

Volume 7

ISSN 1098-8394

JOURNAL of ENTREPRENEURSHIP EDUCATION

An official Journal of the
Academy of Entrepreneurship ®

Edited by
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The *Journal of Entrepreneurship Education* is published by the Allied Academies, Inc., PO Box 2689, 145 Travis Road, Cullowhee, North Carolina 28723, USA, (828) 293-9151, FAX (828) 293-9407. Those interested in subscribing to the *Journal*, advertising in the *Journal*, or otherwise communicating with the *Journal*, should contact the Executive Director at info@alliedacademies.org.

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LETTER FROM THE EDITOR

We are extremely pleased to present the *Journal of Entrepreneurship Education* an official journal of the Academy of Entrepreneurship®, Inc., a nonprofit organization affiliated with the Allied Academies, Inc. The *JEE* is a principal vehicle for achieving the objectives of the organization. The editorial mission of this journal is to advance the knowledge, understanding, and teaching of entrepreneurship throughout the world. To that end, the journal publishes high quality, theoretical and empirical manuscripts, which advance the entrepreneurship discipline.

The manuscripts contained in this volume have been double blind refereed. The acceptance rate for manuscripts in this issue, 25%, conforms to our editorial policies.

We intend to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We welcome different viewpoints because in differences we find learning; in differences we develop understanding; in differences we gain knowledge and in differences we develop the discipline into a more comprehensive, less esoteric, and dynamic metier.

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ARTICLES

ATTRACTING UNDERGRADUATES TO AN ENTREPRENEURSHIP PROGRAM

Lawrence M. Bellman, Yeshiva University

ABSTRACT

This paper examines the positioning of typical undergraduate entrepreneurship programs currently offered by American business schools and suggests a comprehensive approach to strengthen the values associated with these programs. A model is presented which focuses on developing an enterprise culture within the school, supplemented by an innovative curriculum and an effective training program. The model emphasizes the view that the need to integrate practical business experiences with teaching serves to elevate an entrepreneurship program along side the traditional business school career majors.

INTRODUCTION

The state of the economy is the linchpin that often drives undergraduate business school offerings. The cyclical nature of our economic environment often creates new business start-up opportunities that affect the thinking of the entire business community. In the 1996-98 timeframe, investors risked early stage financing, and entrepreneurs tossed their hat in the ring to start new businesses. This atmosphere encouraged business schools to develop and enhance entrepreneurial courses and programs with the goal of increasing enrollment of more undergraduate students who could choose entrepreneurship as an alternative to the traditional courses of instruction. In these economically prosperous times, students are offered the choice of a high success probability, whether entering traditional employment sectors or starting their own venture.

Indeed, the growth of entrepreneurial education has been phenomenal. The surging interest of many business schools in entrepreneurial education has been to the delight of the pro-entrepreneurship public, government, and the media. In 1970, only sixteen universities nationwide offered entrepreneurship courses, but by 1989 that number had risen to nearly 300 (Katz, 1985). Today, more than 1,500 colleges and universities offer some form of entrepreneurship and small business training (Charney & Libecap, 2000), with Business Week reporting that more than one-third of the top business schools have created entrepreneurial programs since 1973 (Reynolds, 1999). Katz also reported on a significant increase, in recent years, in institutional and infrastructural support for entrepreneurship education in the form of endowed chairs and/or professorships in entrepreneurship and free enterprise, a substantial increase in the number of professional associations serving the discipline, an increase in funding for research in

entrepreneurship, elaborate ties with local industry, and an increase in the number of journals in the field.

Entering the 21st century, however, we are faced with a weakened economy that limits career opportunities, and offers a diminished success probability. While global campus entrepreneurship organizations such as SIFE (Students in Free Enterprise) continue to be one of the few bright spots in uncovering career opportunities, offering career fairs at the national and regional level as well as an on-line recruitment database, there appears to be a significant shortfall in the success of individual campus recruiters. In our current economy, where dot.coms are failing and venture money has dried up, the economic doldrums we are currently experiencing has caused downsizing and widespread layoffs and has created a very narrow job market. This has led to a drop in traditional on-campus recruiting, and this increased job uncertainty has made the traditional route into the marketplace less attractive for many students.

To undergraduates majoring in the traditional disciplines, this poses a real dilemma. How can they enhance their chances of securing a career job opportunity upon graduation if there are only a few intern positions and very little on-campus recruiting? Should they examine the self-employment route, and, if so, should they take entrepreneurial and/or small business management courses to prepare for this endeavor?

BARRIERS TO AN EFFECTIVE UNDERGRADUATE ENTREPRENEURIAL PROGRAM

The effectiveness of Undergraduate Entrepreneurial Programs (UEPs) is challenged by the inability of today's education institutions to structure a program that will attract and hold student interest and academic pursuit of entrepreneurship courses. The current situation is caused by a combination of administrative shortfalls, student apathy, and a lack of financial incentives. These indicators can be illustrated by outlining four major reasons why schools are failing to capitalize on developing and growing a predictable undergraduate enrollment in UEPs:

1. *The first area of contention is the lack of a comprehensive support infrastructure for UEPs.*

Most undergraduate business schools have established robust career programs for their traditional majors such as accounting, finance, and pre-law. These programs include links to graduate degrees, formal internships, on-campus interviewing and recruiting, exchange programs, and alumni mentoring and assistance. Even specialized business majors such as retailing, insurance, and real estate often have similar incentives.

Contrast this with entrepreneurship and small business management courses that lack all the formal career preparation steps that the traditional majors offer. While in college, few future entrepreneurs decide that they will pursue entrepreneurship as their major life goal. Since career aspirations likely involve forming a new venture, there is obviously no established organization to offer recruiting support activities, nor do we expect venture capitalists to approach college students with money to invest. The absence of career initiatives in UEPs, in contrast to the career programs

that traditional majors offer, still is not enough to impede the increasing numbers of students looking at the prospects of self-employment and the associated interest in enrolling in entrepreneurial courses. Schools must capitalize on this student interest by improving their UEPs to allow their entrepreneurship undergraduates to supplement their academic preparation with meaningful and practical UEP support components.

2. *The second area of contention argues that entrepreneurial courses are conveniently nested into a traditional management degree-track program*

The second area of contention argues that entrepreneurial courses are conveniently nested into a traditional management degree-track program despite literature that argues that entrepreneurship and management should be treated as very distinct disciplines (Garavan & O'Conneide, 1994; Gartner, 1988). Despite the economic slowdown, the primary focus of collegiate business education continues to be on traditional majors for our undergraduate students (Zeithaml & Rice, 1987). The majority of American universities do not offer a stand-alone entrepreneurship program resulting in an associated baccalaureate degree. Plaschka & Welsch (1990) attributed the corporate focus to the fact that business schools follow a 'product' approach rather than a 'customer' approach to education. All too often, schools like to pump out whatever they have rather than what is needed. From the recipient's viewpoint, there does not seem to be any documented research on attitudes and feelings of business students toward entrepreneurial courses. Yet Hatten and Ruhland (1995) suggested that identifying and nurturing potential entrepreneurs throughout the educational process could produce more successful entrepreneurs.

The driving forces behind integration of entrepreneurship courses into a traditional management curriculum stems from the convenience of administering such a program. There is a readily available supply of academically qualified management faculty who can teach entrepreneurship and small business management by incorporating traditional management, marketing, finance, and operations components into the course curriculum. However, when it comes to recruiting experienced entrepreneurs and business world operatives with academic qualifications, the supply dwindles.

It can be argued that it is also more convenient to utilize well-established department organizations such as management that have years of experience in handling tenure-track and other faculty development issues, as well as curriculum, budgets, and facilities planning. Educational publishers offer a vast array of educational resources to support their traditional textbook and course support material. It is also difficult to measure the results of a UEP in terms of employment and career success. School career placement offices can readily track graduating students placed into traditional disciplines (i.e., accounting and management), but how do they track an entrepreneurial career?

3. *The implications of the lack of a separate undergraduate entrepreneurship degree program, or at least its offering as an "area of emphasis" within another business related degree program (i.e., general management) or as a minor is another formidable barrier to enhancing UEPs.*

The implications of the lack of a separate undergraduate entrepreneurship degree program, or at least its offering as an "area of emphasis" within another business related degree program (i.e., general management) or as a minor is another formidable barrier to enhancing UEPs.

If students do not believe that the inclusion of entrepreneurial courses on their resume will enhance their career opportunities, they will not enroll in such courses and business schools will continue to focus their efforts on traditional majors such as management, no matter what the employment prospects are. On the other hand, if students of the creative arts can take portfolios of their creations with them (Vesper, 1987), why shouldn't entrepreneurship students take with them portfolios of their business creation efforts, including business plans, and case histories with financial statements of ventures undertaken during their academic studies?

There are pros and cons to either offering a UEP as a degree program or as an "area of emphasis" or a minor. Students may experience difficulty in securing traditional employment especially if the UEP is their degree program and they encounter difficulty in developing an entrepreneurial venture upon graduation. The "area of emphasis" or the minor concentration approach, while preparing the student for an entrepreneurial career, may make it easier for them to secure alternative temporary or permanent employment with more traditional employers. The decision tradeoffs may focus on the adequacy of the infrastructural support for the UEP.

4. *A fourth area of concern is the potential failure on the part of the university to recognize the financial upside associated with offering an attractive UEP.*

A fourth area of concern is the potential failure on the part of the university to recognize the financial upside associated with offering an attractive UEP. Of 76 school responses from a survey of entrepreneurial education conducted by Zeithaml & Rice (1987), almost fifty percent reported that their entrepreneurship courses have been responsible for generating additional funds for the college or faculty. Of these, 23 mentioned Small Business Institute (SBI) contracts or Small Business Development Center (SBDC) programs sponsored by the U.S. Small Business Administration. However, these SBA-originated grants will only flow to an institution participating in SBI or SBDC activity.

The majority of traditional school endowments today originate from successful executives and alumni. An aggressive school business development office will target these individuals and their organizations by devising programs such as endowed chairs, school sponsorship events, and scholarship and achievement awards. However, there are many potential contributors who founded their own organizations and are very much interested in encouraging entrepreneurial initiatives by graduating collegiates. Failure to attract successful entrepreneurs with a tailored entrepreneurial program may cost the institution millions of dollars of lost financial opportunity.

Schools who have pursued these individuals have secured substantial funds for establishment of entrepreneurial institutes, work-study programs, course and seminar development, and business plan competitions. The Rennert Entrepreneurship Institute at Yeshiva University, the Lloyd Greif Center for Entrepreneurial Studies at USC, the Baugh Center for Entrepreneurship at Baylor University, the Rothman Institute of Entrepreneurial Studies at Farleigh Dickinson University, and the Institute for Entrepreneurial Education at LSU are examples of such initiatives. However, the

majority of schools offering entrepreneurship courses have not specifically secured private endowments to enhance the attractiveness of their UEP.

This paper suggests a model for a successful UEP program in which the execution of key model components can significantly contribute to enhancing the UEP. The paper discusses what will likely happen to the barriers for a successful UEP if this proposed UEP agenda is pursued and how can negative resistors be counteracted.

AN UNDERGRADUATE ENTREPRENEURIAL PROGRAM MODEL

Although research on entrepreneurship is widespread and seems to be on the rise, very little empirical research has been directed toward evaluating the content, pedagogy, and effectiveness of entrepreneurial teaching programs (Block and Stump, 1992; Borycki, 1989; Ghosh & Block, 1993; McMullan & Long, 1987; Sexton & Bowman-Upton, 1988; Vesper, 1985). Moreover, there is little uniformity among the courses offered (Henderson & Robertson, 2000).

Business schools have a responsibility to instill in their students the feeling that they must be more responsible for their own destiny. For many students this means starting their own company. Translating this need into the entrepreneurial classroom means that educators must emphasize learning by doing, experience-based learning, the making of judgments under pressure, and the use of practitioners.

