS

As the EEC explored existing literature and best practices of other regional programs, little research and few programs existed on programs of this type. There is a regional program in St. Louis where the St. Louis Region Entrepreneurship Educators (STLREE) was formed to co-market the programs of 10 St. Louis area colleges and universities. The STLREE has a website (www.stlree.org) that provides links to each of its members programs and lists the services offered by each member program.

Texas is currently in the process of developing the "Texas Consortium of Entrepreneurship Centers" and its organizational meeting was held on May 22-23, 2008. The objectives of the proposed Texas Consortium of Entrepreneurship Centers will be to share ideas and best practices, leverage their existing programs, encourage collaborative initiatives, and increase the visibility of the contributions of their academic programs and outreach initiatives to innovation and entrepreneurship in Texas. (http://somweb.utdallas.edu/centers/innovation/iie-TCEC.php#list). This appears to be somewhat similar to the objectives and programs developed by the EEC.

STAKEHOLDERS

The students, faculty, universities, business, entrepreneurs, and the overall community in general have become much more aware of what we are doing and the benefits to a more entrepreneurial and innovative culture and climate in which we are producing.

Primary Stakeholders

Students.

The major stakeholder group is the students who have an interest in entrepreneurship. The engrained procedure of EEC recruiting is to seek interest across campus, to reach all disciplines. The EEC provides initiatives meant to satisfy both the concept and the reality of that interest and to provide those so inclined with classes and initiatives which guide them through the initiatives and with development guidance on their plans to introduce them to stakeholders who are capable of converting the interest into an actual business. This entails exposure to the interface with funding which would allow venture formation to happen.

EEC Student Alumni.

A community of those students and graduates who have completed the various initiatives are also stakeholders. They are connected by Web based facilities and annual EEC-sponsored social networking gatherings in Northeast Ohio. Their invaluable feedback not only helps guide future initiatives but provides by example, a source to recruit future students to our initiatives.

Educational Institutions.

The committed support of the seven independent colleges and universities, which have provided the Board members of the EEC, is essential to its existence. Although varying in degree of involvement in entrepreneurship education, each of the seven universities or colleges have active programs underway across the educational spectrum, from tenure track positions, endowed chairs, joint college of business/college of science certificate programs, to graduate courses in entrepreneurship. Awareness of the entrepreneurial options for students is provided in entry level courses. A significant part of the initial year funding for the EEC, as well as access to other supportive resources came about because of the diversion of resources from other individual academic interests at these institutions to a common good.

Entrepreneurial Community.

Successful entrepreneurs within Northeast Ohio have provided an irreplaceable resource in inspiration, education, and mentoring. They have also acted as constructive judges for the students involved in the various initiatives. Kuratko (2005) made this point by addressing the obstacles to quality of the student entrepreneurial education as a need "…to introduce them to people who might be able to facilitate their success…" in behaving entrepreneurially.

Secondary Stakeholders

Investment Community of Northeast Ohio.

Angel and venture capital investors, together with their ancillary accounting and legal staffs, are at the interface with the idea development represented by the student efforts and talents. There is a competition developed within this community for access to the students and ideas which must be moderated by the EEC and the educational institutions. Although not a problem experienced to date, there is potential tension between the educational process and the self interest (profit motive) of this class of stakeholder, over such issues as intellectual property rights and meaningful student assignments.

Innovative Large Firms.

A logical career for the trained entrepreneurial student is also found within the modern innovative corporation. The term 'corporate venturing' entered the lexicon of the large corporation representing the encouragement of innovation by alternative means. Corporate venturing is widespread and creates a need for exactly the type of graduate possessing the entrepreneurial mindset: One who wishes to innovate and grow a concept and wishes not to be bound by a rigid framework of rules.

The political/economic/civil community.

This really includes the region as a whole and includes government at all levels, citizens, and businesses of all size. This complex relationship and recent trends relevant to the EEC are described below.

Regional Stakeholders

The region as a stakeholder of the EEC includes the entire business, political and civil community dependent on a successful economy. The economic benefits of achieving a critical geographic mass of technology, higher educational institutions and a new entrepreneurial mindset are well established.

The Northeast Ohio region has been economically depressed since the migration of traditional steelmaking, automotive and other heavy industries to other states or offshore. A related consequence of this trend is the "Brain Drain" of promising graduates of local colleges who move to other parts of the country.

Ohio recently passed a state economic stimulus program which allocated $250 million dollars to subsidize industrial internship programs aimed at keeping college graduates in Ohio. This contributes to the critical mass by providing logical employment to the graduate trained in the entrepreneurial mindset.

Another subtle and unquantifiable benefit of the EEC is the strengthening of academia, business, social and civil communities. These sectors are interdependent and have a vested interest in the economic health of Northeast Ohio. To the extent that EEC initiatives bring the interests of these sectors together, it strengthens the strands.

Thus, the effectiveness of the EEC performance is governed by two factors – the internal abilities and resources of the Board itself and externally by its relations with a wide spectrum of organizations and groups – the Stakeholders.

FUNDING

The EEC was initially funded by $6,000 in contributions from each member's entrepreneurship center. After the formation of the entity and creation of a strategic plan, the EEC approached the Burton D. Morgan Foundation with a proposal for funding our Entrepreneurship Immersion Week. They made a commitment for three years of funding to the EEC.

The EEC has also received funding from individual and corporate sponsors. We have a designated board member who is in charge of fund-raising. The Northeast Ohio business and government communities have been very supportive by providing substantial support financially and through mentoring and the provision of significant business resources and services.

METHODOLOGY

Sample and Procedures

To test the effectiveness of our Entrepreneurship Immersion Week 2008, we developed a 35 question survey (see Exhibit 3) for all 35 students that participated in the event. The survey instrument was pre tested with all Board members of the Entrepreneurship Education Consortium. Appropriate changes were made based on feedback from the Board.

Exhibit 3: Survey Instrument
SURVEY OF ENTREPRENEURSHIP EDUCATION CONSORTIUM'S ENTREPRENEURSHIP IMMERSION WEEK ASSESSING THE ENTREPRENEURSHIP EDUCATION CONSORTIUM'S SUMMER IMMERSION WEEK
The purpose of this survey is to measure the student's aptitude for entrepreneurship. From this information, we will develop a data bank to determine the impact of our program on your future ability to become an entrepreneur.
NOTE: All of your responses are strictly anonymous. Individual responses will not be seen by anyone within your organization, other schools, or entities. We will strictly prohibit the access of this data by unauthorized individuals or organizations.
1. Define Entrepreneurship
2. Do you currently own a business or have you owned one in the last three years? Yes ___ No ___
3. If so, what type(s) of business(es) and for how many years did you operate each business?

Exhibit 3: Survey Instrument	
4.	Do you want to start your own business before you graduate from College? Yes ___ No ___
5.	Do you want to start your own business after graduating from College? Yes ___ No ___ N/A ___
6.	If you want to start your own business after graduating from College, within how many years do you plan on starting it (in years)? _____
7.	Do you want to work for a small business (less than 500 employees) after graduating from College? Yes __ No __ N/A __
8.	Do you want to work for a major corporation (500+ employees) after graduating from College? Yes ___ No ___ N/A ___
9.	Do you want to go work for your family business after graduating from College? Yes ___ No ___ N/A ___
10.	Do you want to go work for a non-profit organization after graduating from College? Yes ___ No ___ N/A ___
11.	Why did you decide to participate in this event?
12.	What are your professional goals (be specific)?
13.	Do you plan on staying and working in Northeast Ohio after graduating from college? Yes ____ No ____ N/A ___
14.	Define a business plan.
15.	On a scale between 1 (lowest) through 7 (highest) how much do you know about business plans? _____
16.	Define idea generation & opportunity recognition.
17.	On a scale between 1 (lowest) through 7 (highest) how much do you know about idea generation & opportunity recognition? _____
18.	Define a marketing plan.
19.	On a scale between 1 (lowest) through 7 (highest) how much do you know about the marketing plan? _____
20.	Define an operations plan.

Exhibit 3: Survey Instrument	
21.	On a scale between 1 (lowest) through 7 (highest) how much do you know about an operations plan? _____
22.	Define a financial plan.
23.	On a scale between 1 (lowest) through 7 (highest) how much do you know about a financial plan? _____
24.	Define ethics.
25.	On a scale between 1 (lowest) through 7 (highest) how much do you know about ethics? _____
26.	Define Legal Issues.
27.	On a scale between 1 (lowest) through 7 (highest) how much do you know about legal issues? _____
28.	Define staffing and management issues.
29.	On a scale between 1 (lowest) through 7 (highest) how much do you know about staffing and management issues? _____
30.	On a scale between 1 (lowest) through 7 (highest) how much do you know about making presentations of business plans to investors? _____
31.	What is your academic year? Jr. __ Sr. __
32.	What is your Major(s) &/or Minors?
33.	What is your age? ____
34	What is your race? Caucasian ____ African American ____ Hispanic ____ Native Indian ____ Indian ____ Asian American ____ Other ____
35.	Male or Female (Circle One)
	Thank you very much for your cooperation

The test took approximately 15 minutes for the students to fill out. The pre test survey was sent to all of the students through e-mail approximately three days before the beginning of the Entrepreneurship Immersion Week. The same survey was used as a post test to determine the

effectiveness of the week-long immersion week. We received 33 useable responses for a response rate of 94%.

Data was broken down into three exhibits: (1) Demographics and characteristics of the students, (2) Majors of the students, and (3) Measures of students' learning, which was measured through the means of the pre test and post test answers on each topic that was taught (e.g., Business Plans, Idea Generation, Marketing Plan, Operations Plan, Financial Plan, Staffing Issues, Legal Issues, and Business Plan Presentations). T-tests were used to compare the pre test and post test means. Means were developed for each topic on a Likert scale with 1 (lowest knowledge) to 7 (highest knowledge).

RESULTS/DISCUSSION

Background and Demographics of Students

Exhibit 4 shows that the average student's age in the sample was 22.2 with one student's age at 47 years old. Seventy-three percent of the students were male. Thirty students were Caucasian, 2 were African American and 1 was Hispanic.

Exhibit 4: Background & Demographics of Student Participants (N=33)

	Students
Age	22.2
Sex (Male)	73%
Race	
Caucasian	30
African American	2
Hispanic	1
Educational Background	
Senior	22
Junior	8
Sophomore	3
Own a Business	8
# Years as an Entrepreneur	29.5

Twenty-two of the students were seniors, 8 were juniors and 3 were sophomores. Eight students already owned a business within the past three years. The overall sample had 29.5 years of experience as an entrepreneur, with two students having 7 years of experience each.

Majors of Students

Exhibit 5 shows the majors of the students in the program. This exhibit displays a wide variety of majors for students enrolled in EIW 2008.

Exhibit 5: Major(s) of Students (N=33)		
Majors	Students	Percent
Accounting	4	12.12%
Marketing	4	12.12%
Management	3	9.10%
Finance	2	6.06%
Accounting and Chemistry	1	3.03%
Accounting and Finance	1	3.03%
Biomedical Engineering	1	3.03%
Business Administration	1	3.03%
Communications	1	3.03%
Dance	1	3.03%
E-Business Technology	1	3.03%
Early Childhood Education	1	3.03%
Economics and International Business	1	3.03%
Economics and Philosophy	1	3.03%
English	1	3.03%
Fashion Merchandising	1	3.03%
Finance and Fashion Design	1	3.03%
Finance and Marketing	1	3.03%
Marketing Economics	1	3.03%
Marketing and Entrepreneurship	1	3.03%
Marketing and Sales Management	1	3.03%
Marketing Research	1	3.03%
Political Science and Spanish	1	3.03%

Exhibit 5: Major(s) of Students (N=33)		
Majors	Students	Percent
Undecided	1	3.03%
Total	33	100%

This variety of majors including Communications, Dance, English, Early Childhood Education, Fashion Merchandising, Political Science and Spanish meant that the varied backgrounds of the students led to a dynamic exchange of ideas.

Student Evaluation of Program

To measure the effectiveness of the program, Exhibit 6 shows the results of the Pre- and Post-Test Surveys.

Exhibit 6: Student Pre and Post Test Responses to Survey Questions (N=33)			
	Pre Test Mean	**Post Test Mean**	**P-Values**
Business Plan	3.76	5.09	.000***
Idea Generation and Opportunity Recognition	3.12	5.15	.000***
Marketing Plan	3.96	5.18	.000***
Financial Plan	3.10	4.97	.000***
Operational Plan	3.47	4.47	
Ethics	5.19	5.82	.001**
Legal Issues	3.30	4.76	.000***
Staffing and Management Issues	3.47	4.64	.000***
Business Plan Presentations	3.32	5.64	.000***
Grand Mean	3.63	5.08	.000***

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

A separate column was made for pretest and another for posttest. T-Tests were the run on the differences between the two means. The results show that there were significant differences at the $p < .000$ level for every program except for one, Ethics. The mean for the students on Ethics coming into the program was the highest at 5.19. After the program was over, the Ethics mean was 5.82 or a significant difference at the $p < .00$ level.

DISCUSSION

The Entrepreneurship Education Consortium (EEC) is an innovative, collaborative, regional entity that was created to educate students about entrepreneurship. Through a collaboration of representatives from entrepreneurship programs at seven universities and colleges in Northeast Ohio, the EEC is determined to make a significant impact on the region and serve as a model for other regions in the world.

The EEC is unique in the sense that it has an inter-disciplinary student body (students from all disciplines business, engineering, science, etc.); inter-disciplinary faculty (with professional experience as academicians, practitioners, and entrepreneurs); has university and community support; and has the inclusion and integration of local business community mentors and individual entrepreneurs for services and resources to students.

What makes the EEC especially unique is that it was created as a non-profit identity outside of the universities and colleges it represents. As a result, the faculty were able to do things that they might be restricted from doing at their respective schools. For example, at several of the schools, we were restricted from approaching certain foundations, corporations, or individuals. While university President's may talk up entrepreneurship, in reality, the authors have found that entrepreneurship programs are excellent ways to raise capital for their universities, but not necessarily for the entrepreneurship programs themselves.

The members of the EEC realized that these hurdles could be overcome. For example, the Burton D. Morgan Foundation only gives grants to private schools. As a result, three of the schools in the consortium were not able to receive funds from them. However, as a separate non-profit entity outside of the schools, the EEC has been able to approach the Morgan Foundation for grant funding.

Assessment and Recognition

Our first few initiatives have been very successful. This past year we had *LaunchTown* and our second year of the Entrepreneurship Immersion Week. Both events were very successful. The empirical evidence in this article strongly supports the notion that Entrepreneurship Immersion Week was a success. The students learned significantly more information on every topic that was taught to them (see Exhibit 6). We envision ourselves continuing to innovate, educate, and grow.

Exhibit 7 shows the various forms of media attention that the EEC has received since its inception. The EEC has already appeared in 17 articles.