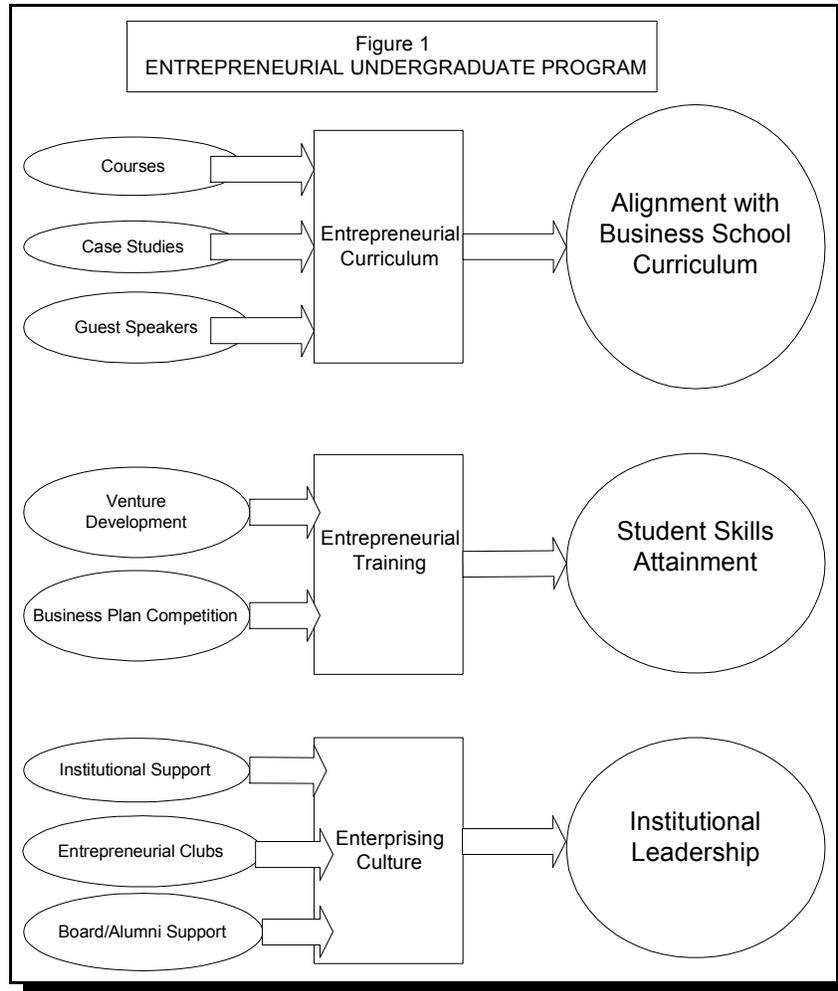
The model shown in figure 1 is based upon a paper written by Garavan & O'Cinneide (1994). They argue that the three basic criteria shown in the model represent the key initiatives of a successful entrepreneurial program at the undergraduate business school level. How do you identify and measure a successful UEP, using these criteria? The author contends that the outcomes shown in the model will provide critical measurement criteria for a successful UEP. The following is a discussion of each of these components shown in the model and its relevance to an effective entrepreneurial undergraduate program.

ENTREPRENEURIAL CURRICULUM

An important criterion for ranking effective entrepreneurship programs as reported by Vesper & Gartner (1997) was courses offered. McMullan & Long (1987), Vesper & McMullan (1988) and Plaschka & Welsch (1990), in discussing curriculum, emphasized that curricula of entrepreneurship programs have to be differentiated from traditional management education programs. The issues concerned with venture development by itself should form the basis for this distinction. McMullan & Long (1987) argue that entrepreneurship education should include skill-building courses such as negotiation, leadership and creative thinking, and exposure to technological innovation and new product development.

The entrepreneurship ranking survey conducted by Vesper & Gartner (1997) discovered that the most frequently offered undergraduate entrepreneurship courses were Entrepreneurship or Starting New Firms, Small Business Management, Field Projects/Venture Consulting, Starting and

Running a Firm, Venture Plan Writing, and Venture Finance. Table 1, a representative survey of 78 AACSB (The Association to Advance Collegiate Schools of Business) institutions, closely parallels this finding. Results indicate the majority of schools surveyed offer the more traditional entrepreneurial courses. Specialized entrepreneurship courses offered by the institutions surveyed include Feasibility Analysis, High Technology Entrepreneurship, Skills and Behavior of the Entrepreneur, Franchising, Licensing and Distributorship, Negotiation, and International Entrepreneurship.



To help students develop goals and objectives they wish to focus on in their entrepreneurial courses, some institutions administer tests that attempt to predict the student's entrepreneurial aptitude versus managerial talents. The tests can be very useful for both the instructor and the student if it is administered at the beginning of a basic entrepreneurship course.

Wonderlic (Wonderlic Personnel Test, Inc., 1509 N. Milwaukee Avenue, Libertyville, IL 60048) publishes an Entrepreneurial Quotient test that assesses entrepreneurial traits and provides both detail and summary information, comparing the test taker to several thousand successful entrepreneurs and corporate executives. Test results not only indicate overall entrepreneurial aptitude but highlight managerial and personality skills. The results allow the students to evaluate their own strengths and weaknesses. It also dovetails nicely into a discussion on desirable entrepreneurial personal criteria.

Table 1: Inventory of Undergraduate Entrepreneurial Courses		
Academic Course	Major Focus	Number of Institutions Offering Course
Entrepreneurship, Small Business Management	Planning new and existing businesses	64
Entrepreneurial Finance	Funding, accounting controls, organization & exit strategies	19
New Venture Creation/ Venture Initiation	Business plan development	17
Entrepreneurial Field Studies (Internships)	Work with entrepreneurs & local businesses	15
Managing Growth Businesses	Management issues in growth	11
Managing the Family Business	Dynamics and issues	11
The Business Plan	Creating comprehensive business plans	9
Strategic and Entrepreneurial Management	Case-oriented, examine Frameworks and models	7
Starting & Managing a Business	Starting business, concepts, business plan projects	7
Marketing for Entrepreneurs marketing; cases	Conventional to "guerilla"	6
Source: College and university catalogs and home web pages		

Critics may feel that these tests do not truly represent a student's ability to become an entrepreneur. Scoring high in managerial aptitude and low in entrepreneurial traits may be an indicator that is critical to the student's future acquisition of an existing business or franchise, but not so for a new business start-up. While this is certainly a consideration, it can be argued that strong managerial talents creates a foundation for becoming an effective intrapreneur in a corporation and subsequently combining this strength with years of experience in which to pursue all types of entrepreneurial opportunities.

Critical to the entrepreneurial learning process should be classroom practice in the preparation and use of effective business plans. Whether this component is incorporated into one of the core entrepreneurial courses or offered as a separate course in business plan development, educators can prepare students for early entrepreneurial efforts by challenging them to conceptualize a business opportunity.

This effort may address a new start-up or acquisition of an existing business or franchise. The March 27, 2002 edition of *The Wall Street Journal* reports that many schools now feel that "entrepreneurial" does not only equate with "start-up," but should also mean finding new business opportunities and expansion of existing companies. According to the article, officials at the Tuck School of Business at Dartmouth College stated that there has been a noticeable shift in business plan topics from projects for an online retail start-up for tall people, to devising a new-product launch for ice-cream maker Ben & Jerry's Homemade, Burlington, Vt.

It is essential in evaluating a class business plan project not to judge the plan's effectiveness by the product or service suggested but rather the form and organization of the plan itself. The undergraduate's idea may not be feasible for practical implementation but the mechanics of presenting an effective and comprehensive plan will provide a solid basis for future plan development "when it counts."

The University of Washington offers a unique program that results in the student earning a PEI Certificate (Program in Entrepreneurship and Innovation) in addition to a degree. The PEI curriculum fulfills students' BA core requirements with a minimum 12-credit concentration in accounting, marketing, and the like, in addition to their entrepreneurship option. The 12-credit core requirement for the entrepreneurial option includes basic entrepreneurship, business planning, creating a company, and marketing issues for new ventures. Electives include such courses as principles of selling, software entrepreneurship, new venture planning, and Internet marketing.

This approach addresses the issue of the lack of a separate baccalaureate degree in entrepreneurship by providing the student with proof of academic accomplishment that could be utilized to overcome some of the concerns that stakeholders may have in the student's probability of succeeding in a future entrepreneurial endeavor.

The final selection of courses included in the entrepreneurial curriculum should, according to Sexton et al (1997), be based on content-orientation, not process-orientation; offer specific knowledge, not general information; and focus on learning from those who have experienced the situation, e.g., other entrepreneurs. Their study identified the 10 most desired topics of fast-growth entrepreneurs as (1) using cash flow to make operational/financial decisions; (2) financing growth; (3) increasing the value of the business; (4) compensation for self and associates; (5) hiring, training, and motivating for growth; (6) succeeding in a rapidly changing world; (7) successful selling via helping the customer buy; (8) sales force management; (9) management succession; and (10) problems and pitfalls of growth.

McMullan & Boberg (1991) argue that students perceived the case method as more effective in developing skills of analysis and synthesis. Incorporating real-world cases into entrepreneurship courses offers the undergraduate the challenge of researching and analyzing ventures that succeed and fail. Uncovering the underlying reasons for firm success or failure along with student observations and recommendations provides a sound basis for developing venture decision-making.

There is a wide availability of existing cases in entrepreneurship textbooks and literature, as well as specific sources such as the Harvard Business School and Babson College. The instructor can assign a case to a group with a case leader, or make individual assignments. These cases usually have three to five questions about the case that the student must answer.

Critics may argue that many entrepreneurial cases are written for the graduate student level, but it has been the author's experience in teaching entrepreneurship undergraduate courses for the past five years that undergraduates are motivated by the case approach and, for the most part, present an effective analysis of case components. What they are lacking is inexperience in developing business alternatives, but this can provide a good foundation for a meaningful classroom learning experience. Recruiting either business school board of trustee members or alumni to act as case mediators may enhance the use of case studies as an effective teaching tool.

Incorporating a business plan class exercise can be another effective teaching tool. The class can be divided into four groups; typically marketing, management, operations, and finance. The chosen business plan can either be a previously submitted student plan (with prior permission) or an outside plan. The instructor can either distribute fact sheets or key questions to each group. The groups would then present to the class the issues, questions, and recommendations for the plan in their assigned specialty as if they were potential venture investors. This kind of classroom training builds an awareness of evaluative factors scrutinized by venture stakeholders and helps train the students to consider these factors when developing their own venture plan.

There is often reluctance on the part of institutional administrations to invite outsiders into the classroom environment, preferring to utilize them in a formalized lecture series or seminar. This reluctance could stem from a fear of requested speaker stipends, or a fear of course curricula inconsistency.

Inviting entrepreneurs as guest speakers often has a very positive effect on the entrepreneurship undergraduate. These invitees provide practical hands-on experience to our budding entrepreneurs, discussing their successes and failures. Entrepreneurs who come to class to speak tend to be fascinating characters because the nature of start-ups lets them retain and display their individuality (Vesper, 1987).

Students will relate well to speakers who are not too far removed from the student age range; preferably between the ages of 25 to 40. A speaker in this age range can narrate career progression that students can relate to. The speaker should be asked to address his/her actual experience in developing a business concept, writing a business plan, applying for funding, and staffing and launching the venture. It is important that the speaker discuss his/her management team and how the team's balance and capabilities aided in securing funds and handling the start-up.

Securing a venture capitalist, corporate or angel investor as a guest speaker will also enhance the learning experience by exposing the students to the other side of venture creation - finding a willing investor. This category of speaker should be asked to discuss how he/she evaluates business plans, management team credentials, business concepts, and funding criteria.

It is also quite possible for the instructor to secure a guest speaker from either the Small Business Administration (SBA), or the Service Corps of Retired Executives (SCORE), which are government organizations. Additionally, Small Business Development Centers (SBDCs), typically located at a college or university, provide speakers who can outline the assistance available to

budding entrepreneurs. The author has used all three sources: SBA to present funding assistance programs; SCORE to discuss proposed business plans in the classroom and outline how their office can provide free advice in starting a business; and SBDC to offer their services in developing attractive business plans.

The speaker program can also include an individual who has either had hands-on experience in taking a venture public or providing the financial advice needed for the venture to plan an IPO or significant expansion. Typically, such an individual would be an investment banker or a senior financial officer.

One of the recommended entrepreneurial core courses suggest by Benson (1992-93) is an entrepreneurial lecture series. This course should bring leading industry executives and successful entrepreneurs to the lecture hall to discuss their backgrounds, career ups and downs, and business advice, in the form of either a formal presentation or an extensive question and answer session. The author has sponsored such a lecture series for the past five years. The series has featured distinguished speakers including the CEOs of the New York Stock Exchange, Bloomberg News, Viacom, JetBlue Airways, Paramount Pictures, Bed, Bath and Beyond, Toys R Us, Loews Corporation, Bear Stearns, and many other organizations. Additionally, the founders of many start-ups such as AOL/MovieFone, SBC Communications, Blackboard, Vaultus, and Acorda Therapeutics have been guest speakers. Recruiting sources for these speakers include the school's business development office, board of trustees, alumni, faculty, and cold prospecting. Often, the visits of these noted entrepreneurs have resulted in philanthropic benefits to the business school.

Critics may argue that solicitation efforts required to obtain this caliber of speakers is time consuming, fraught with rejection, and costly. However, it is the author's experience that successful entrepreneurs and industry leaders are flattered by an invitation to speak to a group of business undergraduates and rarely ask the institution for any compensation. Additionally, if the entrepreneurial lecture series is given every other semester, there is a four to six month planning window to develop a target list, solicit candidates, and confirm the logistics. Expenses are minimal when email, invite letters, and follow up phone calls are utilized.

ALIGNMENT WITH BUSINESS SCHOOL CURRICULUM

Evidence attributing the alignment of a successful undergraduate entrepreneurship program to the business school's curriculum can be manifested by an increase in student enrollment. This suggests an increase in the entrepreneurship interest level and also in the exposure to real world business experiences. The author has evidence of significant student demand increases in basic entrepreneurship courses as well as specialized courses such as franchising and an entrepreneurial lecture series.

Student satisfaction can be measured by faculty evaluations, development of entrepreneurial clubs, and enrollment in multiple entrepreneurship courses. If the student's performance matches his/her expectations, then confirmation of this expectation is achieved (Cadotte et al 1987). Additional measurement considerations should be pursued through the school's Office of Placement Services. These include the gathering of statistics as to the number of start-ups by graduates, the

number of students employed in "new" firms, and the number of students working in positions assisting new firms (Benson, 1992-93).

Attracting qualified faculty with strong academic and entrepreneurial work experience skills is another measure of a successful UEP. There is a severe shortage of entrepreneurship faculty with impressive academic credentials strong enough to get through the tenure processes at top-ranked schools (Low, 2001). One initiative to overcome this shortage is for the institution to recruit its own doctoral graduates initially as adjuncts and ultimately as full-time tenure-track professor. The elimination of refusal on the part of many universities to hire their own doctoral business graduates as instructors can create a pool of qualified faculty for the school's UEP.

Teaching executives have a major role to play in higher business education. Because of their typically long and distinguished careers in the world of business, they can complement the academic perspective with actual business experiences. This, in turn, would result in a curriculum that is more responsive to employer needs, and will provide more graduates who need minimal training (Praetzel, 1995). Additionally, by recruiting faculty with a dual academic/business background, students can benefit from classroom exposure to the many business contacts these instructors have.

Faculty productivity can be enhanced by the school's willingness to pay for the development of new entrepreneurship courses. Entrepreneurial specialty courses such as Franchising, and Business Plan Development broaden basic entrepreneurship course offerings. Expertise in specialized fields such as travel and entertainment, Internet marketing, and food and beverage markets attract more qualified faculty, expand the student's options in the entrepreneurial learning process, and expose the institution to more community recognition.

The integration of an entrepreneurship academic program with the overall business school curriculum is a worthwhile goal of the UEP process. Creating an "area of emphasis" or an entrepreneurship minor may not only result in meeting student needs and expectations but also meeting overall program requirements. This integration would allow a student to pursue a UEP, but still have the flexibility of entering traditional business fields with a generally accepted business degree. The undergraduate business school's strategic mission should be to create an environment conducive to the successful preparation of students for entry into the business world. Aligning the UEP with the business school curriculum incorporates the dimension of business ownership as a career alternative.

From a financial viewpoint, the school enhances its fund raising opportunities by attracting contributions from successful owners as well as managers. The guest speaker component of the UEP creates another portal for successful entrepreneurs and venture capitalists to enter into relationships with the institution that could result in financial initiatives. These initiatives suggest an increase in institutional financial funding.

ENTREPRENEURIAL TRAINING

Venture development activity can either be accomplished through an on-campus entrepreneurial club, the classroom environment, or through individual student initiatives. Babson College, who many believe has the number one ranked undergraduate and graduate entrepreneurship

program (Vesper & Gartner, 1997), offers a class \$3,000 with which to start a business. During the first semester, students decide on a concept and write a formal business plan. They launch and develop the company during the second semester. Businesses have ranged from dorm-room food service companies to campus CD clubs. This process helps inoculate young entrepreneurs against real-world failure.

Each year, undergraduate students, as part of their course requirements, prepare thousands of business and feasibility plans. Yet, the author's experience is that only a very minute portion of these plans is actually pursued as a real-world opportunity. Several of the ideas proposed in these academic exercises have some potential for success if mentor assistance is forthcoming, and some seed capital made available. Business schools should consider supporting this type of activity.

One approach to incorporating venture development into the UEP is to assign various student teams to develop businesses that address specific market needs. The student teams must actually develop either a business plan and/or the actual business itself.

Another possible approach to teaching venture development is to hold an entrepreneurial fair in the school where competing student teams can present their business ventures and be rewarded monetarily.

One of the most innovative initiatives that an entrepreneurial program can offer its undergraduate students is a business plan competition (Gartner & Vesper, 1994). By incorporating the development of a business plan as part of various entrepreneurial course requirements, professors will have received a number of these documents over the course of the semester. An evaluation committee consisting of some combination of faculty, board, alumni, and outside experts can be utilized to select the two or three best business plans for cash awards. The program offered at Yeshiva University involves the evaluation of business plans over each two semesters and cash awards totaling \$10,000 for the three best plans.

Many business plan competitions go beyond the local campus, offering both regional and national awards. The University of Maryland's and the University of Michigan's Campus Entrepreneurship Opportunities (CEO) program typify CEO college and university campuses that provide opportunities for students and alumni to compete for up to \$50,000 in prize money. This business plan competition allows each new student venture to compete for funds that enable them to start businesses with the promise to boost the economic growth of the region. These monetary awards all form the basis of seed financing for potential new ventures. Global Student Entrepreneur Awards (GSEA), administered by Saint Louis University's Entrepreneurship Center, awards over \$80,000 to undergraduate college students each year. Thunderbird just started an international business plan competition.

The school can take advantage of this activity to promote their entrepreneurship program by informing the business community of the competition, issuing news releases for local and regional media, and publicizing the event in alumni and school newsletters and magazines. There are also groups such as SIFE that are sponsored by major corporations, who promote the development of free enterprise educational projects that include finding the funding for team efforts, using the mass media and presenting team accomplishments at a SIFE regional competition.

STUDENT SKILLS ATTAINMENT

The experience gained by participating in school business plan competitions and venture development projects should be documented to allow the undergraduate to prepare and organize an original work portfolio that can be utilized in the pursuit of an entrepreneurial career. Inclusion in this portfolio should be case presentations and solutions, feasibility and business plan projects, work-study projects, and student written analyses of entrepreneurial reading articles. These documents can provide the basis for a graduating student's demonstration of the skills and knowledge required to contribute to the success of an entrepreneurial venture (Vesper, 1987). Coupled with a well-written resume, and enhanced by related work experience, the portfolio can be used to successfully convince venture stakeholders to participate in the venture.

Student involvement in a comprehensive UEP will expose them to a number of entrepreneurs and investors, either serving on the business school's board or through faculty contact. These individuals are usually receptive to offering counseling and advise to the budding entrepreneur. Review and assessment of student business plans, together with career advice can contribute to a student's decision to pursue an entrepreneurial career.

Obtaining qualified mentors through the UEP may provide the assistance needed for the launch of a venture by recent undergraduates who are lacking experience and funding. While most business executives and qualified faculty will not consider joining the Board of Directors for a start-up or developing business, agreement to serve on the venture's Board of Advisors in a non-paid, advisory capacity, is an avenue worth pursuing. Through their experience and industry contacts, these mentors can help uncover sources of funding, potential customers, and assistance in venture development. Participation in an advisory board capacity is non-threatening to the experienced professional because there is no legal or financial liability, nor is the time involved in this activity overbearing.

Business school sponsored internships have been traditionally limited to a few majors such as accounting and finance. Firms in these industries provide the school with a limited number of internship opportunities in these disciplines and school placement offices gear their efforts to help fill them. Little attention has been paid to internships with start-up firms and small but growing firms. Internship programs offer numerous benefits to students, employees, and the schools that serve as intermediaries (Englander et al, 2000). The student gains a better knowledge of the tasks performed by professionals and an opportunity to develop skills relevant to a particular career choice (Coco, 2000). By incorporating venture development projects, business plan competition, guest speakers, and board and industry member participation into the UEP, the opportunities for internship may be broadened through more exposure to successful entrepreneurs. Start-up firms are notoriously short of funding for development and can provide an excellent source for internships. The student gains experience in a start-up environment and the entrepreneur acquires the needed human resources to grow his/her firm.

ENTERPRISING CULTURE

Many U.S. business schools have not devoted adequate resources to develop and maintain a successful UEP. As previously discussed, the current situation is a product of financial, resource allocation, and the lack of administrative focus. From a financial viewpoint, they must compete with other institutions for student enrollment. Funds generated by tuitions and fees are typically used to cover institutional spending. Although fund raising is actively pursued, not enough concentration is placed on obtaining entrepreneurial endowments. Resources are allocated to traditional majors that result in graduate career placements that can easily be measured. Administrators recruit experienced academicians for business teaching positions and while these faculty members may have strong research skills and experience, they may have little or no practical business experience. What will likely happen in these spheres if the paper's proposed UEP agenda is pursued and how can negative resistors be counteracted?

A critical component of an effective entrepreneurship program must be solid institutional commitment and support. This commitment should be manifested through the business school deans, university administrators, advisory board members, and student representatives. Block & MacMillan (1993) suggest that a university program is unlikely to flourish without the active support of top administrators, as well as the efforts of business school deans and the school's voting faculty. A high-quality entrepreneurship program must allow incorporation of "entrepreneurship" into the mission statement of the university as a whole (Vesper & Gartner, 1997). How is entrepreneurship described in school bulletins and catalogues? Are new courses given adequate publicity? Does student recruiting efforts include an emphasis on the entrepreneurial program? Is there adequate and qualified staffing and sufficient budget to teach entrepreneurship?

The institution must introduce its entrepreneurship program at the recruiting phase by preparing and distributing well-designed written and visual program material to prospective students and their families, the business community, alumni, and other interested parties.

The forms taken for these promotional efforts can be attractive brochures, and promotional videos. Course catalogues must contain adequate course write-ups that provide the student with sufficient information. By incorporating these activities at the recruiting level, the school is signifying its overall commitment to the entrepreneurship program as well as validating its credentials to offer a comprehensive curriculum.

Institutional fund raising efforts should consider soliciting a significant donation to establish an Entrepreneurial Institute. With proper funding, the Institute can provide self-sustained funding for qualified faculty, entrepreneurial lecture series, and a host of promotional initiatives that are designed to increase student enrollment as well as attract additional outside financial support, especially from alumni. Graduates strongly identify with a school's history, culture, and mission and such feelings of fondness give rise to the desire to be recognized by the institution and hence the motive for donating (Harrison et al, 1995). The provision of new funding sources can overcome resistance to change and boost the institution's commitment to its UEP. Additionally, the Institute can provide needed resources to administer the UEP without materially impacting the school's current resource allocation.

College administrations must also be convinced that a supported UEP has an adequate payoff for students and the business community as well. Well-qualified faculty should anchor a comprehensive entrepreneurship program. Professors should bring a mixture of practical and academic experience to the classroom, and this background must include their ability to address today's technology and emerging market opportunities. Schools with strong entrepreneurship programs like the University of Michigan, Baylor University, University of California-Berkeley and others are all led by faculty with previous hands-on experience as entrepreneurs and/or successful business leadership. By recruiting qualified faculty, not only is the business school bringing needed practitioner experience into the classroom, but also providing a greatly expanded source for outside contacts and potential school relationships with successful entrepreneurs and business leaders. Balancing a solid full-time faculty with qualified adjuncts, especially to teach venture development in specialized fields, can enhance the school's credentials as a leading business educational institution.

Further proof of payoff for students and the business community can be provided by the school's Entrepreneurial Institute or by campus career placement offices that can track graduates in their pursuit of entrepreneurial careers. By accumulating statistics on graduates involved in business ventures, the school can provide a meaningful alternative to traditional career-track majors, and thus enhance their attractiveness to future undergraduates.

There are a number of campus entrepreneurial organizations that effectively provide undergraduates the opportunity to develop leadership, teamwork and communication skills. SIFE is a global, non-profit organization that has representation on more than 1400 university campuses in 33 countries. SIFE provides leadership training, regional competitions and career opportunity fairs for thousands of college students, offering awards of more than \$400,000 in prize money to college student teams each year. They are located at 1959 East Kerr Street, Springfield, Missouri 65803-4775 (1-800-677-SIFE).

CEO is another campus initiative, with collegiate chapters on some 500 campuses. CEO brings students together from diverse majors to learn how to start their own businesses. They are located at 601 South Morgan Street, Suite 705, Chicago, Illinois 60607-7108 (312-996-2670).

The establishment of an entrepreneurial club on a local business school campus serves to strengthen the positioning of entrepreneurship as a major program because it creates a unity of purpose among the students. Students who enroll in entrepreneurship courses typically do so without the campus camaraderie so often associated with marketing, management and finance clubs and group activities. Their entrepreneurial learning process is typically restricted to the classroom unless they work as part of a class group on a term project such as preparation of a business plan.

An entrepreneurial club affords the student the opportunity to share the learning experience with others outside of the classroom environment. The club, by exposing members to practical business experience, can achieve a continuing commitment to entrepreneurial development beyond the curriculum agenda. Local business communities have many people who are interested in starting their own business but lack the necessary preparation skills. Assisting aspiring local entrepreneurs in the preparation of their business plans and venture presentations can effectively supplement a student's learning experience as well as create a positive image in the community for the academic

institution. Other business community assistance can be in the form of market research, consumer surveys, student consulting projects, and preparation of financial loan requests.

Another initiative that members of the entrepreneurial club can jointly participate in is the development of a business venture that can be operated during the school years. Non-profit ventures can include charity sales of collected goods, assistance programs for the elderly, or tutoring programs. For-profit ventures might include on-campus marketing services, web development for small businesses, or student transportation and travel arrangements.

The most significant barrier faced by student clubs is how to sustain member interest. There are several initiatives that can be used to overcome this negative resistor. The club must have institutional support and accreditation, as well as a faculty mentor to provide guidance and initiatives. Either from school or sponsoring student council funds, or from the institution's Entrepreneurial Institute, funds can be made available to the club for use in seeding a business venture or reimbursing the club for expenses. The faculty mentor should be a key entrepreneurship professor who can effectively advise club members on non-classroom activities.

The school, either through board funding or through the Institute, may be able to fund development of a business incubator for its graduating entrepreneurship alumni. The incubator can provide a greatly subsidized location for start-up office space, professional help, administrative support, conference and customer presentation facilities, and even telemarketing and other marketing services (Allen & Rahman, 1985).