Exhibit 7: Recognition in the Media
The Plain Dealer. August 16, 2008. Section C, pages C1, C3. Entrepreneurship Immersion Program teaches students how to start a company. http://www.ohio.com/business/27045354.html
The Plain Dealer. August 15, 2008. Taking a company from concept to reality. http://blog.cleveland.com/business/2008/08/thomas_ondreythe_plain_dealerc.html
Akron Beacon Journal, August 16, 2008, pages D1, D7, Students immersed in business. http://www.ohio.com/business
Akron Beacon Journal, August 15, 2008, Detail of Student Business Plans. http://www.ohio.com/business/27031109.html
Crain's Cleveland Business, April 21, 2008. Hey, It's a start. http://www.crainscleveland.com/apps/pbcs.dll/article?AID=/20080421/SUB1/885288601
Akron Beacon Journal, April, 10, 2008, pages D1. UA wins entrepreneur competition with drug delivery idea.http://www.ohio.com/news/break_news/17390824.html
The Plain Dealer, February 9, 2008, pages C1, C3, Online idea could speed food to restaurants. http://www.cleveland.com/plaindealer/stories/index.ssf?/base/living-1/1202549603323080.xml&coll=2#continue
Akron Beacon Journal, January 27, 2008, pages D1, D4, Many overrate startups' worth. http://www.ohio.com/business/14462557.html?page=2&c=y
Inside Business, January, 2008, pages 43-44. Creating a Land of Opportunity.
Akron Beacon Journal, October 6, 2007, pages D1, D8, College 'boot camp' takes steps to keep entrepreneurs in area. http://www.ohio.com/news/10282767.html
Inside Business, October, 2007, pages 33-35. Igniting Future Leaders.
The Plain Dealer. August 15, 2007. Section C, pages C1, C6. Students put Entrepreneurship to Work. http://www.cleveland.com/business/plaindealer/index.ssf?/base/business-3/1187168505257600.xml&coll=2
Akron Beacon Journal, August 12, 2007. Section D, pages D1, D4. Entrepreneurs-to-Be Boot Camp. http://www.ohio.com/business/9109356.html
Crain's Cleveland Business, August 6, 2007. Immersing Students in the Ways of Business. http://www.crainscleveland.com/apps/pbcs.dll/article?AID=/20070806/SUB1/70803019&template=printart
Vindy.com. August 4, 2007. 7 Ohio Institutions Fostering Regional Entrepreneurs.http://www.vindy.com/content/education/321544403578574.php
Akron Beacon Journal, April 3, 2007. Section D, pages 2. Honored to Speak at UA.
Crain's Cleveland Business, June 19, 2006. On Their Own: NE Ohio Schools Prepare Students to Pursue Entrepreneurial Paths.

Seven teams of five students from each university were taught at Entrepreneurship Immersion Week 2007 and 2008. One of the seven teams, the winner from Case Western Reserve University in 2007, has already created a venture called Fresh Fork Market http://www.eecneohio.com/acorn.php?page=success_stories. They have already raised over $250,000 for their venture and it was recently valued at over $600,000.

Exhibit 8 shows the student feedback that we received from Entrepreneurship Immersion Week.

Exhibit 8: Student Feedback, EIW 2007
I gained so much information. I learned more in this one week than I have in the past three years of school. But this year was really about application. They gave us an opportunity to really apply what we learned. I have a business idea and know I have a sense of where I can go from here.
I want the EEC to know that I was so impressed that there was a filming, that there was an evaluator, that the press was there, the quality of the guest lecturers and the judges. It was very professional **and** flowed very nicely for a first year program.
It was an incredible experience…I am still so excited about it. Coming into the group, I was the only non business student. I am in Physical Therapy. I learned a lot. I am so glad that I did it... and am even now contemplating becoming a business owner.
I was so sad to leave on Friday…as physically tired I was. I could have stayed for 2 weeks. This is the first time that they are offering this program….it exceeded my expectations immensely.
I would recommend this program to anyone….even people who didn't know that they COULD be entrepreneurs….this program is so special.
I learned that I could start a business. A part of me is afraid to start a successful business... I've been interested in humanities. However, you don't have to have some amazing idea. It was empowering to work with people and learn that it is possible... it was empowering... it's not as hard or daunting... It is doable! To learn that in an experiential way is great!
I just think that the whole opportunity is amazing. Not many kids our age think about coming up with a business... I am so grateful for this. It is a great experience.
I got so much out of the guest entrepreneur lectures. That sort of opportunity doesn't come up very often.
I didn't know what to expect from the Immersion Week, but I couldn't have asked for anything better. I left the program full of ideas and enthusiasm and with an astounding network.
Winning the competition was great, but even better was the opportunity to leave the week with an excited team and a business concept we actually planned on following through with.
Coming into this group, I was the only non-business major, so I was a little intimidated at first. I learned so much during the week and now am even contemplating a business minor of some kind. Our group was outstanding and I am so thankful for having the opportunity like this. The EEC is just an awesome experience.
Not coming from an entrepreneurship background, I felt this program allowed us to get an inside look from experienced professionals. I felt there was a good mix of students from various backgrounds. The guest entrepreneurs were very valuable as well. I came away with a better understanding of my own entrepreneurial spirit. The EEC did a great job organizing and running this event.

Our collaboration with *LaunchTown* created several local university-sponsored business idea competitions, which was followed by a major regional event called *LaunchTown* 2008. Six universities competed at this event, which was sponsored by 34 organizations. PureBalance

Polymeric Solutions, LLC, a business idea from a team of graduate students at the University of Akron, came in first place. PureBalance Polymeric Solutions is an exciting medical high-tech venture that will utilize "innovative polymer technology" to develop a variety of products for multi-billion dollar markets including healthcare, veterinary medicine, and cosmetics. The company is developing efficient therapeutic delivery systems using novel patented polymers to solve everyday healthcare needs. PureBalance's innovative drug delivery systems will provide highly efficient and cost-effective treatment methods for alleviating a variety of medical conditions to a highly diverse end consumer base.

The "Export" Model

We think that the EEC model is a good one for other potential regional groupings of entrepreneurship centers. In fact, we argue that it is likely to be a superior model for the following reasons.

First, we have maintained a fairly narrow focus geographically. The EEC is focused on Northeast Ohio, meaning the Greater Cleveland-Akron-Canton metropolitan statistical area. It was our feeling that a state-wide focus would be too broad, making it difficult to maintain direct contact and to meet frequently. The EEC meets monthly, and more frequently in the two months leading up to our major events, Entrepreneurship Immersion Week and the *LaunchTown* competition.

Second, we decided to focus our membership on 4-year colleges and universities in the region, having viable entrepreneurship centers. We intentionally excluded community colleges and high schools in order to maintain our focus. Although some argue that "everyone is doing entrepreneurship," it does not seem plausible for the consortium to try to be "all things to all people."

Third, we decided at the outset that the consortium needed to have a programmatic focus: the EEC had to develop joint programs that we could do better together than we could do individually. Both Entrepreneurship Immersion Week and *LaunchTown* have this characteristic. This is partially due to the existence of economies of scale in these programs.

Lessons Learned

In the process of starting a regional collaborative such as the EEC, we believe that we have learned some important lessons that other groups might want to bear in mind. They are as follows:

- Keep your focus! Try to keep on track with your objectives and avoid distractions from other sources. Maintaining your focus is important to the success of the collaboration.

- Make sure that everyone "has skin in the game." Each member of the group needs to be ready to contribute both cash when needed and sweat equity all the time. If a center cannot come up with the needed resources, how will this square with what the other centers are contributing?
- Make sure all of the members "like each other." On one level, we are all competitors (for student enrollees, for outside support, and for media attention), but on another level, we can cooperate to produce regional outcomes with more significant impact on entrepreneurship education. Make certain that the group members can concentrate on the cooperative side rather than on the competitive side.
- Keep your dean informed, but do not ask permission! We have all found that our respective deans see the value of our consortium and tend to support and encourage the individual center directors. On the other hand, make certain there are "no surprises." The deans need to know what's coming.
- Hire competent outside help when necessary. The EEC had an attorney as a Board member, who was able to execute the incorporation of the EEC. Later, we hired an attorney/accountant to prepare our Form 1023, the multi-page document needed to apply for Section 501(c) (3) status under the Internal Revenue Code. We also hired a web professional to design and maintain our website. We also used the services of a business insurance broker to purchase liability coverage for the organization. The point of all this is that "do it yourself" activities may prove to be very costly because we are entrepreneurship educators, not attorneys, accountants, etc. who specialize in particular business services.

CONCLUSION

We believe that the Entrepreneurship Education Consortium presents a viable model for fruitful inter-university collaboration and cooperation in entrepreneurship programming. The evidence thus far indicates that we have been highly successful after only two years of operation. We suggest that our model may be very useful to other regional groupings of entrepreneurship centers, as long as the geographical spread is not too great and the collaboration maintains its focus. We are now in the process of developing a third program initiative, which we shall undertake if our initial program design appears to be viable and foundation funding is forthcoming. We believe that other program ideas will emerge in the future because the consortium is a great organization to generate and vet program ideas. Certainly our student participants see the EEC and its programs as very useful and highly beneficial to them. We think the region will also reap the benefit of our efforts in the longer run.

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NEW VENTURE ASSESSMENT: MOVING BEYOND BUSINESS PLANS IN INTRODUCTORY ENTREPRENEURSHIP COURSES

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ABSTRACT

While the business plan is a typical feature of the introductory entrepreneurship or small business course (Katz, 2007), this paper proposes that other methods are available and at times are more appropriate for assessing new venture viability. Recognizing the lack of published research in the entrepreneurship literature related to the new venture assessment tools available, the authors propose a six-dimension framework to discuss four business assessment approaches (breakeven analysis, going concern analysis, feasibility study and business plan) and the resultant reports or documents produced. The proposed framework recommends approaches most appropriate for the assessment under consideration. The article concludes with a discussion of these assessment approaches as they pertain to the typical entry-level university courses in entrepreneurship and small business.

INTRODUCTION

In nearly any course in entrepreneurship, the business plan is the typical end-product. Students are expected to conduct a detailed analysis of market characteristics, anticipated market share estimates, per unit costs, operating details down to employees and rates per hour, utilities, etc, all displayed in impressive, detailed Excel spreadsheets of monthly, quarterly and annual financial pro forma statements. It is a formidable task and one in which students learn a great deal. Katz (2007) refers to this phenomenon as the 'ubiquitous business plan'. However, not everyone has been happy with this emphasis, with some arguing it is misplaced (Timmons & Spinelli, 2007) and others arguing that the content emphasis in most business plans is on the wrong things (Sahlman, 1997).

In this paper, we argue that a full business plan is not necessary to fulfill the typical objectives in introductory entrepreneurship courses and that it actually may mislead students by communicating that there is only one best way to assess new ventures. We propose that a new venture assessment process will typically involve a series of increasingly complex decisions (and

processes) as to venture viability, not simply the all-or-nothing evaluation implied in the business plan.

The proposed process would involve a series of steps starting with a breakeven analysis and end with either a feasibility study or a full business plan depending on the course objectives. After demonstrating the current importance of business planning in entrepreneurship and reviewing the limited literature related to this discussion, the paper outlines six key dimensions to be used when talking about any business assessment process and the resultant report or document produced. Next, these dimensions are used to suggest which of the four assessment methods (breakeven analysis, going concern analysis, and feasibility study or business plan) is most appropriate for the evaluation being considered. Finally, several issues are discussed as they pertain to teaching entrepreneurship, particularly as they relate to new venture viability assessment required in most entrepreneurship courses.

BACKGROUND

In the last decade, more jobs have been created from new ventures than have been lost in the national economy, resulting in increased interest in and demand for entrepreneurship training (Moutray, 2007). With the increasing growth of small business or entrepreneurship course offerings in the United States and globally, the traditional business plan has become a distinctive feature of these types of courses (Katz, 2007). This emphasis on business plans is further evidenced by the presence of dozens of competitive events, ranging from local to international business plan competitions (Small Business Notes, 2008). These competitions attract large corporate sponsors and direct support from a variety of entrepreneurs and small businesses. Awards in these competitions annually run into millions of dollars.

While this clear interest in entrepreneurship can be seen as positive, not everyone is convinced that the emphasis placed on the business plan as the sole educational framework is appropriate. Sahlman has noted that "plans pour far too much ink on the numbers—and far too little on the information that really matters" (Sahlman, 1997). While there may be criticism of the business plan as the end all in entrepreneurship courses, no one is suggesting that assessing new venture viability should be ignored or that the business plan is obsolete. It is a question of suitability to task.

A review of the literature on new venture viability assessment revealed little discussion of this process. While there are debates reflected in the literature as to the value of business planning in new business success (Bhide, 2000; Delmar & Shane, 2003), little was found that distinguished between levels of assessment or addressed the merits of different approaches to concept evaluation that could be used in the entrepreneurial process. Gruber (2007) has suggested that under certain conditions the entrepreneur should focus on different aspects of a plan, opening up the possibility at least for consideration of other tools for making decisions. Recently, some attempts have been

made by textbook authors to discuss new venture assessment as a two-phase process that includes a feasibility study and business plan (Barringer & Ireland, 2008; Katz & Green, 2007). A review of these texts reveals the difficulty of such discussions, as not only does each text differ as to what is included in a feasibility study versus a business plan, but also what defines each.

While our review found little direct discussion of interest in the business literature, there were some examples in agricultural economics (Hofstrand & Holz-Clause, 2006) and engineering-related areas (Eschenbach, 1992). The feasibility studies in the engineering areas were generally limited to capital expansions and projects within existing businesses. Here, too, the terminology used in the research was inconsistent across disciplines. We observed that what was labeled a feasibility study might be more appropriately labeled a business plan (Justis & Kreigsman, 1979; Hofstrand & Holz-Clause, 2006). Further, there appears to be a bias in the business literature in favor of business plans as the only or best way to investigate business concept viability.

Assessing new venture viability is a process involving a series of assessments, with each succeeding assessment being more complex, and hopefully more informative, than the previous. This paper argues that the most complex of these assessments is the business plan, which in its fullest form is more an executable operating plan than a study of venture feasibility. Finally, this paper concludes that undergraduate entrepreneurship students may be better served by introducing them to alternatives to the full business plan.

TYPE OF ASSESSMENT

Using a four-stage model of assessment, we can better characterize the process of evaluation as it progresses from very preliminary in nature to fully developed operating plans. As the purpose for the assessment changes, the implications are reflected in the other five dimensions of assessment. This model includes breakeven analysis, going concern, feasibility study, and the business plan. Each is discussed below.

Breakeven Analysis

Perhaps one of the more basic assessments of a business concept is the breakeven analysis where basic assumptions as to variable and fixed cost behavior is estimated, revealing rough estimates as to revenue streams necessary for the business to be viable. Typically, industry statistics from the same or similar industries are used to gain an estimate of cost behavior relative to a given range of revenue. Frequently, the current academic practice is to develop breakeven estimates after the full business plan is complete. Not only is this unnecessary, but it also diminishes the significance of the tool to provide preliminary information as to concept viability as the business plan has by this point fully detailed the performance expectations for the new venture.

Going Concern

Also referred to as a 'steady state' pro forma, this assessment fleshes out more of the operating details of the stabilized business. Hence, it is essentially focused on the P & L, as it will look when the business is functioning at some typical or 'normal' level. It will detail key revenue and expense categories and reflect a snapshot of this future business. How far into the future the snapshot is taken is not fixed and depends somewhat on the type of business, but would be expected to reflect the operating statement in the 18 – 24 month range after start up. It estimates the financial implications under a given set of assumptions as to market size, penetration success and the expenses estimated to support the level of business anticipated. It is a picture based on an 'if things go a certain way, will it work out' scenario.

Feasibility Study

This assessment dials up the scrutiny of the assumptions and implications using a combination of published data averages (such as RMA) and local market research. Market definition is further honed and characteristics of potential target groups are studied more carefully in order to derive optimistic, mid-range, and pessimistic revenue scenarios for the new venture. The emphasis then is heavily on business concept, products/services offered and the market it is to serve. The implications are reflected in three-year annual financial pro forma statements that would include the mid-range scenario of income statement, balance sheet and cash flows.

Business Plan

This reflects what we have characterized as the full-blown pre-launch operating plan for the business. It is the script for starting the business and the details are further refined and expectations as to performance are quite detailed. This plan would typically provide 5 – 7 year pro forma statements, with month-to-month income statement and cash flow details for at least the first 12 months of operations, with quarterly statements for year two.

With this background on assessment types, six dimensions are proposed that distinguish between these differing types of new venture assessment.