Club member practice in venture presentations can significantly contribute to the budding entrepreneur's ability to convince potential stakeholders to participate in future ventures. A worthwhile exercise is practice in delivering an effective 2-3 minute "elevator pitch." The club advisor can be instrumental in handing out diverse case write-ups where the student club member is asked to deliver a brief and persuasive oral presentation to a group of peers. Effective venture presentations can be the key to seeding and start-up assistance and presentation practice can be invaluable in the entrepreneurial learning process. Other skills that can be acquired through the club include finding financial funding sources, opportunity identification, venture valuation, deal-making, and most importantly, becoming a team player.

The Board of Trustees in a business school is usually composed of prominent business leaders and successful entrepreneurs, but they are rarely approached to solicit their firm's or their own participation in the entrepreneurial program; specifically, internship programs, sponsoring new ventures, and other types of program assistance. Trustees are usually from well-established firms that have already carved out their market niche. Their direct involvement with early stage ventures is rare. Nevertheless, through their business contacts and own needs, they may be in a position to help place a student into a career field where he/she can gain valuable expertise that can be used as the basis for a future entrepreneurial venture.

Schools should develop an ongoing relationship with board members and involve them in the entrepreneurial program. Initial activities may include invitation to classroom sessions, either as speakers, case study discussants, business plan reviewers, or general observers. Relationship development can then progress to intern sponsorship and new venture assistance. If financial help is not feasible, trustees should be encouraged to act as a non-paid board advisor to new student or

alumni ventures. Their business contacts, knowledge of market, legal, and financial sources, can be invaluable to the young entrepreneur.

Additionally, the school should consider establishing an Entrepreneur in Residence each year, rotating senior board members or distinguished alumni. This executive would allot time to visit with the faculty and students, addressing such issues as new venture evaluation, giving advice to entrepreneurship students, and negotiating business community involvement and commitments.

Alumni, as well as board members, can be called upon to perform similar functions. Many are already entrenched in the business community and can be called upon to secure successful entrepreneurs and corporate executives as guest speakers. Potential speaker candidates are often flattered to be given an opportunity to address a business class and the probability of them accepting your invitation to speak will be high. If their schedule conflicts with class hours, they should be asked to suggest an alternative, and they invariably will.

Vesper (1987) suggests a unique entrepreneurial classroom approach whereby entrepreneurs participate in classes with students. Alumni would be a strong resource for this endeavor, especially if they would serve as mentors to the students. Students might gain a fuller understanding of the relationships among the subjects they study, while entrepreneurs might benefit from student contributions to their ventures.

Alumni, if asked, can often arrange a plant or corporate tour for the entrepreneur class. Although some undergraduates already may have hands-on work experience as an intern, most students have not worked with a business firm. Observing the dynamics and interactions in the workplace affords the student the opportunity to absorb the realities and issues of managing people, producing goods and services, and dealing with the many problems associated with acquiring customers, growing the firm, and sustaining competitive advantage. Many times, these tours provide necessary contacts for future internship positions.

Part of the visit would include meeting with a key executive who can brief the students on the nature of the firm's business activities, their market, and perhaps their strategies to succeed. Students should be asked to prepare a few key questions that will help them understand the issues faced by the firm. Typical questions might include asking about the firm's expansion plans, if any, and the manner in which this expansion will be financed. Other areas to explore are how the firm attracts and holds key employees, make or buy decisions, protecting intellectual property, and the role of the firm's shareholders (i.e., board members) in decision-making. If possible, making other key employees available to the students may enhance the visit. The visit or tour may be more amenable than visiting the classroom because the guest speaker or entrepreneur may not have the personal time away from the workplace.

INSTITUTIONAL LEADERSHIP

Business school commitment to a successful UEP, combined with active board and alumni participation and initiatives such as entrepreneurial clubs and business plan competition can result in creating and sustaining an enterprising culture within the institution. Program components that include an enhanced entrepreneurship curriculum, an inflow of funds specifically for the UEP, and

the establishment of creative initiatives such as club or class venture development, and an Entrepreneurial Institute, all suggest a potential increase in student enrollment and satisfaction with the UEP. Improvement in school placement services can materially assist the graduate in obtaining the necessary training and experience necessary to start a venture. Providing critical guidance in locating investors and other interested venture stakeholders can come out of board and alumni assistance. Recruitment and retention of qualified entrepreneurship faculty suggests an improvement in the quality of the UEP as well as creation of the proper balance between the academic and the business learning processes.

In today's economy, undergraduates are finding it more and more difficult to secure attractive first job opportunities. Campus interviewing is down as is internship positions and overall entry positions. By providing a meaningful entrepreneurship minor or "area of emphasis," the school is not only preparing the student for potential success in future ventures, but also providing an "intrapreneurial" perspective to traditional career fields that can place the graduate in a leading position in many interview processes by convincing recruiters that he/she can provide immediate return on investment if hired.

The impact on the community must also be considered. A UEP that brings the entrepreneurial student in contact with community business leaders and aspiring small business owners may serve to greatly enhance the institution's standing in that community. This may result in attracting very qualified administrative support staff and possibly lead to joint school-community business ventures. Impact on the business community is not limited to nearby school communities. The dissemination of the results of key UEP components to the business world helps the school to gain exposure as well as attract funds and business and career opportunities for its students.

IMPLICATIONS

The paper generates a number of implications for continued research and practice. A number of questions are worthy of such research: Should entrepreneurship programs in the business school differ between men and women? Should students participate in start-ups during their academic years, either on their own, or in collaboration with others? Should entrepreneurship be offered as a degree program at the undergraduate level or should it be offered as an area of emphasis or minor within another business-related B.S. or B.A. degree program? Should recruiting efforts for business school board trustees include a commitment for hands-on involvement in the school's entrepreneurship program?

These questions have a direct bearing on higher education's commitment to a successful undergraduate entrepreneurship program. To provide a framework of empirical data to answer these questions, business schools must consider the value of systematically collecting information on incoming students enrolling in entrepreneurship courses, and tracking them beyond graduation to career accomplishments in both traditional and self-employment opportunities. It would be interesting to discover how many women graduates start their own ventures rather than enter family-owned businesses, or enter the traditional job markets. If the data uncovers a healthy trend

toward family businesses, the curriculum and the gender of guest speakers can be tailored to support this trend.

Increased interest in new venture launch classes can spawn institutional emphasis on more hands-on board involvement in the form of tutoring and financial assistance, and also encourage school incubator development. Additionally, it may be preferable to offer sufficient school infrastructural support for an Entrepreneurial Area of Emphasis to substantially ensure that virtually any student who wishes to entrepreneur, either simultaneous with his/her studies or immediately after graduation, can do so (Benson, 1992-93).

CONCLUSIONS

The attractiveness of an effective entrepreneurship program to undergraduates can significantly contribute to the recruiting efforts of business schools by offering students the necessary preparation for self-employment. Lacking the career placement development tools offered by traditional business disciplines, entrepreneurial programs must stimulate entrepreneurial behavior on the student's part by deeply involving the educational institution in supporting the environment, curriculum, and hands on exposure to the entrepreneurship program. This paper suggests a model undergraduate entrepreneurship program that, if successful, can offer significant assistance in enhancing the school's reputation as a learning institute as well as providing the necessary training and exposure to help graduates enter the entrepreneurial field.

There is a growing body of entrepreneurship literature and systematic theories that are necessary for recognition of entrepreneurship as an established discipline (Ivancevich, 1991; Ronstadt, 1987; McMullan & Long, 1987; and Plaschka & Welsch, 1990). Entrepreneurship programs in colleges and universities are evolving into a more formalized educational process, and there is little doubt that the field of entrepreneurship will take its place along-side other legitimate business school curriculum. The most productive entrepreneurial situation would be when all three major activities in this paper's model - enterprising culture, entrepreneurial curriculum, and entrepreneurial training - can work together in parallel and enrich each other. It is probable that an enterprising culture and a robust curriculum will influence attitudes in a positive way toward starting ventures. Training entrepreneurs can give valuable contributions to courses in the form of real life experiences in venture development and student business plan evaluation conducted by entrepreneurs and faculty.

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REENGINEERING OF ENGINEERING EDUCATION: IN THE CONTEXT OF ENTREPRENEURSHIP DEVELOPMENT FOR SUSTAINABLE GROWTH OF SME'S IN INDIA

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ABSTRACT

Considering the engineering education process as manufacturing process this paper tries to explore the possibility of reengineering of engineering education. The author has tried to examine the input, process and output factors for engineering education. Paper gives the trend in engineering graduates towards wage employment / self-employment as career option reasons as to why the product of engineering institution after passing out turn towards the wage employment as career option. The author proposed the input in engineering education process to inculcate upon the students about self-employment as career option and entrepreneurial venture avenues.

The engineer as entrepreneur is a need for today in the changing era of globalization, liberalization wherein the technology is changing at faster rate and product lifetime cycle day by day. Under the circumstance engineer as entrepreneur can play an effective role for sustainable development of SME'S by transfer of technology in efficient way.

INTRODUCTION

Engineering education plays a important role in developing the technical manpower required to industrial, commercial and business sector for its sustainable growth. In last two decades since 1991 world is significantly propelled by technological advances in information systems, materials and devices. The contribution and role of engineering profession to this progress have been substantial. In this context many have observed that the engineering education today doesn't adequately prepare graduates for engineering practice (Brawner & Miller). Employers argue that graduates tend to be skilled in the academic requirements of engineering without having learned and practiced other skills which are also important on the job skills such as team work, leadership and understanding the relationship between engineering and business operations. In Canada, continuous technological change put pressure on engineering faculty to give more and more technical content into their engineering curricula (Evolution...). Industrial sector needs engineering graduates be broadly educated and knowledgeable about the environment in which they live and work, sensitive to the economic, social, political, cultural and ethical dimensions of their work.

Entrepreneurship is perceived to bring benefits at both the macro level of economic development and micro level of personnel development. Entrepreneurial vision is one of the most important forces for driving innovations, increasing market efficiencies and responding to the challenges and opportunities (Strengthening...). In this scenario, small and medium sized technical entrepreneur in particular play a vital role in the social and economic development of the country by improving the efficiency of resources use, reducing risks and hazards, minimizing wastage and safeguarding environmental qualities.

Changing needs of employers, away from specialization and towards flexibility and lifelong learning make a case for change in engineering education. Change needs to be built on sound understanding of factors that effect student learning. One approach, which inculcates students to take responsibility for learning and thus ensures deep and active involvement, is problem-based learning (Ditcher, 2001).

ENGINEERING EDUCATION INFRASTRUCTURE PRESENT SCENARIO

Education is the most important of any resource. The key factor of all economic development comes out of the mind of man. Therefore human resource development has a multiplier effect on utilization of all other resources. The basic problem of the under developed countries is not the poverty of natural resources but the under development of its human resources. In today's industrialized society a broad based system for education and training is more essential than even natural resources. Engineering education is clearly the most important contribution to the economic viability of any nation.

The technological dominance of the United States has largely been possible because of its educational system which has supplied an abundance of scientists and engineers besides business strategists, managers, skilled technicians and skilled workers (Bhaskaran, 1996).

India has formally recognized the importance of higher education and science and technology for national development and committed itself to the development of science and technology manpower (Constitution, 1949; Government, 1958). Over the past fifty years the country has provided fully policy support (Government, 1958; 1968; 1986a; 1986b) and substantial public funds to create one of the worlds largest system of higher education. A system, which includes some internationally, recognized institutes in the country to provide leadership role in higher education in engineering and technology (www.worldbank.org). These Indian Institutes of Technology (IIT'S), one in each region has developed global reputations. In addition, India has a few front-ranking universities/ institutions for engineering & applied sciences education (i.e. Indian institutes of science, Roorkee University (now IIT), Anna University, Jadavpur University), Regional engineering Colleges, Technical Teachers training Institutes and some well established state engineering colleges forms the second tier of technical education. And some five hundred other engineering colleges and eleven hundred polytechnics both public and private follow this.

In the last decade, there is a mushroom growth of engineering institutions in private sector resulting additions of thousands of unemployed engineers. This is due to the fact that:

i)	Lack of quality assurance, obsolescence in curricula and teaching methodology;
ii)	Poor infrastructure and technological support;
iii)	Absence of global perspective
iv)	Failure to attract and retain talent to teaching profession
v)	No incentives to utilize the system to its fullest potential and mobilize additional resources;
vi)	Institutions are isolated & little interaction with employees, community other R&D institutions;
vii)	Growing mismatch of the student capability with requirements of employment market;

This situation has been aggravated by our education system itself, which molds students for job/wage employment than for self-employment (Wani & Sharma, 2000). In the technical institutions the technical abilities of students are developed, but little has been done to give exposure to the student about application of these abilities in launching entrepreneurial venture. This is in spite of the fact that entrepreneurship development cells have already been established in technical institutions. This lacuna can be removed, if these institutions starts requisite course relating to the entrepreneurship motivation, training to built up technical and managerial competence so as to face the challenges and uncertainties in the field of entrepreneurial venture. For this the re-engineering of engineering process is important to improve the engineering as well as entrepreneurial capability and concept of engineering student.