KEY DIMENSIONS OF NEW BUSINESS ASSESSMENT

When assessing the merits of a new business idea or variations of an existing one, the typical process results in a report that centers on the economic value of the idea or concept. The format of the report as to content and depth depends on initial criteria established for the assessment. Early-stage assessments (e.g. a breakeven analysis or going concern) would not be expected to be as

lengthy and detailed as would those later in the assessment process (e.g. a feasibility study with detailed financial projections and data). Further, a preliminary profit analysis would require much less information and detail than would a comprehensive evaluation of a proposal from product concept to financial forecasts. A full operating plan, here defined as a business plan, would call for even greater detail.

A more systematic approach to differentiating various levels of assessment follows. Six dimensions of new venture assessment are identified and discussed. Discussed in turn, the dimensions are purpose, focus, depth of analysis, length of assessment, speed, and cost. Table 1 below summarizes the application of these dimensions to the four assessment types outlined earlier.

Purpose

Often referred to as a 'first pass' at a business plan, the purpose of a feasibility study is to make a series of increasingly more careful and complex evaluations of a concept's viability, beginning with a basic cost-benefit analysis. Breakeven and going concern analyses would provide an early validation for this step. The focus in a feasibility study is on the product, customers, the industry, and the likelihood of successful entry by the new venture using the proposed model. A full-blown business plan (they vary in detail as well) is intended to not only confirm or disconfirm viability but to detail the intended marketing, operational and financial activities that are needed to make the business succeed in its specified market. That is, focus shifts more toward the operating plan details that will launch the business.

Focus

The focus of the breakeven and going concern analyses, as well as the feasibility study, is primarily on the business concept/business model, evaluating the likelihood and degree of success possible in the target market. This means that little attention will be put on operational details, assuming that these are resolvable through 'typical' methodology and related costs. An exception to this generalization might be when the operational details are truly unique, not typical, and likely a key motivation for the assessment to begin with. On the other hand, the business plan attends to the full gamut of issues associated with making a business operational and successful as a going concern in a specific context. As much detail as necessary to support decision-making is built into the business plan in order to meet management and investment decision requirements.

Depth of Analysis

Depth of analysis for the feasibility study is therefore selective and somewhat less detailed relative to the full business plan, particularly in operational and financial analysis. The feasibility

study concentrates on the "softer" but equally important business issues. In contrast, the business plan tends to incorporate more hard detail and covers the full range of functional areas and issues involved in a business start up.

Financial details in the breakeven and going concern analysis are somewhat basic. The feasibility study typically provides no more than three years of pro forma projections and relies heavily on industry averages for estimating these statements. They serve the primary purpose of demonstrating whether there are sufficient returns to investors under the conditions defined to make the venture minimally attractive.

The business plan most likely would include a minimum of five years pro forma statements, with monthly and quarterly details for early periods, and more care to 'localize' the statement details to the specific context in which the business will operate. For example, whereas a feasibility study might use Robert Morris Annual Statement Studies (RMA), Bizstats.com, or other industry average sources to estimate operating expenses, the business plan would seek to specify expected expenses based on localized research built on the differentiating characteristics of the proposed venture. Other expanded operating details would be included as well.

The breakeven or going concern analysis and the feasibility study formats make sensitivity analysis easier and allow the student to test key assumptions more directly and with less effort than with a business plan. Use of these less complex forms of analysis encourages students to consider a broader range of possibilities in their analyses. An example would be the 'first pass' determination of market penetration and regional scope requirements for viability of the venture. Can the business survive at the local level or must it rapidly expand to the regional, national, or global level?

Length of Assessment

As one might reasonably expect from the foregoing discussion, the length of the feasibility study is considerably shorter than the business plan. Whereas a feasibility study would typically range from 5 – 15 pages, excluding appendices, a business plan could easily exceed 25 pages. Balancing brevity and thoroughness of detail is a key success factor in a well-written business plan.

Speed

As to speed, breakeven and going concern analyses and feasibility studies are more quickly produced and thus tend to be the approach of choice when it comes to establishing initial merit of a business idea. It is possible that a more extensive study would be done as well, one with higher quality assumptions and knowledge of fundamentals – and requiring more time. A business plan logically would follow if these first series of 'tests' meet threshold expectations and the business or entrepreneur wishes to proceed to launch. Obviously, the business plan would require additional

time to accomplish, building on and refining the findings of the earlier feasibility study and fleshing out launch and operating details.

Cost

Cost is a key reason for initiating the assessment process with a feasibility study, coupled with the speed of getting an initial assessment of an idea. Typically, one might expect a feasibility study to cost one-third to one-half as much as a full business assessment, and even less than a full operating plan. In this instance, cost is not only measured in dollars of direct expenditures on the assessment, but would encompass the broader issue of opportunity costs associated with a non-timely response to an opportunity. Extensive evaluations that require months of in-depth analysis may not be appropriate or permissible under highly volatile and competitive environments.

As can be seen in Table 1 below, the relationship between the four assessment types is depicted on a continuum, where the purpose of the new business assessment is the primary determinant of the remaining five dimensions and drives the expectations of all involved in the process. As a continuum, a new venture assessment process would be expected to proceed through various phases along the "assessment continuum" until a full business plan is developed for the pre-launch business.

As a practical matter then, assessing viability would be expected to include a number of assessment methods short of a detailed business or operating plan. It is possible that a breakeven analysis, a very preliminary assessment of a new product or venture, could be done in as little as a single page, recognizing the limitations of such a study. Or the preliminary assessment could be done on a going concern basis with only a moderate increase in effort and cost. The primary advantage of such a short assessments is they are quick and provide a rough idea of the parameters for success. This approach is similar to the basic portfolio models used in strategic analysis, which serve as a screening devices for making initial assessments of business opportunities. Basic assessment methods serve a similar purpose in determining the viability of a new venture or business concept.

With such simpler and lower cost methods, new ventures could be evaluated in subsequent stages of the process with methods that are more complex only if they successfully pass through the previous stage. Wasted effort would be minimal as each subsequent phase builds on the previous one. Thus, a full-blown business plan would only be developed or considered once concept viability is reasonably established.

As can be seen from the table, as one moves from left to right on the assessment continuum, we are not only committing more time and resources to the evaluation process but also becoming more comfortable with the project uncertainties leading up to a possible launch. It may be best characterized as moving from a rough sketch to a fully fleshed-out photograph of what should ultimately happen when the project is fully executed.

The discussions here open up several opportunities for not only teaching an entrepreneurship course, but also the integration of entrepreneurship-related discussions across business school and university curriculum.

Table 1: Assessment Dimensions Relative to Assessment Continuum

	ASSESSMENT CONTINUUM			
STAGES	1	2	3	4
TYPE	Breakeven Analysis	Going Concern	Feasibility Study	Business Plan
PURPOSE	Screen and rank alternatives	Estimate 'steady state' pro forma	Estimate ramp up to steady state	Launch detail and funding plan
FOCUS	Testing basic assumptions of market potential for profits	Revising/extending basic assumptions into steady state pro forma	Specify market potential, estimate ramp up schedule and requirements	Launch and early stage operating plan
DEPTH of ANALYSIS	Published industry data or reasonable extrapolations	Published industry data or reasonable extrapolations	Industry data, with tests of key assumptions, and localizing certain data	Detailed with greater reliance on localizing assumptions and data.
LENGTH	1 page summary	1-2 page summary. Single-year pro forma	10 pages or less with executive summary, solid narrative on marketing, operations and financial areas, 3 year pro formas	25 + pages with executive summary, extensive narrative on marketing, operating and financials, 5 year pro formas and detail
SPEED	1 day or less	1-3 days or less	Typically under 30 days	Often > a month
COST	Few hundred dollars	Estimated under a $1,500	Estimated $1,500 to $5,000	Could readily exceed $10,000

Note: Cost estimates given are approximate for the type of assessment

IMPLICATIONS FOR ENTREPRENEURSHIP EDUCATION

Our discussions to this point have focused on defining the four general ways for assessing business viability, including the traditional business plan. We then compared each method using the six dimensions developed for our discussions. By applying more precision in our use of terminology, we not only more accurately represent the array of options available for business

viability assessment, but also are able to communicate to our students more clearly our intentions and expectations as to the result being sought.

This clarity is important for educators and not only for those teaching entrepreneurship or small business courses. As can be seen from Table 1, the opportunity exists to incorporate quite readily business concept viability learning activities into other courses. For example, the breakeven analysis (Stage 1) can be incorporated into an introductory accounting, finance or marketing course. More advanced decision science, marketing, and strategy courses could include breakeven, going concern and basic feasibility study activities (Stages 1-3, respectively). An additional benefit of this 'unpacking' of the new venture assessment process is that it allows a business school to more readily integrate these basic concepts throughout its curriculum.

The continuum also suggests another important opportunity for educators: there is more than one way to assess new venture viability and that each has its usefulness. As argued early on in this paper, the business-plan-only approach taken by most textbooks and course instructors misleads students into thinking there is only one way to responsibly assess business ideas. We suggest that this is not only incorrect, but that a business plan may be inappropriate, depending on the stage of assessment. The tool used should reflect the purpose of the assessment.

In addition to the more conceptual arguments made to this point as to the importance of the continuum presented, there are more practical reasons for rethinking our approaches to teaching introductory courses in entrepreneurship. While it appears that most academic programs that offer an introductory entrepreneurship course include a business plan as a central output of the course, the authors argue that a feasibility study, supported with a break even and/or going concern analysis is more appropriate for this level of course. The reasons for this view are several:

> *This course is typically the first course where students must integrate previous functional knowledge into a cohesive plan or discussion. This may require the instructor to review previously introduced content and how this content must come together for an assessment to be credible. Functional integration is central to this exercise and does not require a full business plan to accomplish this.*
>
> *The timeframes of a typical semester tend to be short. Therefore, the analyses tend to be less rigorous and more descriptive, consistent with an early-stage assessment.*
>
> *The assessment exercise seems best focused on the business concept and its market viability, areas a feasibility study would typically stress.*
>
> *As an introduction, a feasibility study confronts students with the logical sequencing of new project assessment: preliminary first, more in-depth later, should the earlier*

results be supportive. This is consistent with not only the continuum presented earlier, but also is the general approach taken in practice.

In many instances, undergraduates have not completed the basic finance course, bringing only fundamental accounting knowledge to the course. This limits the range of financial analysis possible. Since a course like this is often offered as early as the second year or early third, other content in operational areas such as human resource and operations management may not have not been introduced.

Students in this course typically have had little or no experience in assessing concept or project viability. Some of this can be intuitive, but to the extent an evaluation that is more definitive is expected, a feasibility study better engages more students who are able to meet such expectations.

CONCLUSIONS

This study makes two contributions to the entrepreneurship literature. First, it makes the case that new venture viability should be seen as a multi-phase process involving increasingly more complex methods that should result in more sophisticated information from which to evaluate the venture. Second, among the various methods discussed in the paper, the feasibility study was viewed as the more appropriate teaching tool for the typical introductory entrepreneurship or small business course. It was argued that the feasibility study required less time and student sophistication to conduct yet preserved the major tenets of the learning experience expected in such a course.

Six dimensions for comparison were proposed and four methods were compared using these dimensions. Each method was discussed in light of its role in the assessment process. A breakeven and/or going concern analysis and then a feasibility study seem most appropriate for a typical semester-based classroom experience.

Breakeven analysis and going concern assessments could also be more readily introduced into other courses as they are markedly less complex than either the feasibility study or business plan and could serve as part of a longitudinal learning experience for students. One could easily imagine a feasibility study serving as the basis for a marketing or strategic management capstone course, for example, while a breakeven or going concern analysis could be introduced in an introduction to business course. Applications to other fields could be made as well. While the same can be said for the more complex business plan approach, the feasibility study is significantly less costly and has the other advantages noted earlier.

Finally, using a broader range of assessment methods clearly demonstrates to students the existence and value of alternative tools for determining business or idea viability. Just as "rules of thumb" are employed in many situations that require a quick reply, so too other methods of viability

assessment need be presented to students, especially for evaluating business proposals. The menu of methods presented here offers such advantages and makes available alternatives to the traditional business plan analysis with its attendant detractions.

In sum, by using the assessment continuum,

> *Faculty teaching business courses could legitimately choose, depending on the scope of their course, to limit the business analysis to Stages 2 or 3 viability assessments and still accomplish the required student learning.*
>
> *Students would benefit by seeing a completed project in a more reasonable time frame with less economic burden.*
>
> *The completed non-business plan assessments depicted as Stages 1-3 in Table 1 could serve as the foundation for the development of an education-extending experience for students who might take additional courses that would further develop their original concepts into a business plan.*

Assessing new venture viability is central to launching concepts that succeed. Calling for a business plan for every such assessment is likened to using a hammer for every kind of maintenance problem around the house. It just isn't necessary and sometimes downright inappropriate.

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ENTREPRENEURIAL VERSUS ORGANIZATIONAL EMPLOYMENT PREFERENCES: A COMPARATIVE STUDY OF EUROPEAN AND AMERICAN RESPONDENTS

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ABSTRACT

This research study focuses on the application of the theory of planned behavior to predict choice of employment status by university business students. The study replicates two studies conducted with international (Norwegian) students which found support for the theory of planned behavior as applied to choice of employment status intention between entrepreneurial (self-employment) and organizational employment. This research study determined that the theory of planned behavior does predict employment status choice intention. The research also determined that self-employment intentions are directly influenced by pressure from social norms and from perceived behavior control, but not from attitude. Gender and self-employment experience were found not to influence actual employment choice. This study is necessary in order to determine whether entrepreneurship education increases the intention to start a business.

SUMMARY

In 2004, over 15 million small businesses were established in the United States. In 2006, the Harvard Business School reported 67 per cent of MBA's who participated in business plan competitions started a firm. In the early 1980s there were just 270 entrepreneurship courses offered in the United States. Today, entrepreneurial education includes more than 2,200 courses at more than 1,600 schools, 277 endowed faculty positions, 44 academic journals and nearly 150 research centers (Inc, 2006; SBA, 2005).

The growth in entrepreneurship education across the country presents constant challenges for faculty to stay innovative and forward-looking, while maintaining the rigors in the academic community. While scholars and researchers strive to theorize and hypothesize on emerging ventures, universities strive to meet the emerging talent of students interested in entrepreneurship. One third of new entrepreneurs is younger than age 30, more than 60 per cent of 18- to 29-year-olds say they want to own their own businesses, and nearly 80 per cent of would-be entrepreneurs in the U.S. are between the ages 18 and 34. (Tulgan, 1999).

Making a decision to pursue self-employment is a career choice. With the growth of entrepreneurship programs and the growing numbers of young people emerging as business owners, does their entrepreneurship education influence their choice to pursue self-employment over organizational employment? What factors influence their career choice intentions? The purpose of this article is to report on a study in an entrepreneurship program using the theory of Planned behavior (TPB) as a framework. This research study replicated a similar study by Kolvereid on Norwegian students and found that the perceived social pressure, as identified in the TPB model (1982), shows a strong influence on the intention of either entering self-employment or a salaried employee position. The study contributes to the theory of planned behavior.

INTRODUCTION

The number of definitions of entrepreneurship in the literature demonstrates the various perspectives on how universities across the country view this growing field, and ultimately how courses are taught, what topics are covered, and how students and programs are evaluated. According to the Small Business Administration, there are actually 12 different definitions of an entrepreneur which are listed in "The Report of the President" (SBA, 2005).

Peter Drucker, management guru, simplified, but articulated the essence of the field when he stated, "The entrepreneurial mystique? It's not magic, it's not mysterious, and it has nothing to do with the genes. It's a discipline. And like any discipline, it can be learned" (Kuratko, 2006). The dilemma in entrepreneurship pedagogy is not who is the entrepreneur but meeting the challenges of the future entrepreneurs while advancing as an academic discipline. The impact of entrepreneurship programs on attitudes and intentions toward entrepreneurship remains untested (Krueger and Brazeal, 1994; Souitaris, Zerbinati and Al-Laham, 2006; Peterman and Kennedy, 2003).

Krueger and Carsrud (1993) argue that entrepreneurial behavior such as starting a business is intentional and best predicted by intentions toward that precise behavior. They state that intentions are the motivating factors that influence behavior. This is in agreement with the Theory of Planned Behavior that states intentions are the immediate antecedents of actual behavior (Ajzen, 1991). A number of studies (Kolvereid, 1996; Krueger and Carsrud, 1993; and Shapero and Sokol, 1982) conclude that creating a venture is a planned and intentional behavior. Intention, therefore, is a better predictor of behavior than attitudes. According to the model, attitudes and beliefs predict intentions and, in turn, behavior (Ajzen and Fishbein, 1986).

Early research on personalities and character traits influenced the intention literature (Peterman and Kennedy, 2003). Models have been developed incorporating behavioral and situational behavior. Recently, models focusing on attitudes and their corresponding antecedents, such as gender, education and experience have been proposed. Two models stand out in prior research which offer similar perspectives on the entrepreneurial process and have been widely used in the intention literature: Shapero's Entrepreneurial Events (SEE) and the Theory of Planned

Behavior (TPB), as in Figure 1. In Shapero's model, the entrepreneurial event is preceded by an event that predisposes one toward action or intent to act (Shapero and Sokol, 1982). This event could be a job lay-off, for example. This model presumes that intention is a result of the desirability and feasibility of an entrepreneurial action. In the TPB model, the intention is preceded by an attitude and belief in one's capability and desirability, personal behavior or feasibility, and social pressure or normative beliefs. As this model addresses one's belief and attitude prior to any entrepreneurial event, this model allows for an assessment of an intervention, such as education.

As reflected in the psychology literature, intention has proven to be the best predictor of planned behavior (Souitaris et al, 2006), and in fact the intention variable has become part of a number of contemporary theories of human social behavior (Bandura, 1997; Ajzen and Fishbein, 2002). It is the convergence of these theories around considerations that influence the decision to engage in a given behavior that provides a theoretical framework on which entrepreneurship intentions can be studied.

However, the entrepreneurship intention literature has not resulted in an accumulation of knowledge. As stated by Shook, Priem and McGee: "Future work on entrepreneurial intentions should attempt to integrate and reduce the number of alternative intention models" (Shook, et al, 2003). Krueger and Carsrud (1993) first applied the TPB to the field of entrepreneurship (Fayolle, Gailly and Lassas-Clerc, 2006). The Krueger and Carsrud model, as depicted below, conceptualizes the development of beliefs and attitudes including possible and potential external triggers which could explain the shift from intention to behavior. "Researchers might use the TPB model to analyze how the process of doing a business plan or entrepreneurial education affects intentions" (Krueger and Carsrud, 1993).

The paper proceeds as follows: First, the authors present an explanation of the theory of planned behavior, followed by the review of the study by Kolvereid in which he found the theory to predict the intentions of Norwegian students toward entrepreneurial behavior. The hypotheses for this study are then developed to test the basic predictive nature of the theory on a control group and a group of entrepreneurship students. Then we present the methodology and the results followed by a discussion and future implication section.

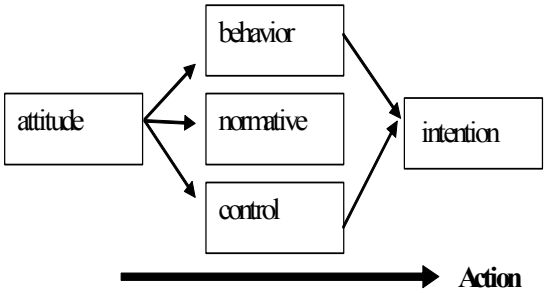
THEORY OF PLANNED BEHAVIOR (TPB)

The psychological theory of planned behavior postulates that planned behaviors (such as starting a business) are intentional and predicted by intention towards that behavior. Intention is best predicted by attitudes, as a function of beliefs, of which three are distinguishable:

- Behavior beliefs, or perceptions of personal value;
- Normative beliefs, or perceptions of society and others; and
- Control beliefs, or perceptions of personal feasibility.

Beliefs are formed by associated attitudes. In turn, each belief links behavior to a certain outcome or other such attribute. Since the attribute already holds a certain value, positive or negative, we simultaneously acquire an attitude toward that behavior. This relationship is depicted in Figure 1.

Figure 1: Theory of Planned Behavior



As Doll and Ajzen state: "We learn to favorably evaluate behaviors we believe have largely desirable consequences and we form unfavorable attitudes toward behaviors we associate with mostly undesirable consequences" (Doll and Ajzen, 1992). Table 1 shows Ajzen's three beliefs and their corresponding attitudes.

Table 1: Theory of Planned Behavior and Corresponding Attitude	
Beliefs	Corresponding Attitude
Behavior (Perceptions of personal value and outcome)	Favorable or unfavorable
Normative Beliefs (Perceptions of society and others)	Perform or not perform
Control Beliefs (Personal behavior feasibility)	Ease or difficult

According to the theory, the most important determinant of a person's behavior is behavior intent. If a person perceives that the outcome from performing a behavior is positive, he/she will have a positive attitude toward performing that behavior. Ajzen states, "To the extent that people are realistic in their judgments of a behavior's difficulty, a measure of perceived behavioral control can serve as a proxy for actual control and contribute to the prediction of the behavior in question" (2002). A high level of perceived control serves to reinforce increased effort and perseverance to perform the behavior.

In applying the TPB, the theory states that the antecedent of entrepreneurial behavior is the intention to become an entrepreneur or entrepreneurial (Hytti and Kuopusjärvi 2004). This intention

is, in turn, predicted by the extent to which a person has a positive or negative evaluation of entrepreneurial behavior (that is attitude), the perception of social pressure to behave entrepreneurially, and the person's confidence in his/her ability to perform various entrepreneurial activities (perceived behavior control). Confidence is directly connected with perceived behavioral control and, according to Ajzen (1991), if one believes there exists obstacles or requisite resources are lacking, a low level of perceived behavior control exists.

COMPARATIVE INTERNATIONAL RESEARCH

Kolvereid (1996) conducted a study of Norwegian university students on their vocational choice between self-employment and employment in an organization. In using the TPB, he predicted that the more favorable the attitude and subjective norm with respect to becoming self-employed, and the greater the perceived behavioral control, the stronger the individual's intention to become self-employed (Kolverid, 1996). Additionally, he predicted that gender only indirectly influences intentions to become self-employed. This study was replicated with Russian students (Tkashev & Kolvereid, 1999) and results showed that perceived behavioral control was the strongest predictor of behavior, followed by subjective norm and attitude. Prior to the present research, these international studies have not been replicated using American participants, though TPB has been used in numerous studies on entrepreneurial intent, as mentioned earlier.

Kolvereid (1996) developed a classification scheme of reasons for preferring self-employment versus organizational employment. He identified reasons individuals have for their employment choice and developed a comprehensive classification scheme of these reasons, based upon his research study involving graduates from a Norwegian business school. Following the belief that a reason would be belief-based and linked to a behavior, Kolvereid developed a list of 11 different groups of reasons and cross tabulated reasons for employment status preference for self-employment and for organizational employment. Based on these factors, he designed a survey to investigate the relationship between these factors and self-employment and organizational employment intentions. Based on the discussion above and the hypotheses in the Kolvereid study, the following hypotheses were developed for this study:

H1: The more favorable the attitude and subjective norm with respect to self-employment, and the greater the perceived behavioral control, the stronger the individual's intention to become self-employed.

In the Kolvereid (1996) study, a demographic characteristic such as family background, gender, and past experience was added. His argument was that additional variables such as past entrepreneurial experience does affect attitude, and perceived behavior control and subjective norm, therefore other variables can provide a closer connection with the intentions. He chose to include

the variable family background and gender, and for this study, we chose gender. Therefore, the second hypothesis states:

H2: Gender influences the students' intention to become self-employed.

A third hypothesis is a result of questioning whether educational intervention, such as an entrepreneurship course, would influence any of the three variables from the TPB model as depicted in Figure 1: attitude, subjective norm and perceived behavior control. The educational intervention in the present study is an entrepreneurship course, requiring the students to start a business and make a profit before the end of the course. The students in this course were required to deal with factors identified in the literature as behavior required for launching a new organization: marketing, budgeting, human resource management, etc. In Adult learning theory, the emphasis is on transformational learning (Mezirow, 1991). Transformative learning involves "an enhanced level of awareness of the context of one's beliefs and feelings [and]. . . involves profound changes in self such as changes in cognitive, emotional, somatic, and unconscious dimensions." Thus, discontinuous experiences not only have the capacity to create fundamental changes in the entrepreneur's awareness regarding the effective management of his/her business, but also in terms of the entrepreneur's personal identity---learning that impacts directly on their self-understanding, perceptions, and behavior at a much deeper level (Cope, 2003). Based on the arguments above, the third hypothesis states that:

H3: The exposure to entrepreneurship as a learning event influences the intentions to become self-employed through the effect on attitude, subjective norm and perceived behavioral control.

NORWEGIAN STUDY

Kolvereid collected data from university students who participated in a 2-year program at a Norwegian business school. His survey focused on the classification paradigm of reasons for choosing self-employment (entrepreneurial) and organizational employment. The reasons for self-employment, as determined in his classification scheme are: economic opportunity, challenge, autonomy, authority, self-realization and participation in the whole process. The reasons for organizational employment from the classification are: security, work load, social environment, avoidance of personal responsibility and career opportunity. He used a seven-point likert-type scale asking students to respond to each of the measures: "To which degree do you agree or disagree that the following factors are important to consider when you are to decide your future career path?" (1 = strongly disagree; 7 = strongly agree). His results confirmed that the theory of planned behavior can be used to predict employment status choice intentions. Also, attitude, subjective norm and

perceived behavioral control all contribute significantly to the explanation of intentions, and demographic characteristics indirectly influence intentions through their effect on attitude, subjective norm, and perceived behavioral control. His results suggest that entrepreneurial intentions are determined by factors that may be altered, not demographics that cannot be changed.

RESEARCH METHODOLOGY

To gather data in the current study, the authors used the questionnaire Occupational Status Choice Attitude Indexes developed by Kolereid (1996), and posted it online, and by e-mail invited participation of the students not enrolled in an entrepreneurship class (the control group), comprising a total of 57 students, of which 32 were male and 25 female. On average, the survey took 15 minutes or less to answer. Of the respondents, 25 percent were unemployed, 7.5 percent were self-employed and 67.5 percent were organizationally employed. To investigate the effect of an entrepreneurship class on entrepreneurial attitudes, we also surveyed students in an entrepreneurship course and coded the respondents as having self employment experience since they were currently enrolled in a course which required the students to start a business and make a profit before the end of the semester. This group of 29 respondents comprised 19 organizationally employed, 3 self-employed and 7 unemployed, 15 males and 14 females.

RESEARCH RESULTS

The present research assumes that an individual has either the choice to become self-employed or organizationally employed. In the survey, the students were asked, "If you were to choose between running your own business and being employed by someone, what would you prefer?" For the question, 82.5 per cent of the control group respondents answered that they think they will start a business. 17.5 per cent of these students do not think they will ever start a business. 99 percent of the respondents in the entrepreneurship course answered that they think they will start a business. Table 2 shows the career preferences broken down by probability estimates and compared with the results from Kolvereid's study.

Table 2: Probability of Becoming Self-employed (N=Norwegian, A=American)

0-49 %			50-74 %			75-100%		
N	A1	A2	N	A1	A2	N	A1	A2
41.3 %	14 %	48%	45.5 %	21 %	17%	13.5 %	64 %	35%

(A1= American entrepreneurship students; A2= American control)

In this study a belief-based measure of attitude was developed on the basis of some of the reasons people state for preferring self-employment or organizational employment, according to Kolereid (1996). Respondents were asked to evaluate the extent to which they agree or disagree with the item when considering it for future work career along a 7-point Likert-type scale (1 = strongly disagree; 7 = Strongly agree). (See Table 3.) To measure the self-employment attitude, the index scores of the reasons for becoming self-employed were added, and similarly, a measure of employment attitude was obtained by adding the index scores of the reasons for becoming organizationally employed. Finally, an overall score for an attitude measure was calculated as a numerical difference between the self-employment attitude and employment attitude measures.

A high score (values greater than 1) on the final attitude measure indicates a favorable attitude for becoming self-employed. On the other hand a low score (values below 1) indicates a favorable attitude for becoming organizationally employed. Thus, the value obtained in this study for the entrepreneurship class was .25. To measure the self employment attitude, the index scores of the reasons for becoming self employed were added. By the same token, a measure of employment means that the students did not have a favorable attitude toward becoming self employed, though favorable responses to the probability of becoming self-employed contradicts this score. The control group scored 1.4, a favorable attitude toward self-employment.

Table 3 shows the Spearman correlations between the attitude index and the intentions of becoming self-employed and organizationally employed. All of the correlations are statistically significant at $p < .05$. The five correlations measuring the reasons for becoming organizationally employed have a significant effect on the attitude index. The following example is one of the three questions used to measure subjective norm, which was measured by three items.

I believe that my closest family thinks that I Should Not__:__:__:__:__:__:__Should

The two other items measured the belief concerning "my closest friends" and "people who are important to me". Motivation was measured by another three questions, which measured "To which extent do you care about what your closest family, closest friends and people who are important to you think when you are to decide whether or not to pursue a career as self-employed?" The responses were given on a 7 point Likert scale, where 1 meant "I do not care at all" and 7 "I care very much." The responses were recoded into a bipolar scale (1 = -3 and 7 = 3) and then added and averaged in order to obtain an overall measure of subjective norm (Chronbach's alpha = 0.87). Table 4 shows how perceived behavioral control was measured.

The responses to items 1, 2, 4 and 6 were re-coded according to the following criteria: (Original response: 1 2 3 4 5 6 7); and (Re-coded response: 7 6 5 4 3 2 1). The 4 re-coded responses and the other two items left were then averaged to obtain an overall measure of perceived behavioral control (Chronbach's alpha = .79) For the demographic characteristics, respondents were

asked to indicate their sex (female = 0, male = 1), current employment status and if self-employed the date on which they became self-employed.

Table 3: Reliability and Spearman Correlation Coefficients (entrepreneur/control)						
	Chronbach's alpha			Self-employment intentions		
	Entrepreneur	Control	Kolvereid	Entrepreneur	Control	Kolvereid
Employment attitude						
Security	0.984	0.901	0.79	0.291	0.030	-0.15
Work load	0.884	0.653	0.71	0.142	0.003	-0.12
Social environment	0.854	0.881	0.87	0.522	0.193	-0.25
Avoid responsibility	0.915	0.890	0.82	0.135	-0.266	-0.12
Career opportunity	0.942	0.939	0.87	0.503	0.129	-0.06
Self-employment attitude						
Economic opportunity	0.856	0.853	0.68	0.028	0.371	0.11
Challenge	0.971	0.927	0.84	0.029	0.154	0.10
Autonomy	0.846	0.844	0.83	0.431	0.571	0.32
Authority	0.823	0.805	0.90	0.382	0.625	0.31
Self-realization	0.904	0.874	0.78	0.218	0.360	0.20
Participate in the whole process	0.650	0.809	0.71	0.249	0.352	0.07

	Table 4: Perceived Behavioral Control	
1	For me, being self-employed would be?	Very easy = 1; Very difficult = 7
2	If I wanted to, I could easily pursue a career as self-employed.	Strongly agree = 1; Strongly disagree = 7
3	As self-employed, how much control would you have over the situation?	Absolutely no control = 1; Complete control = 7
4	The number of events outside my control which could prevent me from being self-employed are?	Very few = 1; Numerous = 7
5	If I become self-employed, the chances of success would be?	Very low = 1; Very high = 7
6	If I pursue a career as self-employed, the chances of failure would be?	Very low = 1; Very high = 7

RESULTS, DISCUSSION AND FUTURE DIRECTIONS

The Spearman correlations for the analysis variables attitude, subjective norm, perceived behavioral control, employment experience, sex, self-employment experience and self-employment intentions for the control group, the entrepreneurship class and the Kolvereid study are shown in Tables 5 and 6. A number of issues should be discussed when assessing these results. First, we will discuss the results of the control group with those of the Kolvereid study, followed by a discussion of the entrepreneurship course results.