ENGINEERING EDUCATION REQUISITES

The engineering education programmes must not only teach the fundamentals of engineering theory, experimentation and practice but be relevant, attractive and connected, preparing students for a broad range of careers and lifelong learning (Augustine & Vest, 1994). The tremendous growth in technology has resulted in pressure on engineering faculties to pack more and more technical content in their engineering curricula. Also engineering graduates are increasingly required to contribute in areas well beyond the technological dimensions. It is the need of the modern society that needs engineering graduates be broadly educated, knowledgeable about the society, sensitive to the economic, social, political, environmental, cultural and ethical dimensions of their work. Employers of graduate engineers needs technologically based, broadly educated with good communication skill, ability to work as a part of a team, potential leader and a basic knowledge of business and management. The Canadian Academy of Engineering (Evolution...) after getting inputs from graduates after a few year of experience particularly in small industry supports inclusion of emphasis on these factors in curricula.

The approach at the under graduate stage should focus on identifying and teaching fundamental concepts and developing the skills and applying these to practical engineering problems. The focus should be on problem solving, project-based learning and enhanced learning skills. Engineers already possess/ develops some fundamental problem solving skills (DeLisle, 1999). They are not only to recognize and describe problems, but also must offer acceptable

solutions to the problematic environment. Engineers are to subject their ideas to a variety of tests before adopting them thus are supposed to assume responsibility for the quality of their work.

In early years, engineering education did a good job of transmitting knowledge to engineering students & it might be argued that it facilitated the development of skills & promoted the values in ways appropriate for the time. Engineering students developed and sharpened the skills by working through numerous laboratory exercises and industry-designed case studies and by participating in cooperative industrial work-study programmes and practice schools. The primary values of engineering practice at the time were functionality and profit. A good process was one that did what it was supposed to do in as profitable manner. Both the engineering curriculum & the faculty reinforced these values (Kshirsagar, Thete & Kulkarni, 1998).

The circumstances engineers face today are considerably different from the past, and circumstances of the future will be even more different. Significant changes in engineering education will be required to meet the needs of preparing graduates for the challenges of the coming century.

CHALLENGES TO ENGINEERING EDUCATION IN THE COMING CENTURY

Engineering education can develop the faculties of intuitive and creative skills and can ensure the capabilities of a person. The education in general and the engineering education in particular have played a pivotal role in development of human resources. It is an accepted philosophy that education through knowledge skills, development of values and attitudes provides strengths to the people. It broadens their views to respond to the changing situation and enables them to respond and contribute particularly to the socio-economic development and thereby improving quality of life (Kshirsagar, Thete & Kulkarni, 1998).

In fast changing technological environment, wherein the industry life cycle and the technology life cycle have been shrinking, technical entrepreneurship has assumed a central place in enterprise development and sustainable economical growth (Sanghvi, 1996). The small-scale industrial sector in India, who has enjoyed a lot, now has to face the challenges due to open economy. The challenges in industrial and business environment coming and competence needed are as follows:

The engineering institutions can offer better resources to develop requisite competence among engineers for tomorrow (Matani, 1997). Engineering educators face an increasing need for clarity in what way they are doing, why they are doing and how (Newport & Elms, 1997). Early engineers believed in and worked in society that believed in for its own sake. The paradigm was that engineer was an agent of technological change, carrying little or no responsibility for outcomes. Today engineers are facing different paradigm. They are expected to bring a combination of technology, economics, social consciousness and environmental awareness in deriving most possible good both present and future communities. They always had to deal with technological change, and engineering education must change in response. The other reason why engineering education needs to rethink its direction is that in many countries there is an increasing demand for accountability by those who pay the bills. Quality assurance and quality management are demanded in education

therefore educators need to follow quality principles. One of the most important is to make sure that the needs of the customer are met.

Sr. No.	Major Changes in Business Environment	Competence Needed
1	Increasing competition	i) New management techniques
		ii) Learning new success factors
2	Fast developing techniques	i) Higher knowledge base
		ii) Need for technical competence
		iii) Need for continuous updating
3	New patterns of work	i) Higher competence needs
		ii) More individual responsibility
		iii) Professional/ Expert skills
4	Internationalization	Need for communication &
		interpersonal skills
5	Ageing workforce	i) Diversification and Motivation
		ii) Management and Leadership
6	New values	i) Recognition of changes
		ii) Career Growth
		iii) More Mobility

QUALITY ASSURANCE IN ENGINEERING EDUCATION

The engineering education can be regarded as a system with elements like inputs and outputs similar process to as that of manufacturing systems. The input subbasements include faculty, students, administrative support, financial resources, infrastructure, programmes and management. The institution as a process subbasement are student training faculty development, development and optimum utilization of infrastructure, curriculum revision, and development as per market need, educational research and feed back mechanism, The output subbasement includes formal trained manpower, retraining continuing education, research development and services.

As per Vaidya and Jain (1996) feedback obtained from user-system (society and industries) to improve the quality of engineering education is:

i)	Transfer of technology;
ii)	Institutions under system relationships;
iii)	Participation of user system in curriculum development, continuing education and so on;
iv)	User system as a resource input both financial and expertise.

Difference between two modes of operation in industry & institution is as profound as it is in manufacturing process; only difficulties of designing & implementing optimal control in an education context are greater.

Item	Manufacturing Process	Engineering Education Context
Measured Variables (MV)	Yield, Purity, Hardness, Production Rate, No. of Defects, Rate of Return etc (easy to access)	Knowledge (easy to access)
Assessment Techniques	Process variables measurement & calculation (Objective)	Exams (objective) Performance assessment (subjective)
Set Point Target (SP)	Numerical values (objective)	Exam scores (objective) Performance ratings (subjective)
Feedback Signal	MV and SP (clear)	MV and SP (fuzzy)
Control Variables	Temperature (clear) Pressure (clear) Feed rate (clear)	Course content (clear) Curriculum design (fuzzy) Instructional methods (very fuzzy)
Required control Variable adjustments	Qualitatively clear Quantitatively determinable by measurement or simulation Easy to implement	Qualitatively fuzzy Quantitatively difficult to predict or measure Hard to implement
Benefits	Easy to demonstrate	Difficult to demonstrate

In this context, Richard Felder (1998) states that the control of manufacturing system is much easier than control of educational system. No doubt the control in educational system is little bit difficult, but with these guidelines, the quality assurance procedures (of which peer review and external accreditation are possible components) can ensure that every one does his best at what he is used to do so (Sparks, 1993). Now a day's quality is defined as 'fitness for purpose', with the customers indicating the 'purpose' and the providers delivering the 'fitness'. More precisely in the field of education this becomes as "Quality in education means defining worthwhile learning goals and enabling students to achieve them", where

i)	Applied to engineering, defining worthwhile goals involves paying attention to academic standards, to the expectations of society, to student's aspirations, to the demands of industry, to the requirements of professional institutions, to the fundamental principles of the subject, to the practical applications etc.
ii)	Enabling students make use of research into how they learn and build on successful teaching experience, both of which may require professional development for most teachers.

It makes clear that the educational methods must match to the educational goals. The terms 'knowledge', 'skills', and 'understanding' are often used in defining the cognitive aspects of

educational curricula (Technology..., 1992), but as with the world quality, the terms are used too imprecisely to be much value in course design. For the purpose of engineering education, these terms can be defined as:

●	<i>Knowledge:</i>	It is a information that has been memorized and can be recalled in answer to a question. If students are interested and understand, their learning of knowledge can be rapid and straightforward.
●	<i>Skills:</i>	It is that what people can do without thinking much about how to do them, such as communication, designing, solving familiar questions etc. Some skills are called manual and some intellectual; all are mental in the sense that the learning occurs in brain. Unlike knowledge, skill cannot be learned very rapidly, however interested the learners might be.
●	<i>Understanding:</i>	It is the capacity to use explanatory concepts creatively in explanations, in new designs, in correcting unfamiliar errors, in asking, searching questions, in argument and discussion and so on. It is the ability to tackle new and unfamiliar problems successfully.
●	<i>Know-how:</i>	Like understanding it is a problem solving capability, but it is acquired through experience rather than through familiarity with abstract, concepts and their application.

Again, most engineering problems require a mixture of knowledge, skills, understanding and know how for their solutions, so a case can be made against the process of analyzing learning into distinct categories. Ramsden (1992) feels necessity to acquire sufficient knowledge, skills, understanding, and problem based learning can be one approach in engineering education.

WHAT IS ENTREPRENEURSHIP?

Entrepreneurship is creating and building something of value from practically nothing. That is, entrepreneurship is the process of creating or seizing an opportunity and pursuing it regardless of the recourses currently controlled. As per the Jeffrey Timmons (1998) entrepreneurship is a human creative act. It involves finding personal energy by initiating and building on enterprise or organization, rather than by just watching, analyzing or describing one. It needs a vision and the passion, commitment & motivation to transmit vision to the stakeholders such as partners, customers, suppliers, employees and financial bankers. It also needs courage to take calculated risks both personal and financial and then doing everything possible to influence the odds.

The development of entrepreneurship can be alternate option to many economic evils in most of the developing countries. In the context of Indian perspective its need has been dynamic and ever increasing to encompass much wider areas that merely economic problem areas. Presently entrepreneurship development in India is very much needed for solving the problems related to:

i)	National Production;
ii)	Balanced regional development;

iii)	Dispersal of Economic Power;
iv)	Unemployment
v)	Harnessing youth Vigor

WHO CAN BE AN ENTREPRENEUR?

The entrepreneur in today's society is opportunistic, money grabbing aggressive and autocratic (Dailey). Mark Casson (1997) finds the entrepreneur is something whose judgment differs from that of other people, he believes that without his intervening a wrong decision would be made. The entrepreneur intervenes in order to exploit his superior judgment. There is tendency to classify entrepreneurs as innovators. There is much truth in this, but the new entrepreneur is a special breed. He is not just a schemer or inventor, who works for the unit; he is more a manager who is inventive also. His innovation is to be economically feasible.

The entrepreneur is said to be successful, when he detects and evaluates the new situation in his environment and directs the making of such adjustments in the economic systems, as he deems necessary (Samiuddin & Rehman, 1989). Tandon (1975) finds the entrepreneur who conceives an industrial enterprise for the purpose, displays considerable initiatives, grit and determination in bringing his project into function/ realization and during this process, performs different operations to run start unit from conceptualization to operational stage.

HOW ENTREPRENEURIAL ARE THE ENGINEERING STUDENTS?

It has been observed that the general trend of engineering graduates is toward the wage employment as career option. It is lack of awareness about the scope in this field. A survey was conducted by the author among the final year students of mechanical engineering at Regional Engineering College, Kurukshetra for three consecutive years. The questionnaire was given

i)	To assess the inclination of students towards self-employment / wage-employment.
ii)	To assess the entrepreneurial concepts of the students.
iii)	To assess the entrepreneurial capability of the students.

Hypothesis tested was that; there is a relation between entrepreneurial concept and entrepreneurial capability of student in selecting a career option. Questionnaire was to identify the inclination of students towards self-employment or wage employment as career option and judge their concept and capability. In this student was to give the weightage to each factor/question. The concept and capability was worked out from the response received. Findings are as follows:

TABLE-: Career Options of Students						
Year	Self-Employment Option Of Students			Wage-Employment Option Of Students		
	No. of Students	Concept	Capability	No. of Students	Concept	Capability
1997	22	0.5495	0.8558	22	0.5283	0.7848
1998	25	0.6735	0.8687	15	0.5844	0.8448
1999	18	0.6329	0.8888	27	0.5815	0.8281
2000	09	0.6396	0.8524	25	0.5946	0.8075

Note: Concept is entrepreneurial concept of student, which is an inherent characteristic of individual.
Capability is entrepreneurial capability, which can be developed through proper educational input.

OBSERVATION

1. The entrepreneurial capability and concept of students opting self-employment is on higher side than that of the students opting wage-employment as career.
2. The capability of the students, both in self-employment as well as wage-employment is less than concept of students.
3. The total number of students choosing wage-employment is more than number of students choosing self-employment as career option.

ANALYSIS

Entrepreneurial capability of students is less than entrepreneurial concept. The concept is developed by the theoretical lectures, whereas the capability is developed with product oriented techno commercial practical exposure and field experience with the real industrial problems to the students.

Can Engineering Background of Entrepreneur affect the Growth of Unit?

Educational qualification is asset with individual. It gives confidence in solving various problems. The technical education is an added advantage, if one happens to be in engineering industry. As per the study confined to the engineering industry, it was tried to know if technical education helps the entrepreneurs in improving their performance (Bhatia & Sharma, 1989). The hypothesis tested was that, technical education helped the entrepreneurs in improving their performance.

TABLE-: Relevance of Education with Growth Pattern of SSI Unit				
Educational qualification of the entrepreneur.	Growth Pattern			
	Significant positive growth.	Significant negative growth.	Insignificant growth.	Total
Technical Education	42.3% (11)	11.5% (03)	46.2% (12)	100% (26)
General Education	18.3% (15)	14.6% (12)	67.1% (55)	100% (82)
TOTAL	26	15	67	108

NOTE: Figures in the brackets are number of cases.

As detailed in the above table, it can be seen that 42.3% of entrepreneurs with technical qualification appeared in significant positive growth pattern, while 18.3% with general education happened to be in this category. In negative growth 11.5% entrepreneurs with technical and 14.6% entrepreneurs with general education were found. Similarly 46.2% persons from technical education showed stagnated growth with this it were 67.1% for the general education category. It proves the positive relationship between the technical education and entrepreneurial performance.