Table 5: Spearman Rank Order Correlations for Entrepreneurship Class

	1	2	3	4	5	6
Independent Variables						
1. Attitude						
2. Social norm	0.126					
3. Perceived behavioral control	0.240	0.623				
4. Employed status	0.216	-0.002	0.222			
5.Sex (female = 0, male = 1)	-0.514	-0.028	0.076	0.084		
6. Self-employment experience*	-0.217	-0.217	-0.184	0.037	-0.021	
Dependent Variable	-0.117	0.494	0.271	-0.090	-0.068	-0.021
Self-employment intentions						

* *Experience based on enrollment in class.*
Actual students assumed not to have self-employment experience

Table 6: Spearman Rank Order Correlations for Control Group with Kolvereid Results in Parentheses

	1	*2*	*3*	*4*	*5*
Independent Variables					
1. Attitude					
2. Social norm	0.522 (.295)				
3. Perceived behavior control	0.554 (.350)	0.536 (.440)			
4. Employed Status	0.071 (.336)	-0.063 (.291)	-0.187 (.248)		
5.Sex (female = 0, male = 1)	-0.218 (.130)	-0.248 (.178)	-0.305 (.130)	0.149 (.192)	
Dependent Variable	0.409 (.452)	0.719 (.600)	0.345 (.367)	-0.096 (.367)	-0.055 (.244)
Self-employment intentions					

As expected by the theory of planned behavior, attitude, social norm and perceived behavior control were significantly correlated with self-employment intentions in the control group. Gender and employment status showed no correlation with attitude, social norm and perceived behavior control. These results are not similar to Kolvereid's results and therefore do not support the second hypothesis. For the entrepreneurship group, social norm and perceived behavior control were correlated with self-employment intentions. However, attitude showed no significant correlation, and therefore do not support the first hypothesis. According to Ajzen (2002), low intention - behavior correlations are sometimes obtained. Here, students involved in an experientially based entrepreneurship course, their grade depends on the collaboration of their peers and their own skill and ability in order to start a business and make a profit. This may account for high subjective norm - intention correlation. If there is little or no variance either in intention or in behavior, Azjen reports strong correlations cannot be expected. Gender showed a correlation to attitude only, and not to social norm, perceived behavior and self-employment intentions. Interestingly, in the Kolvereid study gender showed only an indirect influence on self-employment intentions.

For the third hypothesis, surprisingly the self-employment experience had no significant correlation on any of the variables in the entrepreneurship group. Souitaris, Zerbinati and Al-Laham (2006) found no correlation between entrepreneurship education and perceived behavioral control in their study. They conclude that the students entered the program with a high level of self-confidence and therefore there was less scope for a change attributed to the program. Additionally, they found that learning and resources did not correlate with an increase in attitudes and intentions, whereas inspiration did. They posit students entering an entrepreneurship program may find the course resources useful only once the student has been inspired by others to proceed along the self-employment choice, an important finding for course design implications.

It is important to note that in this study, students were surveyed at the end of the course, though they were still involved with their businesses and their grades were not yet decided. This may account for the correlation between self-employment intentions and social norm. What other students say (and do) may influence how their peers respond.

This study looked at three different groups of students whose data show similarities and differences which can partially be explained. Using the theory of planned behavior in this study tests the utility of the predictive nature of the theory, that is the extent to which the choice of employment status depends on the intentions and whether or not the behavior is under perceived control. The students in the current study exercise intentions through what their peers or family members expect. Students may gain confidence and self-efficacy in the experientially based classroom, only to realize the enormity of business startup. Additional variables not included in the theory of planned behavior are needed to predict intentions.

The present study has several possible limitations. A pool of undergraduates may not necessarily generalize to the broader graduates in the same age group and socio-economic status.

The entrepreneurship students were assessed on one course instead of an entrepreneurial program comprised of several complementary activities.

The findings in this study support the contention that for entrepreneurship education to embrace the 21st century, professors must "… expand their pedagogies to include new and innovative approaches to the teaching of entrepreneurship" (Solomon, Duffy and Taraishy., 2002, pp. 82–83). Ways to measure these approaches, as noted earlier, have thus far proven to be incomplete, varied and unreliable. This study sought to measure the success of the experiential nature of an entrepreneurship course. Identifying and studying experiential learning events, such as reported in this study, support the call proposed by Krueger, Reilly, & Carsrud, (2000) to research ways to help nascent entrepreneurs.

During the past decade, the growth in entrepreneurship education and training has presented numerous challenges for faculty and universities and training centers to remain innovative and forward-looking, while maintaining the rigors required in the academic community. Ways to raise the intention and attitudes toward an entrepreneurial career must be incorporated into the curriculum. Intentions models offer a framework for pursuing a better understanding of entrepreneurial processes (Krueger, 1993). This study offers mixed results in determining the predictive nature of the theory of planned behavior. With the control group, the theory shows a strong connection between self-employment intention and the three attitudes as depicted by their beliefs: attitude toward the behavior, subjective norm, or what others say about the behavior, and control or the perceived ability one has toward becoming self-employed. With the entrepreneurship students, the self-employment intentions were predicted only by what others may say about the behavior of starting a business. The lack of consistent empirical results between the control group and the entrepreneurship group and in comparison to the Norwegian students, questions the validity of the survey instrument.

Also, this study did not find a link between intention and nascency. The entrepreneurship students were considered nascent entrepreneurs because of the demands placed on them during the semester, much like the activities associated with starting a new business (Alsos and Kolvereid, 1998). The results failed to link self-employment intentions to self-employment experience. In other words, having the experience of starting a business did not influence the students' intentions of self-employment. A possible explanation for the lack of correlation between self-employment experience and intentions toward self-employment rests with the timing of implementing the survey to the entrepreneurship students. They were still emotionally involved with the challenge of making a profit by the end of the semester and not concerned with attitudes toward future self-employment. More empirical studies are called for in proving the intention-behavior link.

What do our findings generate in the entrepreneurship-intention literature, and in evaluating entrepreneurship programs? We concur with Souitaris, Zerbinati and La-Laham (2007) who called for longitudinal studies using the theory of planned behavior. Regarding the literature on the evaluation of entrepreneurship programs, more studies in the U.S. are needed using the measures for reasons for organizational employment and self-employment. Is it possible that these measures

as used in the Norwegian study and replicated in this study are culturally biased? Souitaris, Zerbinati and La-Laham used the same measures, though their study participants were from Europe as well. In short, more studies will be fruitful.

The future will therefore no doubt remain a truly awesome time with regard to evolving opportunities for creativeness in the arena of entrepreneurship because there are such significant needs among students and practitioners for innovative approaches in educational and training endeavors---based on a foundation of conceptual and operational rigor and meaning. It is a time that will offer opportunities for those who are open to meaningful ideas that can be successfully brought forward from many sources to fulfill these needs and thereby facilitate even greater levels of success in the arena of entrepreneurial endeavors. The authors welcome dialogues with interested researchers and practitioners of creative and meaningful philosophical and operational foundations for successful entrepreneurial education and training, and subjects and projects.

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AUTHORS' NOTE

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ENTREPRENEURIALLY-MINDED UNDERGRADUATE BUSINESS STUDENTS' EDUCATIONAL PREFERENCES

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ABSTRACT

Senior undergraduate business students were queried as to how helpful twenty different pedagogical strategies were in facilitating their learning. Entrepreneurially-minded students were found to have educational preferences that differ from the rest of the undergraduate business student body. Overall, entrepreneurially-minded students found the more active educational strategies more helpful in learning than did the other business students.

INTRODUCTION

The desire for curricular change in business education reflects the charge that today's business curriculum is too focused on delivering knowledge-based content. As a result, a wider array of instructional strategies by which business can be learned is ignored (Jenkins and Reizenstein, 1984; American Accounting Association, 1986; Porter & McKibbin, 1988; Perspectives on Education, 1989; Commission on Admission to Graduate Management Education, 1990; Linder & Smith, 1992; Dulek & Fielden, 1992; Elliott, Goodwin & Goodwin, 1994; and Pfeffer & Fong, 2002). Despite this long-standing criticism about the business curriculum and its pedagogy, little evidence exists that curricula and pedagogy have changed over time (Pfeffer & Fong, 2002; Richardson, 2003). The consequences of this misplaced focus on the acquisition of knowledge are graduates who are technically competent, but who lack the judgment and other skills so necessary for long-term success in the business professions. Nowhere is this more critically important than in entrepreneurial education.

The significance of entrepreneurial education is derived from the importance of the entrepreneur to our economic system. Cole [1959] writes that economic systems set the stage for their own survival to the extent that they provide both an opportunity for entrepreneurs to exist and an opportunity for those entrepreneurial individuals to respond to the needs of society. Accordingly, society has a vested interest in providing for the development, nurturing, and growth of entrepreneurial individuals, encouraging such individuals to stay the course. However, the question remains whether the educational programs in place are as efficient and effective as they can be in this regard? Therefore, in order to meet the broad goals of entrepreneurship education, research into

more effective classroom instructional strategies need to be undertaken. More effective in the sense, that these strategies are better at nurturing and developing the essential entrepreneurial skills needed by tomorrow's entrepreneurs in addition to the necessary intellectual skills.

Schools of business are in a unique position to translate the research concerning the psychological nature of entrepreneurs, learning-style theory, and the linkage between them resulting in a preferential learning style for entrepreneurs into the more effective training of entrepreneurs. The purpose of this paper is to present results that validate previous research regarding a preferential learning style for entrepreneurs (Ulrich and Cole, 1987; Ulrich, 2001). This will be accomplished by empirically demonstrating that entrepreneurially-minded business students exhibit a greater preference for active learning strategies than non-entrepreneurially minded business students. Accordingly, these results provide an additional rationale for the need to change educational methods within the business curriculum so society can benefit from enhanced entrepreneurial education.

The first section of this paper addresses teaching versus learning and the concept of an entrepreneurially-minded individual. This is followed by brief reviews of the research on the psychological characteristics of entrepreneurs, learning-style theory, and the development of a preferential learning style for entrepreneurs by linking learning-style theory to the psychological characteristics of entrepreneurs. In addition, a brief overview of pedagogical strategies is presented. The next section focuses on the research method employed and the subsequent research results. Finally, the last section discusses the study's findings.

BACKGROUND

Given the widespread call for curricular change, why does the current state of affairs continue? Is it because the faculty-reward structure is too oriented toward research and publications and, therefore, only pays lip service to teaching as some have suggested (Richardson, 2003; Elliott, et al., 1994; Linder & Smith, 1992; and Dulek & Fielden, 1992)? Or, are business faculty not adequately trained to teach business (Benke & Hermanson, 1990; Elliott, et al., 1994; Linder & Smith, 1992; and Leavitt, 1991)? May, Windal, and Sylvestre (1995) report that 81.3% of surveyed accounting faculty believe that faculty should be trained in teaching methods. In addition, those surveyed expressed wide agreement that fundamental curricular and teaching method changes are needed. But, despite this agreement, May et. al. (1995) report significant disagreement over both the extent and form of that change with the greatest disagreement in the area of teaching methods.

Fundamentally, teaching and learning are basically different in their orientations. With the former the focus is on input and the teacher, while with the latter the focus is on outcomes and the students (Boyatziz, Cowen, & Kolb, 1995). Consequently, a learning approach places greater attention on the students and how they respond to the educational process. This paper focuses on the other side of the curriculum/teaching equation by surveying undergraduate business students on how

they perceive the ability of various pedagogical strategies in facilitating their learning. Since students experience the curriculum, it is important to understand how curricular changes might affect their learning. One particular segment of undergraduate business students is of particular interest. Those are the students who are entrepreneurially minded. While great strides have been made in teaching entrepreneurship, the fact remains that most students who eventually pursue an entrepreneurial career will not major in entrepreneurship, nor will they take entrepreneurship courses. As a result, they will not receive the benefits of an entrepreneurially-oriented education because, to date, such instruction has been aimed primarily at the entrepreneurship major. Even though the vast majority of students will never pursue an entrepreneurial career, many of them may be entrepreneurially minded. Cole and Ulrich (1988) describe an entrepreneurially-minded individual as someone who is capable of becoming an entrepreneur or encouraging others to become an entrepreneur when the opportunity arises. Thus, entrepreneurially-minded individuals are those who are: capable of managing, leading, or inspiring others; innovative, creative, and receptive to change; and attuned to the needs of society. By definition, the entrepreneur is entrepreneurially-minded. However, one does not have to be an entrepreneur to be of an entrepreneurial mind.

The education and development of entrepreneurially-minded individuals is a vital element of entrepreneurial education that must not be overlooked. Even though such individuals may never become entrepreneurs, an important part of overall entrepreneurial education involves enhancing one's ability to: think entrepreneurially; be receptive to change; and more importantly, understand the entrepreneurial process. Since the entrepreneur must deal with many different individuals during the entrepreneurial process, including accountants, lawyers, insurance brokers, bankers, suppliers, and government personnel, being able to interact or transact with one who is of an entrepreneurial mind will greatly serve to facilitate the entrepreneurial process. Hence, the education and training of the entrepreneurially-minded individual is an important part of the process of entrepreneurial education. Accordingly, research into improving the effectiveness of educating such individuals is appropriate. This paper presents the results of an empirical study to evaluate the learning effectiveness of several different instructional strategies for entrepreneurially-minded individuals.

RESEARCH REVIEWS

Psychological Characteristics of Entrepreneurs

A substantial body of literature exists which indicates that entrepreneurs exhibit certain personality traits, more so than others. The research has led to the belief that entrepreneurs share common personality traits which partially account for entrepreneurial behavior. Entrepreneurs have been characterized as individuals with a high need for achievement (McClelland 1961, 1965; McClelland and Winter 1969). Such individuals demonstrate a desire for setting goals, achieving those goals through their own efforts, solving problems, and receiving feedback on how well they

accomplished their tasks. McClelland concluded that the characteristic of a high need for achievement was an important factor in an individual becoming an entrepreneur. McClelland's conclusions have been confirmed in numerous subsequent studies (Schrage 1965; Warner and Rubin 1969; Hornaday and Bunker 1970; Hornaday and Aboud 1971; Komives 1972; Lachman 1980; and Vesper 1980).

Another attribute which is associated with entrepreneurs is internal locus of control. An individual's belief about one's locus of control reveals that person's perception about the origin of forces which control one's actions. An internal locus of control is associated with the belief that, within limits, an individual can determine one's own fate. An external locus of control is associated with the belief that outside forces determine the fate of an individual.

A close relationship between a high need for achievement and an internal locus of control is reported in the work of Rotter and Mulry (1965). Subsequent research with entrepreneurs found them to have both a high need for achievement and an internal locus of control (Borland 1975; Pandey and Tewary 1979). Moreover, a study of successful entrepreneurs found them to have a high internal locus of control (Hornaday and Aboud 1971). In addition, it has been demonstrated that individuals with entrepreneurial intentions have an internal locus of control (Borland 1975; Brockhaus 1975; and Rupkey 1978).