The phenomenal growth of engineering colleges and polytechnics in private sector increased the output of technical persons in many folds resulting rise in unemployment. In this context, self-employment is the potent way for technical workforces, which will not only provide the employment for themselves but also will be in a position to generate employment for others (Wani & Sharma, 1999).

ROLE OF ENGINEERING EDUCATION IN DEVELOPING ENTREPRENEURIAL VISION

In order to assess the input in the engineering education, the author conducted a survey. In this the questionnaire prepared was got filled from faculty of engineering institutions in and around. The questionnaire was given with intention to get the details of input given by teacher to the engineering student to develop his skill, knowledge and know how etc. The feed back data received is as follows:

It can be seen from the above table, the knowledge input in engineering education is increasing the technical capability of the student. The practical exposure to student about real field problems is lacking, resulting failure in expectations of the employer. Lack of awareness by teacher about the entrepreneurial avenues results to ignorance of student towards self-employment / entrepreneurial venture as career option.

The awareness of teacher for application of knowledge in field is also important; who delivers to student the knowledge and its practical application in industry/ field.

Table - Input in Technical Education by Faculty	
Input factors by Faculty in Engineering Education for	Scale Rating
Knowledge enhancement	
Motivational factor of teacher for teaching profession.	0.9521
Clarity of concepts of teacher about teaching profession.	0.8604
Dedication of teacher to profession.	0.9145
Receptive mind and teachers willingness to learn.	0.6792
Skill enhancement	
Ability of teacher to develop leadership skill and ability to work in team among students.	0.8958
Developing innovative approach among students.	0.8563
Practically well aware of application of technology/engineering taught.	0.7979
Keeping abreast of technological development in the field.	0.8791
Entrepreneurial Awareness	
Awareness about the avenues for students in self-employment.	0.6500
Awareness of industry/employer expectations form students	0.7021
Giving exposure to the students about the real practical problems of industries.	0.5541

The aim/objective of the student seeking admission to technical institution is:

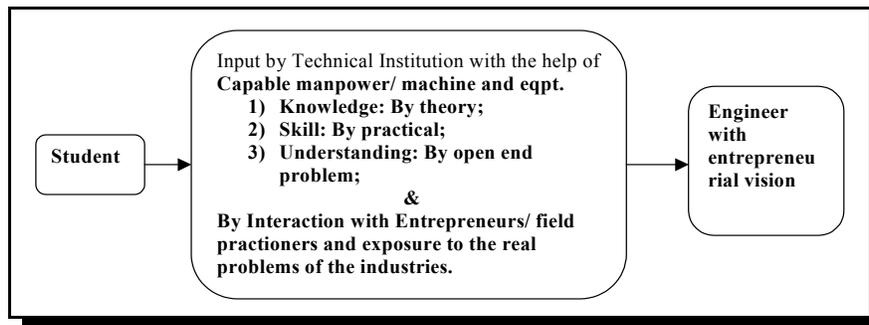
i) Wage employment, ii) Self-employment iii) Higher studies for research.

In this majority of the students prefers for the wage employment and very little no of students are interested in self-employment. This is due to the lack of awareness among the students about entrepreneurial avenues, various schemes/ incentives provided by the government for encouraging self-employment in small-scale industrial sector. It is the hard fact that, this is due to the lack of awareness among the teachers due to the ineffective industry institute interaction. The effective industry institute interaction will not only develop the faculty of the teachers but will also help in realizing the problems of industrial sector. The good example of effective industry institute interaction is the Silicon Valley project, which was conceived by Fredrick Terman, of the Stanford University, USA in the year 1948. At that time Terman (1947) has emphasized that, If western industry and western industrialists are to serve their own enlightened & long range interests effectively, they must co-operate with the universities and whenever possible, strengthen them by financial and other assistants.

Objectives of the curriculum should be from occupational & vocational angle to develop the:

i) Diagnostic skill;	ii) Management skill;	iii) Computer handling skill;
iv) Competence building for decision making;	v) Awareness of international quality standards	

Figure-1: Role of Institution in Developing Entrepreneurship



Well-qualified faculty with entrepreneurial concepts and capability can make significant contribution in developing entrepreneurial attitude among engineering students. For this theoretical lectures to be followed by practical, relevant to theory and then open ended problem related to industry, can be helpful in developing application capability among students. Interaction with entrepreneurs and acquaintance with real life industrial problems can develop capacity among engineering students to face uncertainties and unseen problems more tactfully and find out viable solution for sustainable development.

STRATEGIES FOR ENTREPRENEURSHIP DEVELOPMENT AMONG ENGINEERS

Engineering educators should do something to develop creative and innovative spirit helpful for entrepreneurial capabilities in students. Necessity of developing innovative, creative and entrepreneurial attitude to suit individual idiosyncrasy in the modern industrial world is unquestionable. Karune (1987) feels that the methodology of creative thinking alone cannot turn engineer into entrepreneur, unless he has required amount of insight into basic laws and command over various sources of knowledge to become resourceful. To develop this insight among student's i.e. presenting the principles from known to unknown, from old concepts to new ones, from simple problems solved by one principle to complex problems involving several laws can be the best method. This can give students the right insight and helpful to develop his confidence in meeting new situations with initiative and originality.

Technology and science based entrepreneurship provides an enabling factor self-employment to educated youths and providing employment to others through this endeavor. It can develop the

faculties of intuitive, creative skills and enhance capabilities of a individual. The education in general and technical education in particular has played a pivotal role in development of human resources. Technical education with entrepreneurship development can also play an important role in human resource management.

Engineering & research institutions are surplus with intellectual cream and can be considered as brilliant source of ever-emanating new ideas (Matani, 1995). On the foundation of proven theories & established scientific knowledge, fresh endeavors should be done to put some impetus to catch-hold of sparks of excellence from students and faculties working on different projects. These needs transfer of technology from laboratory to industry, as successfully done in case of agriculture universities and dairy research institutes resulting green & white revolution n India. The workshop/ laboratory facilities in the technical institutions are to be of good quality and precision. This facility can be utilized in optimum fashion. However Natarajan (1990) has cautioned that, it must be remembered that none of the modern equipment for educational technology is of any educational use unless it is in the right place, at the right time in working order and in the control of a teacher who understands its application. For effective implementation of entrepreneurship development programme, students are to be made aware about different stages in starting venture incorporating practical problems as happened to be in running it. For this effective industry institute interaction could be vital. The proposed entrepreneurship development programme in the engineering institution can be as follows:

Table- Phases in Entrepreneurship Development Programme		
Programme Phase	Focus to be made on	Input / Action during programme.
Selection of the right prospective candidate	The Entrepreneur	Entrepreneurial concept & capability test followed by the entrepreneurial input.
Motivation of an individual to become an entrepreneur.	The Entrepreneur	*Awareness about government incentives, and avenues in the field; *Interaction with entrepreneurs followed by visit to their unit.
To start the unit	Venturing process: marshaling resources men, m/c, material, money, land, services & technology etc. & market assessment	*Industrial potential survey; *Market survey: assessment of demand; *Idea of market terms and conditions; *Preparation, presentation of project report followed by group discussion.
To run the unit.	Running a business/ venture awareness of the internal & external factors affecting the performance of a unit.	*Interactions with successful/unsuccessful entrepreneurs; *Open-ended problem to students during in plant training of unit followed by report preparation, presentation & group discussion.
To expand the unit	Unit/ market/customer.	*Case study of an industrial unit, report preparation and presentation and group discussion.

The author has conducted such entrepreneurship development programmes on this pattern for the educated unemployed youths irrespective of their educational background. The success rate of these programmes is quite good as compared to that of the entrepreneurship awareness camps and entrepreneurship development programmes where the students are not getting the opportunity to have acquaintance with the real field problems in the field in which they are going to launch the unit.

CONCLUSION

In fact entrepreneurial development is a continuous learning process and therefore the scope and avenues for research and experimentation are also unlimited. The suggested system is not conclusive and need not be blindly followed, but it definitely helps in planning the approach and methodology, which can appropriately, design to suit the prevailing conditions.

This will be helpful in reducing the gap between the entrepreneurial capability and entrepreneurial concept of the student. Also in developing entrepreneurial workforce for sustainable development in SSI sector through effective technological innovation.

With the Indian economy opening up and offering fresh avenues to the entrepreneurs, the need for revising the present management of science and technology education has become inevitable. It has become essential to inculcate entrepreneurial qualities in students. The upcoming projects should be with new ideas and aim of constant up gradation in production in product/service involving latest technology and sophisticated equipment's as per the global standards so as to meet the competition. With the philosophy there is good scope for technical person in entrepreneurial field.

Preparation for job cannot be the sole objective of education. It is equally important to motivate younger talents in science and technology to turn towards entrepreneurship as a viable pursuit of excellence. In the changing industrial scenario, wherein product lifetime cycle is shrinking and technology is changing at faster rate, entrepreneurship development among engineers will be an effective mechanism of luminous renaissance in technology innovation and sustainable industrial development of a nation. We should not forget that now in the changing scenario it is the technology, which drives the economy. Since engineers create this stuff, they can be real masters of the society.

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EFFECTIVE ENTREPRENEURIAL EDUCATION: A FRAMEWORK FOR INNOVATION AND IMPLEMENTATION

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Maria Gonzales, East Tennessee State University

ABSTRACT

The misalignment between higher learning practices in relation to teaching technical entrepreneurship, and the needs of high-tech start-ups and existing technology-based businesses is substantial. This article provides an innovative approach to remedy this problem. The approach advocated in this article stresses an open system orientation with external strategic partners in business, industry, the professional community and technology-based business incubators. The suggested approach has been applied with substantial benefits for both higher education and external stakeholders. Results of three mini-case studies utilizing the advocated approach are presented and their implications are discussed.

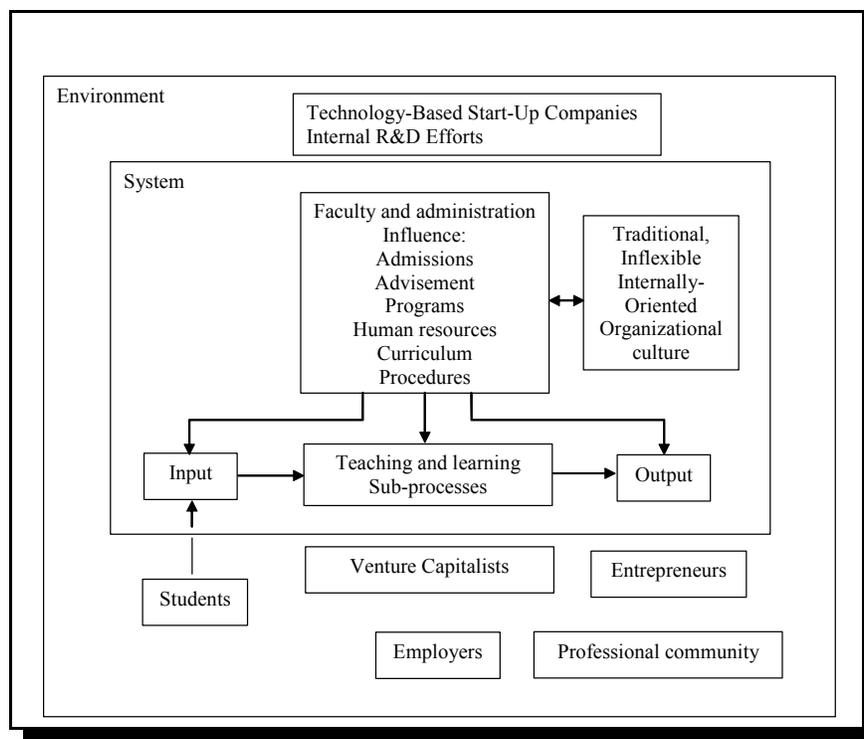
INTRODUCTION

It is difficult to be optimistic in these turbulent times. Headlines in the popular press tell us that investors are loosing confidence in CEO's, the Bear market is causing huge losses in retirement portfolios, and stock markets are unlikely to recover until the fourth quarter of 2004. Against this backdrop, innovative entrepreneurship education may offer a glimmer of hope, as it has the potential to positively influence both new business start-ups and new business development within existing businesses. However, in order for such potential to be translated into a tangible economic positive force, higher education must adopt an open system approach that stresses technical innovation and partnerships with the businesses, industries and professional communities responsible for commercializing these innovations.

In general, institutions of higher learning have been slow in responding to the new realities of technical entrepreneurship education that is founded on web-based information technology in a global business context. Not unlike business organizations of the recent past, many of these institutions of higher learning still operate under the closed system orientation illustrated in Figure 1. In this context, they are slow to provide the skills needed by a technology-based business start-ups and the internal research and development (R&D) requirements of existing technology companies. According to Calabree (1993) rigidity and the dysfunctional nature of the higher learning culture and practices makes change difficult. However, higher education can learn from

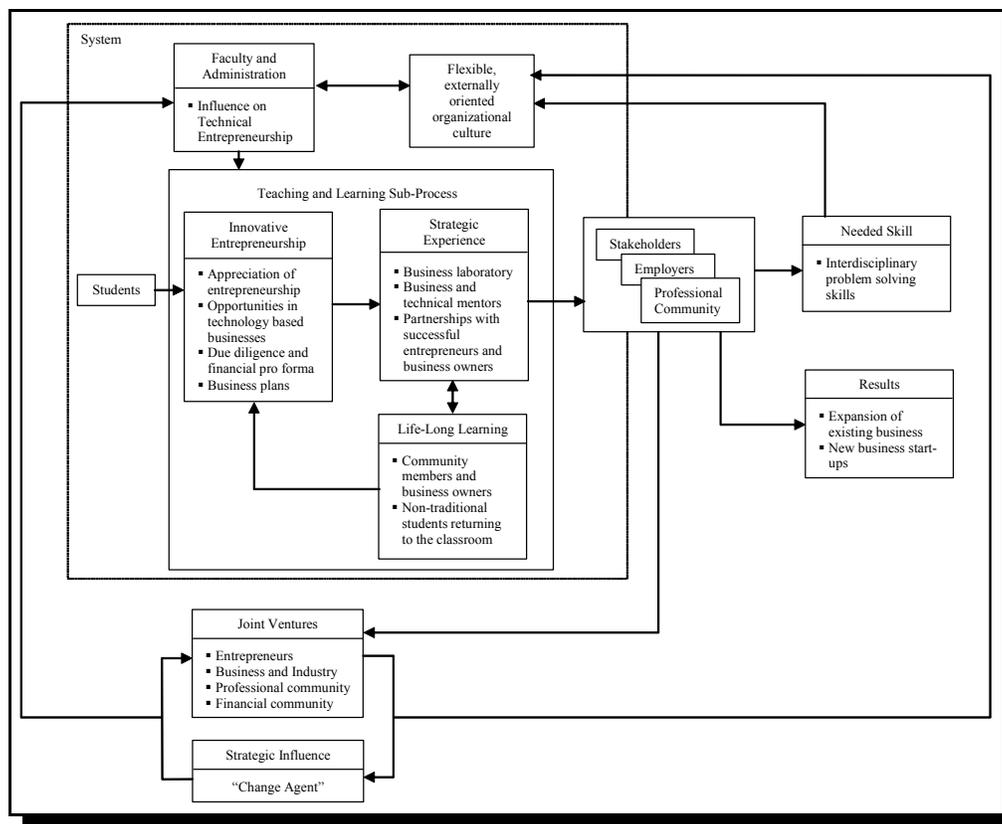
the business environment that is constantly changing and competing in a global environment that requires flexibility and innovation in order to respond to customer needs and expectations. Flexibility is a competitive dimension that helps organizations respond to environmental uncertainty and change (Butler & Ewald, 2000). Few institutions of higher learning have moved to the open system stage characterized by an increased outward orientation with a focus on appropriate stakeholders. In the context of technical or innovative entrepreneurship education, these stakeholders become employers in existing technology-based businesses, practicing entrepreneurs, students, and the financial and professional communities.

**Figure 1: Traditional Framework Of Teaching And Learning:
A Closed System Orientation With No Stakeholder Influence**



The objective of this research is to address the need for higher learning institutions teaching entrepreneurship to rethink their mission, strategies and operations to make them more consistent with the open system orientation practiced by businesses today. In the process, mutually beneficial partnerships between business, business incubators and new technology-based businesses are suggested as a step in that direction. The second step involves initiating a process for continuously augmenting the practitioner's skill-set by delivering relevant courses in a timely manner. With these two steps in mind, a framework for implementation is suggested in Figure 2. This framework provides the backdrop for the East Tennessee State University (ETSU) experience that is briefly discussed to shed some light on a practical implementation path that others may benchmark.

Figure 2: Strategic Influence-Conceptual Model: An Open System Approach To Technical Entrepreneurship Education



One contribution made by this study is the conceptual model that provides a context in which higher education can respond to the growing need for systematic technical entrepreneurship education, bridging the gap between the practice of effective entrepreneurship and the skills needed to be successful. This model advocates open and complete collaboration between business, industry, the professional community, and technology based business incubators. The academic and business community recognizes the need for such collaboration. Three mini case studies are presented that demonstrate some of the benefits resulting from the suggested open system model. From the university perspective three patents were acquired from a major chemical company, a separate not for profit research foundation was formed to help mitigate the risks associated with biotechnology ventures, technology transfer was improved, and a new market for our technical entrepreneurship program within existing businesses was identified. This latter opportunity occurred because our partners recognized the those responsible for new product or new business development need the same entrepreneurial skill set as those launching new ventures. In addition to public recognition for their generosity, one of our large business partners benefited from an income tax write-off for their donation of intellectual property. A medium sized business partner gained a comprehensive business plan to accelerate the commercialization of their intellectual property, and also improved

their strategic business model to use technical innovation as a means to gain a sustainable competitive advantage. One of our new venture partners received second round venture capital funding aided by the digital animation designed by our student team. The CEO of this company indicated that the digital animation provided a visual means for rapidly explaining the market benefits resulting from his complex proprietary technology. One faculty member benefited by becoming CEO of a new venture launched in our technology based business incubator and by receiving a government grant to further his commercialization efforts. Another faculty member is consulting for a start-up company in our Innovation Laboratory. During video interviews taped with the students' permission, technology students said that they acquired new business and marketing skills that help them contribute more effectively to company development projects. In addition, business students indicated that they gained a deeper appreciation and understanding of the need for cross-disciplinary teams and approaches when launching high technology business ventures. Hopefully, this article makes a positive step in helping align technical entrepreneurship education with the needs of external stakeholders so that other institutions of higher learning may enjoy similar benefits.

BACKGROUND

Until the late 1970s, higher education and R&D groups in large technology-based companies operated in a relatively static environment. Engineers and scientists seeking breakthrough and innovation were technology-focused with little attention to commercialization or business potential. As a result, higher education adopted a closed system orientation characterized by traditional programs with separate and distinct engineering and business curriculum and offerings. Instructors, rather than drawing on their own wealth of experience, resorted to the teaching model of subject-based teaching handed down by their former professors (Wright, 1995). As a result, very few cross-disciplinary practical-technical entrepreneurship programs emerged. Furthermore, engineering management courses focused on managing technical projects. Although cost and schedule parameters were adequately addressed, the technical performance impacts on market potential, manufacturing risks and Federal Drug Administration (FDA) or other regulatory barriers to successful commercialization were often ignored. These later issues frequently were the very ones that determined overall project success in terms of business measures such as return on investment (ROI).

As a consequence, programs often produced MBA graduates with little appreciation of technical innovation and Masters of Science graduates in Engineering or Engineering Technology with little business acumen. During this same timeframe, smaller more agile entrepreneurial efforts grew into larger technology-based businesses forcing both business leaders and educators to reconsider the need for enhanced technical entrepreneurship skills. One of the gaps identified in the literature was that little attention was devoted to the development of teamwork, communication, and practical managerial skills (Coleman, 1996). Yet, these were the skills being demanded by the business community (Haffner & Maleyeff, 1995).

Significant steps have been taken to address the inconsistencies between business demands and business education. Lehigh and others have created cross-disciplinary programs to enhance a student's entrepreneurial skills by blending engineering, business, design, and other sciences (Ochs et al, 2001). Although a consensus on the content for programs of study has not been reached, a curriculum with at least one course covering the essentials of starting a business including writing a business plan, plus additional course work in small business management, negotiation, high technology, or global business appears to be a reasonable baseline (Kautz, 2000). However, it should be noted that an entrepreneurial leadership program is also important to medium and large sized businesses that rely on new product development and growth to achieve their strategic objectives. Of the current programs in entrepreneurship offered by top schools in business and engineering identified by US News and World Report as of April 2002, only three (3) colleges have graduate certificates in entrepreneurship: University of Chicago, University of California - Berkeley, and Georgia Institute of Technology. Others have majors, minors, or concentrations in entrepreneurship. The "Compendium of Entrepreneurship Programs" by Vesper and Garner identifies one-hundred-and-twenty-four (124) colleges that offer three (3) or more classes on entrepreneurship. Of the one-hundred-and-twenty-four (124) colleges, only ten (10) have certificates in entrepreneurship. The teaching methods utilized tend to vary as illustrated in Table 1.

College	Lecture	Case Study	Other
Pennsylvania	55%	30%	15% experiential learning
Northwestern (Kellogg)	33%	33%	34% team projects
Harvard	15%	75%	10% simulation, field studies
MIT (Sloan)	30%	45%	25%
Duke	45%	40%	15% simulation
Michigan	40%	40%	20% experiential Learning
Columbia	40%	40%	20% group projects
Cornell	25%	40%	35% Discuss., projects
Chicago	50%	25%	25% lab simulation

The need for real-world experience is stressed by the use of the case study method, experiential learning, and simulation approaches as shown in Table 1. However, a path toward achieving the open system orientation still appears to be lacking. In order to shed some light on this pathway, a strategic influence-conceptual model providing an open system approach to technical entrepreneurship education is suggested in Figure 2. This model encourages the free flow of information between the external stakeholders, comprised of those who employ our graduates and the professional community, to influence the technical entrepreneurship curriculum to better match

the skills needed for success in the practical environment. One suggested strategy is to form joint ventures and mutually beneficial partnerships to strategically influence entrepreneurship programs and their teaching and learning sub-process. In addition, the suggested teaching and learning sub-process underscores the students' need for practical experience that can be gained through partnerships with successful entrepreneurs, business owners, and technical business incubators. Students develop business plans that link innovative technologies to the marketplace, while partners serve as business and technical mentors. The arrangement is mutually beneficial as students gain the needed practical experience, and business partners benefit from the outside perspective provided by the students and instructors.

Another important attribute highlighted in the conceptual model is the community's need for lifelong learning in order to maintain a competitive advantage. This is particularly true in high technology organizations where the pace of change of technology mandates the need for innovation. The cultural impact on the faculty and administration is that non-traditional students must be accommodated. One strategy is to offer graduate certificate programs in entrepreneurship that focus on updating skill sets, without requiring a full master's curriculum. An example of such a graduate certificate program is given in Exhibit 1.

Exhibit 1: Courses For Certificate In Entrepreneurial Leadership	
Core Courses	Credits
Small Business Management	3
Entrepreneurial Finance	3
Innovative Entrepreneurship	3
Strategic Management of Technology and Innovation	3
Strategic Experience or Entrepreneurial Experience	3
Electives	Credits
Students pick one of the following courses.	
Leading Continuous Improvement	3
Leading Empowered Problem Solving Teams	3
Scheduling for Project and Quality Management or Project Management	3

During the past eleven years ETSU has been developing partnerships with business, industry and the professional community to enhance our program in innovative entrepreneurship. By innovative entrepreneurship we mean creatively using technology to generate new business opportunities. During this period a stream of research was conducted to suggest best practices in teaching technical entrepreneurship. Our research and the practical experience gained in implementing our program suggest that the open system and partnership approach shown in Figure

2 results in significant benefits for the students, faculty, staff and strategic partners. Some of these benefits were highlighted earlier in this article. The purpose of the discussion below is to provide further detail on the most important lessons learned during this process.

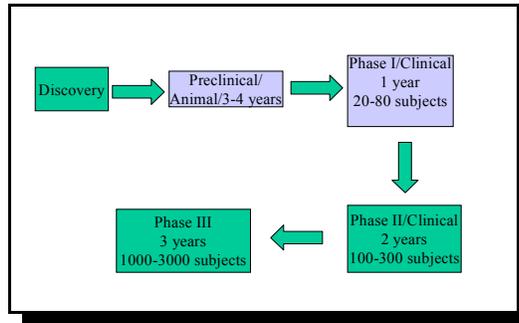
One of the significant lessons learned from the ETSU experience and benchmarking exercises with other universities having affiliated business incubators, is that few institutions of higher learning have a systematic approach for commercializing the intellectual property that results from their faculty's research. Intellectual capital often lies dormant in the university setting. Furthermore, faculty and staff frequently believe that commercializing this intellectual knowledge would be of substantial benefit to themselves and to their students who would experience the entrepreneurial process first hand. The first mini-case study outlined briefly below stresses how the framework in Figure 2 can assist in realizing these benefits.

Over a period of several years, one of our faculty members conducted sustained research on cholesterol lowering drugs and in conjunction with a major chemical company obtained a patent. However, the patent remained dormant because the pathway to commercialization involved several years of pre-clinical work with animal models and then extensive clinical trials. Since the company involved did not have an estimate for the commercial value of this patent, management elected not to make the economic investment necessary to move forward.

Guided by the framework in Figure 2 a student project was designed and implemented. The first author on this article and an outside expert in biotechnology business start-up ventures served as business mentors and the faculty member holding the patent served as a technical mentor. A graduate student team comprised of a Medical Doctor, a Ph.D. candidate in Biotechnology and a MBA candidate took the Innovative Entrepreneurship course as a first step in the Teaching and Learning Sub-process. This cross-functional team generated a comprehensive business plan that quantified the potential economic benefits of the drug when commercialized, and laid out the pathway and timeframe required for success. As part of this first step in the Teaching and Learning sub-process, the graduate student team, guided by the business and technology mentors, developed a more comprehensive business model for the new business venture that subsequently emerged (See Figure 3).

Although the patent had previously been stagnant, the business model for this new biotechnology company's niche in the patent development chain created a business opportunity for the faculty member who had developed the intellectual property. Strategically this new venture strives to commercialize biotechnical intellectual property for nutraceuticals, pharmaceutical or medical devices. Their business model suggested that as research scientists, a faculty team could use their core competencies, to evaluate the efficacy of a product by conducting pre-clinical work with animal models and then extending their efforts to clinical trials. Success with each phase of clinical testing increases the commercial value of the patent. Once sufficient value is demonstrated, the new biotechnology venture plans to out-license this proven capability to an interested buyer. Their future customers will be large pharmaceutical or medical companies with the necessary capital to market and manufacture new products worldwide.