The importance of innovation, for entrepreneurship, with its attendant need for tolerance of ambiguity is emphasized in the work of Schumpeter (1954). Palmer (1971) noted that since an entrepreneur must make decisions under uncertainty, a distinguishing characteristic, and an appropriate measure for entrepreneurial potential, would be the willingness to deal with uncertainty. Subsequently Schere (1982) posited that the uncertainty bearing role of the entrepreneur may be viewed as an ambiguity bearing role, and that tolerance of ambiguity is a distinguishing psychological trait. Using Budner's (1962) Tolerance-Intolerance of Ambiguity Scale, Schere found entrepreneurs to have a higher tolerance for ambiguity than did non-entrepreneurs. Regarding those who express an intention to become entrepreneurs, Sexton and Bowman (1984a, 1984b) found entrepreneurial students to be significantly more tolerant of ambiguity than were other students. Again, a high tolerance of ambiguity appears to be a distinguishing psychological characteristic, both for the entrepreneur and for those who wish to be entrepreneurs.

Other psychological traits that have been found to be characteristic of entrepreneurs include: a high need for autonomy (Collins et al. 1964; Hornaday and Bunker 1970); dominance (Sexton and Bowman 1983); endurance (Mescon and Montanari 1981); and independence (DeCarlo and Lyons 1979; Hornaday and Aboud 1971). Additionally, entrepreneurs tend to have a low need for either conformity (Komives 1972; Sexton and Bowman 1983) or support (Litzinger 1965; Hornaday and Aboud 1971).

Learning-Style Theory

An individual's learning style describes the way in which one acquires and uses information in developing an understanding of and in solving problems. Psychologists have identified two primary dimensions of cognitive growth and learning (Harvey, Hunt, and Schroeder 1961; Flavell 1963). The first dimension ranges from concrete experience (CE) to abstract conceptualization (AC). The second dimension ranges from active experimentation (AE) to reflective observation (RO). Kolb (1978) incorporated the two bipolar dimensions into a learning style model.

An understanding of the learning process may be gained by considering Kolb's four-stage learning cycle model. Stage I begins with a concrete experience, which is the basis for observation and reflection in Stage II. In Stage III, the observations are resolved into a generalized theory. Stage IV draws hypotheses or implications from the generalized theory of Stage III to serve as a guide for the development of new experiences. All learning moves through the four stages and all four abilities are required in learning. But, the abilities are polar opposites in this two-dimensional model. Therefore, one must continually decide which learning abilities to apply in a given learning situation. As one grows and develops, one must resolve the conflicts between being active or reflective, and between being concrete or analytical. Through socialization, past experiences, and demands of the current environment, the conflicts are resolved. In time, the individual develops a learning style preference.

Entrepreneurial Learning Style Preference

Linking entrepreneurial psychological characteristics with Kolb's Learning Style Model, Ulrich and Cole (1987) posited a preference for an active as opposed to a reflective learning style for entrepreneurs. The decision to become an entrepreneur can be seen as a series of five interrelated steps. The first step is for the potential entrepreneur to recognize an opportunity to innovate. Drucker (1985) claims that this is the necessary characteristic that all entrepreneurs have in common. After an opportunity is recognized, the entrepreneur needs to develop alternative courses of action to take advantage of this opportunity. Next, the various alternatives must be evaluated. Then, the best alternative is selected. Finally, the selected alternative is implemented.

First, focusing on the active experimentation / reflective observation dimension, Ulrich and Cole (1987) argue that our understanding of entrepreneurial behavior indicates a primary preference for action. After all, opportunities and innovative ideas must be acted upon to effectuate entrepreneurship. Litzinger (1965) draws a distinction between entrepreneurs, who are goal- and action-oriented, and managers, who merely carry out policies and procedures in achieving the goals. Similarly, the individual psychological characteristics of an entrepreneur, basically the needs to achieve and to dominate, the greater tolerance for novelty, and the perception of controlling one's

environment, tend to infer an active posture, as opposed to a reflective one. Thus, an entrepreneur is expected to favor active experimentation over reflective observation.

On the abstract conceptualization / concrete experience dimension, Ulrich and Cole (1987) find that the preference of an entrepreneur is not as clear. In fact, it is precisely the conflict between concrete experience and abstract conceptualization that leads to what Kolb (1976) refers to as "creative tension". To be creative, one has to be freed from the constraints of a previous focus on abstract concepts and to experience anew. Schrage (1965) found that an accurate awareness of the environment was more important than either achievement or power motivation in distinguishing the successful entrepreneur from others. McMullan (1976) describes the creative process as a synthesis of problem-finding and problem-solving. Thus, a creative person is one who is able to coordinate activities in each of the different modes of learning. Consequently, Ulrich and Cole (1987) conclude that both these abilities are important to entrepreneurs with the balance between them varying with individual entrepreneurs depending on whether problem-finding or problem-solving is more important for innovation.

Ulrich (2001) empirically demonstrated the validity of entrepreneurs possessing a preferred learning style with an active orientation. By correlating the psychological characteristics of entrepreneurs (needs for achievement, affiliation, autonomy, and dominance along with the four measures from Budner's tolerance of ambiguity scale and Rotter's internal/external locus of control scale) with the reflective observation and active experimentation scores from Kolb's learning style inventory, Ulrich (2001) found that the correlations overall supported the general hypothesis that entrepreneurs have a learning style preference that is active as opposed to reflective.

A person's learning style preference affects the degree to which various pedagogical techniques facilitate learning (Kolb 1978). Thus, it is possible to relate various pedagogical techniques with different learning styles. Randolph and Posner (1979) use Kolb's learning style model to place various pedagogical strategies and techniques into categories. Using this approach the twenty instructional strategies used in this study are designated as being either active or reflective.

Pedagogical Strategies

Employing the delineation described by Weston and Cranton (1986), pedagogical strategies used in this paper will be grouped into four general categories: instructor-centered strategies (IC); interactive strategies (IS); individual-learning strategies (IL); and experiential-learning strategies (EL). The pedagogical strategies used in this research, while not all-inclusive, do represent some of the more popular strategies used in higher education, and they are listed by category in Table 1. Weston and Cranton (1986) provide an overall perspective of the differing strategies and factors important in their selection.

In the case of instructor-centered strategies, the direction of communication is one way, from the instructor to the students. The focus is on the instructor who is primarily responsible for imparting information to the students who are learning in a passive manner. The dominant form of instructor-centered strategies is the lecture. Lectures are, however, particularly efficient and effective for large class sizes and for instruction at the lower levels (knowledge and comprehension) of the cognitive domain (Weston and Cranton, 1986) typically present in introductory courses. Nevertheless, instructor-centered strategies by their inherent nature place the student in a reflective role. Several differing lecture approaches employed in this research include the following: lectures-in-general, theory lectures, and applied lectures.

With interactive strategies, the communication between the instructor and students is two way as well as being among students. More importantly, with such approaches, the students have an opportunity to actively participate in the learning and teaching process. In comparisons concerned with higher-level cognitive learning (analysis, synthesis, and evaluation) or attitude and motivation, class discussion was found to be superior to the lecture strategy (McKeachie, 1963). For larger classes or situations where students may feel more comfortable interacting with a smaller number of students, small-group discussions can be used. A more structured interactive strategy is cooperative learning, a particularly useful technique when there is a high degree of variability in either the students' abilities or experiences. In cooperative learning, those students who have mastered the material accept the role of instructor and teach the material to other students. Another approach is group projects, which permit students to actively interact with each other, while the instructor's role is that of consultant to or manager of the learning process. This approach is recommended for business students as entry-level business graduates will work in a small-group environment. In addition to immersing the students in the learning process, group projects are recommended when the higher learning outcomes concerned with application, analysis, synthesis, and evaluation are desired. The interactive strategies considered here consist of the following: argumentative discussion, large-class discussion, small-group discussion, seminars, group projects and cooperative learning.

Individual-learning strategies permit students to learn at their own pace. These methods require regular immediate feedback so the student can assess his or her progress. One individual-learning strategy considered here is programmed instruction. Programmed instruction involves a series of frames that comprise the instructional program. Each frame contains a stimulus-response pattern that allows the student to progressively learn concepts and/or skills. Additional individual-learning strategies considered in this research are examinations-in-general, problem examinations, term papers, homework, and required readings. Fundamentally, all of these instructional strategies have a reflective orientation.

The basis of experiential-learning strategies, in either real or simulated-work settings, is active learning. Because the student takes an active role, active learning strategies are more effective than the traditional educational approach in reaching the more complex educational outcomes of

application, analysis, synthesis, and evaluation (Chickering, 1977). Put simply, participation allows students to use and develop all of the four learning abilities described by Kolb (1976). That is, students are able to reflect on their experiences and develop generalizations through small discussion groups. The discussion groups than can develop hypotheses based on their learning experiences, which are further tested with additional exercises. In a sense the students are taught how to learn. May, et al. (1995) report that 63.6% of a random sample of accounting educators believe that the objective of the accounting curriculum should be to teach students how to learn on their own. Students who experience these more active strategies are more likely to maintain their interest in education and learning. Successful learning experiences tend to beget a desire for more; as a result, lifelong learning, which is so vital to entrepreneurship, is fostered. The experiential-learning strategies considered in this research are internships, management simulation, role-playing, structured-experiential exercises, and case analyses.

Given the passive nature of student involvement with instructor-centered strategies and the lack of interaction with others with the individual-learning strategies, opportunities for students with these two strategies are clearly restricted. Thus, they are reflective in nature. Also, due to their nature the instructor-centered and individual-learning strategies do not have the ability to motivate students to the extent that interactive and experiential-learning strategies do. However, with these latter strategies, there is greater student involvement with the student being an active participant. Accordingly, given the general descriptive characteristics of the various pedagogical categories, the instructor-centered strategies and the individual-learning strategies are considered to reflective while interactive strategies and experiential-learning strategies are considered to be more active. Given the preferential for active learning strategies by entrepreneurs, it is hypothesized that while there will be no difference between entrepreneurial-minded and non-entrepreneurially-minded students with respect to their helpfulness ratings of instructor-centered and individual-learning strategies, the entrepreneurially-minded students will rate the helpfulness of the more active strategies (interactive and experiential-learning strategies) higher than the non-entrepreneurially-minded students.

More specifically:

Hypothesis 1: *Given the reflective nature of the instructor-centered and individual-learning strategies, the entrepreneurially-minded students' ratings of their helpfulness in learning will not differ from the non-entrepreneurially minded students.*

Hypothesis 2: *Given the active nature of the interactive and experiential-learning strategies, the entrepreneurially-minded students' ratings of their helpfulness in learning will be greater than the non-entrepreneurially minded students.*

METHOD AND RESULTS

The purpose of this study is to determine whether differences exist between entrepreneurially-minded business students and non-entrepreneurially-minded business students with respect to the perceived success of twenty differing pedagogical strategies in facilitating student learning. The subjects employed in this research were senior undergraduate business students from two AACSB accredited institutions, one private and the other a regional state university located in the Northeast United States. In order to operationalize the concept of the entrepreneurially-minded individual, students were asked to express their entrepreneurial intentions by indicating their agreement to the statement, "I plan to become an entrepreneur," by means of a six-point Likert scale ranging from strongly agree to strongly disagree. While agreement with this statement does not necessarily identify or predict a future entrepreneur, it does indicate receptiveness to the concept and experience of entrepreneurship. As indicated, one does not have to be or become an entrepreneur to be entrepreneurially-minded. Through their course work, the students were fully aware of what being an entrepreneur meant. Therefore, the students' responses are used as a proxy for entrepreneurial-mindedness, with greater agreement showing one as being more entrepreneurially-minded. Based on their responses, 148 students were acknowledged as being entrepreneurially-minded (strongly agree and moderately agree), another 175 students were considered to be neutral with respect to this issue (slightly agree, slightly disagree, and no response), and 87 students were categorized as being non-entrepreneurially minded (moderately disagree and strongly disagree). A number of research studies, including those of Borland (1975), Brockhaus (1975), Rupkey (1978), and Sexton and Bowman (1983), indicate that students who express entrepreneurial intentions exhibit psychological traits which are characteristic of entrepreneurs. Therefore, to further validate the entrepreneurial difference among these students, they were compared on several psychological characteristics that have been associated with entrepreneurs. The psychological characteristics employed here are: Rotter's internal/external locus of control scale (Rotter, 1966); Budner's intolerance of ambiguity scale (Budner, 1962); and Steers' manifest needs questionnaire (Steers and Braunstein, 1976).

Since multiple psychological measures are determined for each student, determination of whether differing degrees of entrepreneurially mindedness are present among the three groups of business students (entrepreneurially-minded, neutral, and non-entrepreneurially-minded) is determined by a one-way multivariate analysis of variance test (MANOVA). Olson [1974] found that when performing MANOVA the test statistic based on Pillai's trace was the most robust and had adequate power to detect true differences under different conditions. Moreover, Pillai's trace can be transformed into an exact F-ratio. A statistically significant difference was found among the differing groups at the 0.000 level of significance using Pillai's trace test statistic (0.117; approximate $F = 2.73$). This MANOVA test is followed by nine individual univariate analysis of variance tests (ANOVA) for each of the individual psychological measures to determine which

psychological measures are causing this significant difference. Subsequently, for each significant ANOVA test, a Scheffe post-hoc analysis test is used to determine the specific group differences for each of these psychological measures.

Table 1: Psychological Measures With Differences Among Groups

Psychological Measure	*F-Value*	*Signif.*	*Scheffe Post-Hoc Analysis*
Rotter's I/E Locus of Control	2.48	0.085	E-minded > nonE-minded
n-Achievement	8.54	0.000	E-minded > nonE-minded
n-Affiliation	0.22	0.978	
n-Autonomy	0.36	0.700	
n-Dominance	16.59	0.000	E-minded > Neutral > nonE-minded
Budner's AT Scale	1.45	0.235	
Budner's Complexity Dimension	1.50	0.225	
Budner's Insolubility Dimension	1.90	0.151	
Budner's Novelty Dimension	4.41	0.013	E-minded > nonE-minded

The follow-on ANOVA tests and Scheffe post-hoc analysis tests reported in Table 1 indicate that the group of students labeled as being entrepreneurially-minded students do have a higher internal locus of control, a greater need for achievement, and a greater tolerance for novelty than the students identified as being non-entrepreneurially minded. In addition, the group of entrepreneurially-minded students exhibits a higher need for dominance than both the neutral or non-entrepreneurially-minded students, with the neutral students having a higher need for dominance than the non-entrepreneurially-minded students. Thus, the entrepreneurially-minded students exhibit the personality traits of entrepreneurs and, accordingly, represent students who are entrepreneurially-minded individuals.

The students were asked to indicate how each of twenty different pedagogical strategies facilitated their learning by selecting one of the following responses: 5 = most helpful, 4 = very helpful, 3 = moderately helpful, 2 = slightly helpful and 1 = unhelpful. Mean student responses for each of the twenty pedagogical strategies for the three groups of business students are listed in Table 2.

Table 2: Student Ratings Of Pedagogical Strategies			
Pedagogical Strategy	E-minded Students	Neutral Students	non-E-minded Students
	(n = 148)	*(n = 175)*	*(n = 87)*
	Mean	*Mean*	*Mean*
Instructor-Centered Strategies (IC)			
Lectures-in-General	4.25	4.01	3.97
Applied Lectures	4.60	4.46	4.51
Theory Lectures	3.67	3.44	3.4
Individual-Learning Strategies (IL)			
Homework	4.47	4.31	4.43
Exams-in-General	3.78	3.79	3.74
Problem Exams	4.04	4.03	4.02
Programmed Instruction	3.97	3.80	3.67
Required Readings	4.03	3.87	3.85
Term Paper	3.45	3.22	3.24
Interactive Strategies (IS)			
Cooperative Learning	4.18	4.05	3.93
Group Projects	4.27	4.07	3.94
Seminars	3.88	3.59	3.56
Small-Group Discussion	4.36	4.11	3.73
Large-Class Discussion	3.74	3.46	3.12
Argumentative Discussion	4.35	4.08	3.8
Experiential-Learning Strategies (EL)			
Internships	4.32	4.13	3.78
Case Analyses	4.18	4.05	3.9
Management Simulation	4.25	4.02	3.71
Experiential Exercises	3.93	3.7	3.58
Role-Playing	4.05	3.67	3.3

Given the multiple pedagogical strategies rated by each student, determination of whether differing degrees of entrepreneurially mindedness has an impact on the students' ratings of pedagogical strategies is determined by a one-way multivariate analysis of variance test (MANOVA). A statistically significant difference is found among the differing groups at the 0.003 level of significance using Pillai's trace test statistic (0.192; approximate F = 1.77). The MANOVA test is followed by twenty individual univariate analysis of variance tests (ANOVA) for each of the individual pedagogical strategies to determine which strategies are causing this significant difference. Eleven of the twenty individual pedagogical techniques show statistically significant differences at the 0.05 level among the three groups. These pedagogical strategies are listed in Table 3. Finally, each of these significant ANOVA tests is followed with a Scheffe post-hoc analysis test to determine the specific group differences within each of these pedagogical strategies. The results of these post-hoc tests are presented in Table 3.

Table 3: Pedagogical Strategies With Differences Among Groups

Pedagogical Strategy	*F-Value*	*Signif.*	*Scheffe Post-Hoc Analysis (0.05 Level of Significance)*
Lectures in General (IC)[1]	4.77	0.009	E-minded > Neutral & nonE-minded
Programmed Instruction (IL)	3.07	0.047	E-minded > nonE-minded
Group Projects (IS)	3.32	0.037	E-minded > nonE-minded
Internships (EL)	8.65	0.000	E-minded & Neutral > nonE-minded
Role Play (EL)	13.18	0.000	E-minded > Neutral > nonE-minded
Management Simulation (EL)	8.45	0.000	E-minded > nonE-minded
Experiential Exercises (EL)	3.91	0.021	E-minded > nonE-minded
Small Group Discussion (IS)	10.98	0.000	E-minded & Neutral > nonE-minded
Large Class Discussion (IS)	9.98	0.000	E-minded & Neutral > nonE-minded
Argumentative Discussion (IS)	8.15	0.000	E-minded > nonE-minded
Seminars (IS)	3.93	0.020	E-minded > Neutral

[1] IC = Instructor-Centered Strategy; IL = Individual-Learning Strategy; IS = Interactive Strategy; and EL = Experiential-Learning Strategy.

Statistically, the helpfulness in learning among the three groups is more in sync for the more reflective, traditional pedagogical strategies (instructor-centered and individual learning) which are reflective in nature. Two out of three instructor-centered strategies and five out of six individual-learning strategies showed no significant differences among the groups. These traditional pedagogical strategies are applied lectures, theory lectures, homework, exams-in-general, problem exams, required readings, and term papers. The only two instructional strategies showing a statistical

difference were lectures-in-general and programmed instruction with both showing entrepreneurially-minded students rating these two strategies higher on helpfulness in learning. Thus, *Hypothesis 1* is generally supported.

Just the opposite experience occurred for the more non-traditional, active strategies. Only one of the five experiential strategies and one of the six interactive strategies shows no significant differences among the groups. These non-traditional pedagogical strategies are cooperative learning and case analysis. Turning to the differences among the business groups with respect to the more active, non-traditional instructional strategies (interactive and experiential learning), I found that 9 of the 11 active pedagogical strategies exhibit statistically significant differences with entrepreneurially-minded students rating each higher on helpfulness in learning as compared to non-entrepreneurially-minded students. All the pedagogical strategies exhibiting differences in ratings among the groups are listed in Table 3 along with the cause for the significant one-way ANOVA tests. The direction of these differences supports *Hypothesis 2* that the entrepreneurially-minded students will benefit more from the active, non-traditional learning strategies than the other non-entrepreneurially-minded business students.

DISCUSSION

This research empirically supports previous research (Ulrich and Cole, 1987; Ulrich, 2001) that entrepreneurs possess a preferential learning style that favors active learning as entrepreneurially-minded students do exhibit a preference for the more active, nontraditional instructional strategies. The higher need for achievement and other personality traits and interpersonal behaviors typically found among entrepreneurial students as well as the active nature of these educational strategies appear to be impacting the effectiveness of these pedagogical strategies in facilitating the learning of entrepreneurially-minded students.

An additional outcome of this research is that the differences in helpfulness in learning for the entrepreneurially-minded students are greater among the more active pedagogical strategies than the traditional strategies. This is important because the active strategies are superior not only in reaching the more complex educational outcomes of application, analysis, synthesis and evaluation (McKeachie, 1963; Chickering, 1977; and Weston & Cranton, 1986) but also in developing the necessary professional skills essential for today's students: oral communication skills, interpersonal skills, leadership skills, critical-thinking abilities, teamwork, decision-making abilities, and written communication skills. For those reasons, the consequences of having a misplaced focus on the acquisition of knowledge and the emphasis on the more reflective instructional strategies within our business schools are having a greater impact on entrepreneurial education and, more specifically, the entrepreneurially-minded students. Accordingly, in order to better meet the broad goals of entrepreneur education, more active instructional strategies need to be undertaken as these strategies

are more effective in nurturing and developing the essential entrepreneurial skills needed by tomorrow's entrepreneurs.

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DEVELOPMENT AND INITIATION OF AN ONLINE MASTER OF SCIENCE DEGREE IN ECONOMIC DEVELOPMENT AND ENTREPRENEURSHIP

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ABSTRACT

The University of Houston-Victoria has developed and initiated a new, online-delivered Master of Science degree in Economic Development and Entrepreneurship. The program is based on the premise that economic development is a result of starting, growing and expanding, and attracting business to an area. Consequently, the program gives equal weight to the fields of entrepreneurship and traditional economic development. The paper describes the unique structure of the program, the development of the program using input from both academics and practitioners, and its initiation.

INTRODUCTION

The primary foundation of economic development is based on the "three legged stool" of starting new businesses (entrepreneurship), growing and expanding existing businesses, and attracting outside businesses to a community, region, state, or nation (Swager, 2000). In addition, starting, growing and expanding, and attracting businesses to an area must be supported by environments that provide the capacity to support business growth. The ultimate goal of economic development is more than business growth, however. It is to provide a higher quality of life to all citizens (Swager, 2000).

It is becoming clear that the traditional economic development notion of chasing new industry to come to an area is giving way to the realization that entrepreneurship is a vital part of economic growth (Baumol, 2005: Baumol, 2004; Drabenstott, 2005; Formaini, 2001; Holcombe, 2003; Walzer & Athiyaman, 2007). In addition, business attraction and entrepreneurial activity are facilitated by business supportive communities (Markley, Macke, & Luther, 2005). Consequently, current economic development is a combination of traditional firm attraction, the innovative creativity of entrepreneurial activity, and a healthy dose of community development. Using the "three legged stool" model of economic development and responding to a call by Donald Iannone (1995) for higher education to become involved and work more closely with economic development

professionals, the University of Houston-Victoria (UHV) developed and implemented a Master of Science in Economic Development and Entrepreneurship (MSEDE) degree.

An extensive search of existing graduate programs found award-winning graduate entrepreneurship degree programs, such as the ones at the Kelley School of Business at Indiana University and the program at Western Carolina University, or quality programs focusing on economic development, such as the University of Southern Mississippi program, but no program was found that formally combined both economic development and entrepreneurship. This is not to say entrepreneurship is not part of quality economic development programs or economic development is ignored by entrepreneurship programs. It is just that no program was found that had both on an equal footing. Considering the emerging "three legged stool" model, UHV - through its School of Business Administration - created and implemented a program that equally integrates entrepreneurship and economic development into a single, unified course of study. The combined program takes a holistic view of the contemporary economic development model. The final unique feature of the program is that it is delivered totally online.

This paper describes the process used to develop the program and the structure of the program that emerged from the process. The program was formally approved by the Texas Higher Education Board in the summer of 2006 with the first online classes offered in the fall of 2006. The first graduates completed the program in the fall of 2008.

DEVELOPING THE PROGRAM

Initial Conditions

Several initial conditions shaped how the new program was designed and delivered. The University of Houston-Victoria is an upper division university which means that only junior and senior undergraduate classes and graduate classes are offered. The university uses local community colleges to supply the first two years of undergraduate education. Consequently, the graduate programs are a primary focus. In fact, in the School of Business Administration, where the new MSEDE program is offered, graduate students outnumber undergraduates by about a three to one margin. Therefore, the decision was made to offer the new MSEDE program at the graduate level. The current university president, who is the former provost of the University of Southern Mississippi, has a passion for economic development. His desire to see the UHV more involved in economic development activities and his willingness to supply the necessary resources provided the springboard for developing the MSEDE program.

The Association to Advance Collegiate Schools of Business International (AACSB) accredited School of Business Administration (SoBA) was chosen to develop the program because it has taken a lead in the university's outreach and new program development. In addition, both the current entrepreneurship and economics faculty are part of the SoBA.

For over 10 years, the university and the SoBA have been developing quality, online delivery of both graduate and undergraduate education. In fact, the AACSB accreditation team gave special recognition to the quality of the SoBA online courses. Online delivery has become a primary method for delivering quality education with a little over 60 percent of the university's semester hour credits being delivered online. Quality online classes combined with the geographic limitations of Victoria, Texas - the location of UHV's main campus - made online delivery of the new MSEDE program necessary. There are just not enough potential students in the Victoria area to support such a specialized program. The use of the online method was the only alternative. Consequently, the program had to be totally online with no face-to-face component.

There was a consensus among the university president, dean of SoBA, and faculty that the program would be designed with input from both academics and practitioners representing the interests of entrepreneurs and economic development professionals. Combining academics and practitioners would produce a program that is academically sound and yet relevant to the target student.

A search of people involved in both economic development and/or entrepreneurship revealed no significant pattern of undergraduate degree specialization. Consequently, the program would be available to anyone with an undergraduate degree (minimum 2.5 GPA preferred) from an accredited university program and a GMAT or equivalent GRE score that meets university requirements. Under certain conditions, students could petition for a GMAT/GRE waiver. No "leveling" courses would be required.

It was assumed that a primary target student of the program would be economic development professionals. The TEDC is one of the largest associations of economic development professionals in the nation. Before any serious program development was done, the degree concept was presented to Carlton Schwab, Chief Executive Officer of the TEDC. His initial reaction was extremely positive and his continued support eventually helped pave the way for approval from the Texas Higher Education Coordinating Board.

Initial research indicated that combining economic development and entrepreneurship into a unified curriculum was the direction to take the program. The holistic "three-legged stool" model that economic development is the result of business creation, expansion and retention, and attraction combined with strong communities became the basic foundation.

The Process

The process was designed to be in three phases – initial design of the MSEDE program, development of a detailed proposal complete with justification and specifics of the curriculum design, and finally the approval by UHV, the University of Houston System, and state agencies.

A design committee was formed consisting of academics from the SoBA and the School of Arts and Sciences that houses the non-profit leadership program (the community development

component) and a representative from each of the following organizations - the Small Business Development Center (SBDC), the Council of Governments, the Victoria Economic Development Corporation, and the Victoria Chamber of Commerce. Drs. Jim and Jo Ann Carland, the architects of Western Carolina University's award winning graduate program in entrepreneurship, were brought in to facilitate the process. After two days of intense discussion, the basic structure began to emerge. The new 36 semester-hour program would consist of 10 core courses and 2 electives. The committee agreed that both entrepreneurship and economic development are processes and the basic curricula design would follow a process approach. The core would consist of an introduction course that would lay the foundation for the holistic view of the relationship between economic development and entrepreneurship, a four-course block of entrepreneurship-focused courses, and a four-course block of economic development-focused courses. The consensus of the committee was the program should have a "hands on" component. Consequently, a capstone course consisting of either an approved economic development project or an approved entrepreneurship project was included. The two electives were specified to include one entrepreneurship/business-related course and one economic development-related course. The specific details of the program design are provided in the program description section of this paper.

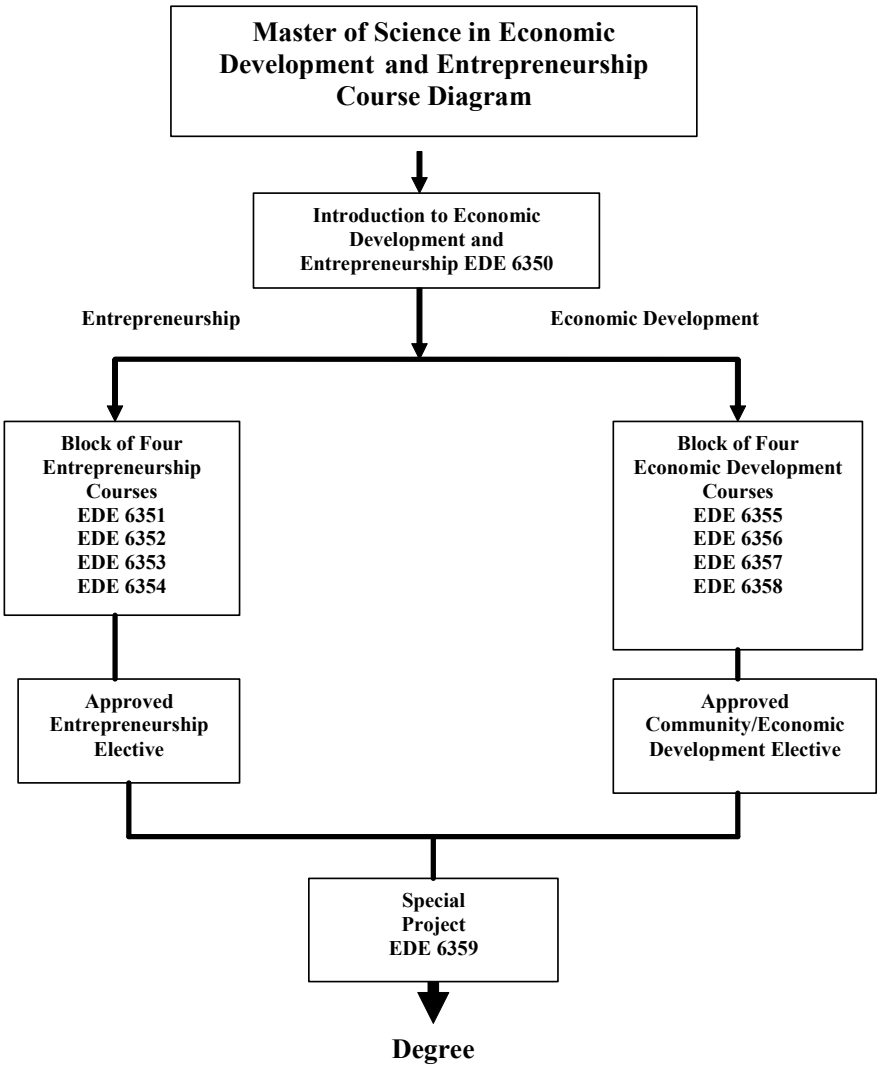
The second phase of the development process was to develop the detailed program proposal. The proposal included specific information about the curricula, program need, and program cost. The proposal became the primary document for the approval process.

Approval was needed at three primary levels – UHV, the University of Houston System, and the Texas Higher Education Coordinating Board. The program went from conception to final approval and the first offering of classes in 18 months.

PROGRAM DESCRIPTION

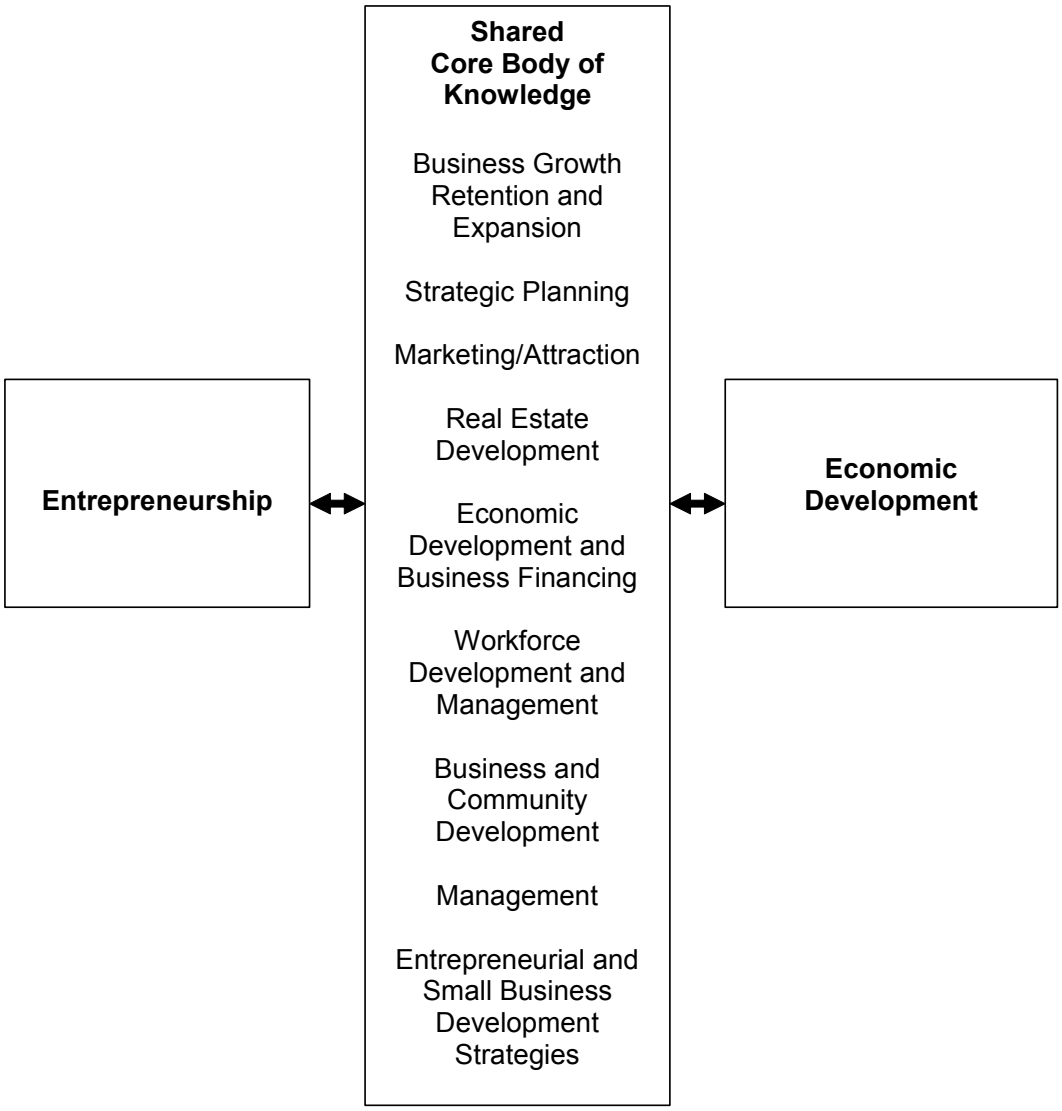
The final program design is found in Figure 1. As mentioned above, the basic program structure included an introductory course, four entrepreneurial-focused courses, four economic development-focused courses, two electives, and a capstone project course. The unique structure provides the student with two separate lenses to look at the "big picture" of economic development. The entrepreneurial lens allows the student to view the world from the viewpoint of an entrepreneur/business owner. This lens allows the student to understand what it takes to build a successful business and what should be expected from the economic development professional. The economic development lens provides the student with the ability to evaluate the role of economic development in firm creation, growth and expansion, and attraction. Knowing how the entrepreneurial mind works and what is important to the entrepreneur allows the economic development professional to design programs and strategies to best foster business growth and business attraction.

Figure 1. Final Program Design



Although there are two separate lenses, there are many shared areas of core knowledge between the entrepreneurship and economic development blocks of courses. Figure 2 highlights the core areas of common knowledge. The knowledge categories are drawn for the core body of knowledge required for economic developer certification by the International Economic Development Council (IEDC) (2007). Integration of the entrepreneurial-focused knowledge and economic development-focused knowledge is designed into each core course.

Figure 2. Shared Core Body of Knowledge

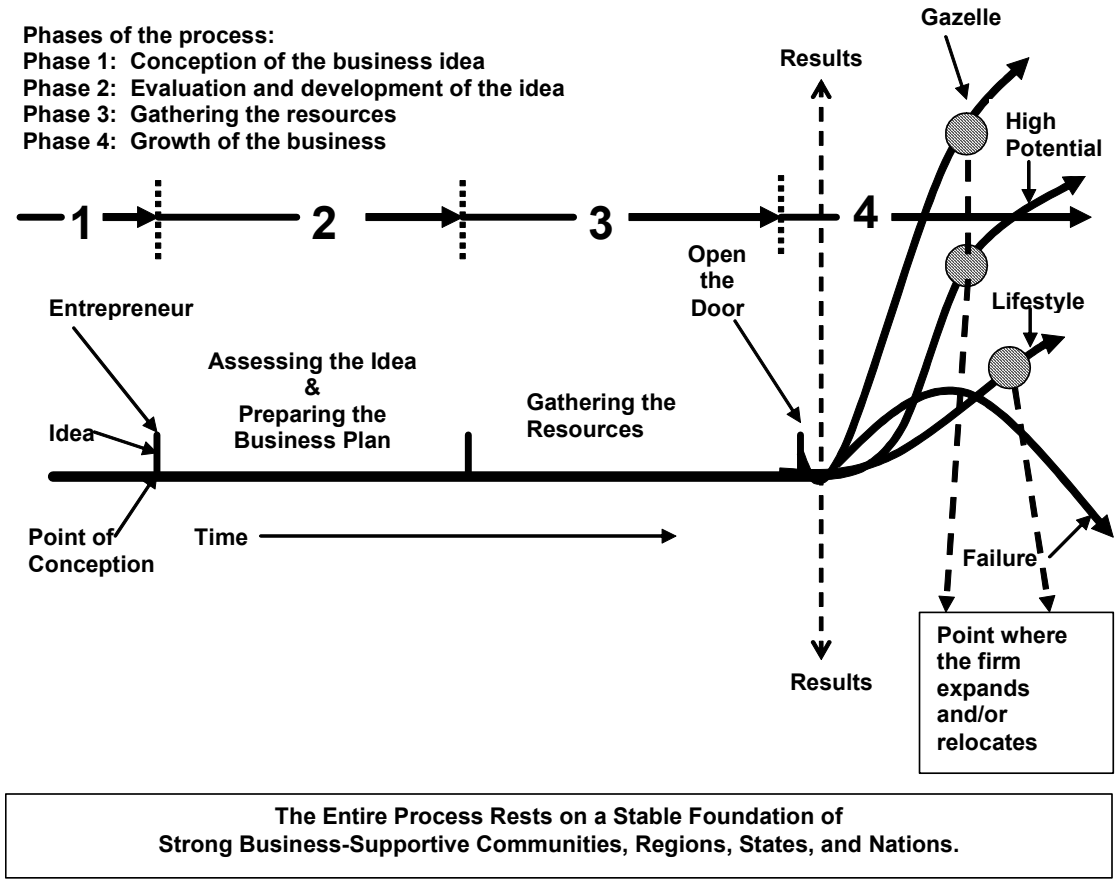


Course Design Criteria

The program takes the process approach to course design. Figure 3 provides a diagram of the entrepreneurial and economic development process used to structure individual courses. The process is divided into four phases: 1 - conception of the business idea, 2 - evaluation and

development of the idea, 3 - gathering the resources, and 4 - growth of the business. The entire process rests on a stable foundation of strong business-supportive high quality of life communities, regions, states, and nations. The process in Figure 3 provides a rich foundation for building the MSEDE program. Courses were designed to expose students to each phase of the process and the underlying need for strong business-friendly communities. The first three phases describe the activities of getting the doors of the firm open and phase four describes firm growth.

Figure 3: The Entrepreneurial and Economic Development Process



All business must start with solid business idea that appears to be economically viable. The merging of the entrepreneur and the business idea, phase one, starts firm creation. Phase two highlights the need to properly assess the business viability of the idea and, if found viable, turning the business idea into a formal business plan. Business plans are not businesses, however. The plan must be made operational by gathering and employing resources to finally get the firm in operation, phase three. Once firms are started, phase four, the growth of the firm can take a variety of paths. Carland, Hoy, Boulton, and Carland (1984) described the difference between small business ventures and entrepreneurial ventures. Small business ventures were described as independently owned and operated firms that were not dominant in their field and did not engage in marketing or innovative practices. These closely align with the lifestyle business shown in Figure 3. The scholars described entrepreneurial ventures as firms interested in using innovative strategic practices for growth and profit. These firms closely resemble the high potential and gazelle firms shown in Figure 3. Both small business ventures and entrepreneurial ventures provide economic benefit and are included in the MSEDE program.

For course development purposes, phase four is divided into two parts, growing the fledgling business to about 100 employees and growing the more mature firm beyond the 100 employee mark. By the time a firm reaches the 100 employee mark, the entrepreneur usually finds that he/she is unable to manage the firm without professional help. In fact, a study by the National Federation of Independent Business (Dennis, 2004) found that shifting management responsibility to others may be well under way in firms with as few as 20 employees. During the latter portion of phase four is often when the firm becomes large enough for a major expansion or relocation. Firms at this point in their growth are the traditional target of traditional economic development professionals. Consequently, the MSEDE program includes a block of courses dedicated to traditional economic development activities of retention, expansion, and attraction.

Finally, strong business-supportive communities are necessary for starting, growing and retaining, and attracting businesses (Figure 3). Consequently, the MSEDE program includes a substantial component dedicated to community development. The following section will describe each course in the program and how it relates to the process in Figure 3.

Individual Courses and Relation to Entrepreneurial and Economic Development Process

Introduction to Economic Development and Entrepreneurship (EDE 6350) is designed to give the student an overall view of how the economic development process works and how entrepreneurship is a vital part of economic growth. The student is introduced to a wide variety of literature describing current thinking about economic development and entrepreneurship. The structure of the course was influenced by an article by Ronald Swager (2000) that provided a comprehensive framework of the economic development process and by a Ray Perryman (2006)

article describing more traditional economic development thinking Overall, the course gives the student the "big picture" of the MSEDE program.

The entrepreneurship block of four courses is designed to address the four phases of firm development. Each course specifically addresses a particular phase(s) of the process. Each course contains all the traditional topics such as financing, marketing, strategic management, etc., but at the level appropriate for the phase of growth. For example, the early courses would emphasize topics such as "bootstrap" financing while courses for the more mature firm would emphasize financing using an initial public offering. Obviously, topics would overlap, but each course emphasizes how the topic relates to the specific level of growth. The following courses make up the entrepreneurship block and cover specific phases of the firm growth process.

Fundamentals of Entrepreneurship and Innovation (EDE 6351) covers phase 1 and phase 2 to the point of producing a viable business idea.

Developing the Business Plan (EDE 6352) develops phase 2 through producing a formal business plan and phase 3, gathering sufficient resources to open the door of the firm.

Nurturing and Growing the Fledgling Venture (EDE 6353) emphasizes growing the business from the day the doors open to 100 employees.

Growing the Successful Venture (EDE 6354) develops the firm beyond 100 employees.

The economic development block of courses recognizes that at a certain point in the growth cycle firms become large enough to expand or relocate and, consequently, become the target of traditional economic development efforts. Therefore, courses in this block focus on economic development activities. In addition, economic development cannot be fully implemented in non-business supportive communities with a poor quality of life. Consequently, the economic development courses also include techniques to build strong business-supportive communities that foster firm growth and provide a high quality of life for their citizens.

The economic development block takes a slightly different approach to the process methodology. Two bodies of knowledge were considered critical to student success - applied statistical methods and a working knowledge of resource sources for both community and business development. The following two courses were designed to provide both bodies of knowledge.

Economic Development and Entrepreneurial Finance (EDE 6355) emphasizes resource sources for both business and community development. The course investigates both public and private resource sources at the national, state, regional, and local levels. Traditional sources of business financing are covered in the entrepreneurship block of courses.

Methods in Economic Development (EDE 6356) provides students with the applied statistical methods needed for economic development.

The final two courses recognize the changing landscape of economic development. While each community is concerned with the economic wellbeing of its local citizens, contemporary economic develop recognizes that economic development is a regional matter (Drabenstott, 2005). Therefore, the final two economic development block courses investigate local and regional development.

The Practice of Local Economic Development (EDE 6357) focuses on the development of local economies and the community's capacity to foster business growth and provide its citizens with a good quality of life.

The Theory and Practice of Regional Economic Development (EDE 6358) concentrates on developing and coordinating regional efforts for economic development.

Students are allowed to select one elective that is business/entrepreneurship focused and one elective that is economic development/community development focused. Most students select the business/entrepreneurship elective from the courses offered in either the Strategic MBA or Global MBA degree programs. The economic development/community development elective is normally selected from graduate economics courses or graduate courses from the Non-Profit Leadership degree plan. Students may petition to have a course that is not in the approved list counted as an elective. This allows the student the flexibility to select courses that fit their particular situation or interests.

Economic Development and Entrepreneurship Project (EDE 6359) is the capstone course. The overwhelming consensus of the program design committee was that the program must include a "hands on" project that is either economic development-focused or entrepreneurship-focused. The project must be something that substantially furthers economic development and/or entrepreneurship at the regional or community level. The student must have the project approved before enrolling for the course. The project may be completed in the community or region where the student lives. Examples of projects completed by students include the strategic plan for a business incubator in a high-income community, the plan for a business incubator in an economically depressed area of a large metropolitan area, a community specific curricula for teaching potential entrepreneurs to start and develop businesses, and a study of the economic impact on the area surround the proposed location for an expanding university.

The MSEDE course offerings provide a comprehensive and integrated view of the entrepreneurial and economic development process. The process structure allows the student to

understand the relationship between entrepreneurship and traditional economic development from both an integrative perspective and as economic development professionals or entrepreneurs.

CONCLUSIONS AND IMPLICATIONS

There is no doubt that the critical role of entrepreneurship in the overall economic development process is being recognized. It is also true that universities need to become more involved in developing leaders in economic development and entrepreneurship (Iannone, 1995). Finally, excellent graduate programs in entrepreneurship and economic development already exist and include elements of both economic development and entrepreneurship. Considering these facts, there are three primary reasons why the UHV MSEDE program described in this paper is important.

First, considering the recognized relation between economic development and entrepreneurship, no other program appears to fully integrate the two into a unified curriculum. The UHV MSEDE program addresses this possible shortcoming by providing a holistic view of the entrepreneurship and economic development process by formally recognizing the contribution of each area. Second, because the program was designed by both faculty and practitioners, the program is academically sound and useful in equipping leaders with the skills and knowledge to be effective in the global economy. Third, the online delivery makes the program available to many qualified students who could not leave career or family commitments to pursue graduate education. By making graduate education available to many, the call for more university involvement in economic development and entrepreneurship education is addressed. Overall, the program offers a unique opportunity for students interested in economic development or entrepreneurship to continue their education.

As mentioned in the introductory section, the program received final approval by the Texas Higher Coordinating Board in the summer of 2006 with classes beginning in the fall of 2006. Currently, there are about 65 students who appear committed to the program with 124 total students declaring MSEDE as a major (fall 2008 data). Many students are located throughout Texas, but at least 22 states are represented. The first graduating class completed the program in the fall of 2008. The program has two full-time faculty with one devoted to the entrepreneurship component and one to the economic development component. From time to time, other School of Business faculty and faculty from other disciplines participate in the program.

Obviously the program is in the infant stages and it may make several years to fully develop its potential. Over the coming years, many improvements and changes are expected. At this time, potential student interest in the program remains high and outside support is consistent. By all measures, the program has a bright future.

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