Figure 3: Simplified Business Model For Biotechnology Company's Niche In The Patent Development Value Chain



Guided by the framework shown in Figure 2, the researchers were able to approach the major chemical company holding the patent with a comprehensive business plan. Having quantified the commercial value of the patent and the pathway to success, a potential joint venture between the university and this company was explored from a mutually beneficial viewpoint. Moving through the strategic experience portion of the Teaching and Learning sub-process, it was discovered that medical and biotechnology students were consumed by their commitments on other research projects in their major concentration of study. As a result, they could not devote sufficient time to this particular entrepreneurial project. When the time pressures of the new business venture conflicted with other learning objectives, the cross-functional team became dysfunctional. However, detailed discussions with the students, video taped with their permission, revealed that they felt they had benefited by experiencing the entrepreneurial process. This mini case suggests that in order to make the full commitment for transition to the biotechnology business incubator, the students must have a strong technical and economic motivator. The faculty member who was co-holder of the patent with the major chemical company subsequently became the driving force for this project. When the chemical company donated this patent and two others to the university as discussed below, the faculty member became CEO for the new business venture launched in our high technology business incubator. The students continued their academic pursuits. From a teaching and learning perspective, the major lesson learned was that students most often will abandon the business venture at the end of the formal entrepreneurship class, unless they have a substantial stake in the resulting venture. Other research efforts in conjunction with the Center for Entrepreneurial Growth at the Oak Ridge National Laboratories appear to confirm these findings.

The framework shown in Figure 2 was helpful in conducting negotiations with the major chemical company for ownership of the intellectual property. Initially the possibility of a joint venture or strategic alliance was considered. Assisted by the business model and financial data, alternatives were explored for commercializing the initial patent plus two other patents held by the firm. Using a win-win negotiations approach, a mutually beneficial outcome was realized. Having quantified the economic potential and pathway to commercialization was an essential factor in

coming to closure and underscores the need for a detailed due diligence step in the process shown in Figure 2.

Recognizing that several years of continuous research were required to realize a commercially viable product, the major chemical company elected to donate the patent in question, plus two additional related patents, to the university. These two related patents were identified through the business model that emerged from the Innovative Entrepreneurship block in the Teaching and Learning sub-process shown in Figure 2. The company benefited not only because of their community service to the university, but also because the well-documented business plan demonstrated the commitment by the university to commercialize the intellectual property and also provided a solid estimate of the economic value of the intellectual property that was donated. These latter facts allowed the company to gain a tax advantage through their generosity to the university. The university benefited because this was the first case of receiving a donation of intellectual property from an external partner. This example suggests that the open system and partnership approach described in Figure 2 is mutually beneficial to institutions of higher learning and their external business partners.

Currently, this new biotechnology company has refined their business plan, is accepting shared ownership of the three patents with the university, has transitioned into ETSU's business incubator and has received a government grant to continue the commercialization process. Another benefit to the University is that the framework (see Figure 2) provides a roadmap for other faculty members to follow in commercializing their patents.

Referring again to the Teaching and Learning sub-process (see Figure 2) a teaching objective of the Innovative Entrepreneurship block is to have both business and technology students enhance their creative thought process in generating new ways to use technology to spawn new business value propositions that customers are willing to purchase. From a teaching perspective this is often the most challenging step. Our experience suggests that humor, metaphor, and art provide a means for students to unlock their creativity. Psychologists and artists (Betty Edwards, *Drawing on the Right Side of Your Brain*) indicate that these non-technical disciplines help students experience the difference between linear sequential thinking (left-brain processes) and synthesis skills (right-brain processes). Our practical experience with this approach suggests that students experience accelerated learning and are able to rapidly generate innovative concepts that have commercial value when aided by humor, metaphor, and artistic approaches to technical problem solving.

These innovations ultimately result in new business ventures that are launched in a business incubator (business start up facility) or they may result in new product development and marketing efforts for existing businesses. This latter point is significant because one of our discoveries in teaching innovative entrepreneurship is that these skills are also vitally important to those responsible for business development within existing businesses. From an economic development perspective this is significant because seventy-five percent of new jobs are created by existing businesses. When developing partnerships with business, industry, and the community this benefit is a significant factor in obtaining support for the university's efforts and in attracting students for our programs in entrepreneurship. When coupled with web-based or distance learning technologies, entrepreneurship education can be delivered to students on-site in existing businesses. The ETSU

experience suggests that this approach significantly expands the university's market for these courses and programs.

Most large technology-based firms have a well established new business development function. However, most small to medium sized high technology firms lack the resources to fully implement this capability. This next mini-case study involves a small manufacturing company in business for twenty-five years in a specific market niche. Through their strategic thinking process this company discovered that they could not realize their growth objectives solely in their current markets. Guided by the framework in Figure 2 the first author of this article worked with the company to define a project for one of their chemical engineers taking ETSU's course in Innovative Entrepreneurship. The importance of involving company management using the open system concept shown in Figure 2 is underscored. This early and frequent engagement of the management team ensures that the technical student in the existing business gains access to needed marketing and financial information in a timely manner.

In this situation the chemical engineering graduate student, with little business experience, was able to search through the company's intellectual property seeking potential new products or new product applications. Similar to the biotechnology patent cited in the earlier example, the student found a patent that was dormant because the business case had not been adequately developed and management lacked the information necessary to make the strategic investment decision. During the Innovative Entrepreneurship step in the Teaching and Learning sub-process the chemical engineer was able to assemble a team comprised of company employees with marketing and financial analysis skills. From a teaching perspective the lesson learned was that project contributors need not be formally taking the entrepreneurship course as long as they are committed to provide timely access to needed information. However, care must be taken to outline the student's responsibilities and the company's commitments prior to launching the project. Often a letter of engagement between the company and the university is helpful. In this letter the students document their understanding of the project scope, timeframe, and deliverables and the company commits to provide timely access to needed information and also to provide timely review and feedback for corrective action during the project.

In the mini-case just described several benefits resulted for both the company and the student. During post-course interviews, the student stated that he gained a much deeper appreciation for the business dimension of R&D efforts. He emphasized specific learning outcomes in both marketing and financial dimensions of the project. The company was delighted because the business plan provided financial and marketing information needed to link the R&D effort to its commercial value with the corresponding ROI. In addition, strategies for making this innovation a value added relationship market rather than a commodity business were cited as being especially attractive. Since the company is in the process of transforming itself from a niche market to a solutions oriented technology driven company, the check-list created by the business plan resulting from the Innovative Entrepreneurship course will be used to validate business cases for other new business innovations. This was cited by the company as a major benefit resulting from the course.

From the specific example cited above and through practical experience working with small and medium sized manufacturing businesses, another teaching and learning lesson is also apparent. The R&D process to create new products spans a time period longer than one semester. Therefore,

in order for the existing technology based business to realize the expansion of business results suggested in Figure 2 one of two alternatives should be considered. Either existing intellectual property should be required as the input to the Teaching and Learning sub-system, or the entrepreneurship program in partnership with existing businesses should span up to four semesters to cover the R&D discovery and innovation process.

The final mini-case for this article illustrates two additional lessons learned. In partnership with the Center for Entrepreneurial Growth (CEG) at the Oak Ridge National Laboratories (ORNL), ETSU established three cross-disciplinary graduate student teams to work with start-up companies. The CEG is a business incubator designed to transfer technologies created by the ORNL into the commercial sector. Twenty-Six new business start-up companies are currently in the CEG. The primary lessons learned through this partnership are twofold. Since these CEG companies are high-tech based, they often are led by highly specialized scientists and engineers. Graduate student teams with technical marketing experience can often make significant contributions within the semester long Strategic Experience course. The students gain first-hand entrepreneurial experience by living and working with the fledgling technology based start-ups, and the companies benefit from the strengthened competitive and marketing analysis that results from the strategic project. In addition, graduate students with non-directly related technology experience, not having had the course in Innovative Entrepreneurship, can participate in the Strategic Experience. Often the high-technology companies are seeking venture capital and have difficulty in explaining the commercial value of their inventions to their financial backers. Digital media students, through graphical animation, can often capture the salient features of the technical innovation in a readily understandable format for venture capitalists and other investors. The outcome of this partnership is that the digital media graduate students experience high-tech entrepreneurship first hand, while the digital animations produced provide the high-tech start-ups with help in raising venture capital.

The three mini-case studies discussed in this article illustrate specific benefits that have resulted from application of the open system framework shown in Figure 2. These benefits are summarized briefly below from the university, community/partner, and faculty/student perspectives.

From the university perspective the formation of the biotechnology company resulted in the donation of three patents from the chemical company, creation of a separate not for profit research foundation to accept this donation, improved commercialization of intellectual property that would have otherwise been dormant, and a practical roadmap for other faculty to follow in the transfer of their technology to potential commercial markets. In the future the university could receive royalties, should the venture become profitable. For ETSU these were all firsts. From the partner's perspective, the major chemical company received recognition for their generosity, an income tax write-off, and helpful input to their internal innovation business model as they implemented their corporate venture group. Biotechnology faculty and students gained an appreciation and understanding of the business dimension of technical entrepreneurship. The faculty member also benefitted by becoming CEO of the new venture and by receiving a government grant to further the commercialization of the intellectual property.

In the case of the small manufacturing firm, the university gained a market for their technical entrepreneurship program within existing businesses and also found business mentors willing to help other student teams. This suggests practical steps that can be taken in working with other small to

medium size manufacturing firms within the region served by the university. From the company's perspective a comprehensive business plan was developed to accelerate the commercialization of their existing intellectual property. More importantly, the company was able to refine their business model to aid in their transformation to a more technically innovative organization. The engineering student gained new business and marketing skills that he claims help him contribute more effectively to other company development projects.

One of the start-up companies in the Center for Entrepreneurial Growth received second round venture capital funding. According to the CEO the digital animation was helpful in explaining a complex technology to his financial backers. In addition, the strategic marketing audit provided some value by helping refine the competitive analysis and market niche. The Oak Ridge National Laboratories, as part of a broader partnership effort with the university, makes more than 90 patents available to student teams pursuing technical entrepreneurship studies. This is another first for ETSU. In addition, following the practical approach suggested in this article, faculty are finding consulting opportunities with start-up companies within the ETSU Innovation Laboratory (technical business incubator).

In summary, the framework shown in Figure 2 has served as a useful guide in implementing an open-system-partnership approach to technical entrepreneurship education at ETSU. Students, faculty, staff, the university and our strategic partners have all benefited as discussed above. Guided by the framework, the university is also able to contribute to its objective to promote economic development, because our technical entrepreneurship education has a natural result of creating new technology based start-ups as well a promoting new product and business development for existing firms. We are currently expanding our horizons to include an international dimension. In partnership with the Hochschule Bremen (HB), ETSU is further refining our program to offer a Graduate Certificate in International Entrepreneurship. The major additions include inter-cultural business and team training, an appreciation and understanding of the requirements for global technology based companies, and a mandatory summer session abroad. This term abroad may include a Strategic Experience in either the ETSU or HB Business Incubator. To accomplish this learning objective we introduce the concept of twinned incubators. By twinned incubators we mean that certain new technology business may be better launched in European or in US markets; and the appropriate incubator for the new venture is chosen based upon the market it will initially serve. This approach takes the open system framework shown in Figure 2 to an international application.

A PROPOSED OPEN SYSTEM APPROACH

Although significant strides have been made, the closed system approach that is still present in many higher learning institutions teaching innovative entrepreneurship falls short of stakeholder needs and expectations. In this context, the stakeholders include technology based start-up companies, R&D organizations within existing technology-based businesses, the financial and professional communities, and the students served by the learning institutions. The transition to an open system orientation should be guided by the dominant strengths and business opportunities faced by many technology-based start-up companies and R&D organizations within existing

technology-based businesses. Toward that end, Exhibit 2 suggests that improvements require an infusion of business skills to link technical innovations to commercial market business results. Coupling this with the need for real-world entrepreneurial experience underscored in the literature cited above, the teaching and learning sub-process in Figure 2 results. This sub-process is comprised of three main functions: 1) Learning in innovative entrepreneurship; 2) A real-world strategic experience in entrepreneurial practices; and 3) Opportunity for life-long learning with non-traditional students returning to the classroom with the purpose of enhancing their technical entrepreneurship skills.

The innovative entrepreneurship learning experience brings engineering and business students and faculty together in cross-disciplinary teams. These teams start with an innovative technology that must be commercialized. Through the due diligence process the commercial value of the innovation is determined and the market potential and corresponding financial performance are described in a formal business plan. An important lesson learned in this teaching step is that partnerships with business, industry and the community create opportunities to bring bankers, successful entrepreneurs and small business owners, venture capitalists, and other resource people into the classroom. Furthermore, these partners often act as business and technical mentors and provide helpful guidance to refine technical innovations and business concepts. From these real-world experiences students learn lessons that no textbook could provide.

The final product of the innovative entrepreneurship learning experience is a business plan that is reviewed by a panel of experts. With helpful suggestions from this panel the students proceed to the Strategic Experience. (See Figure 2.) This experience is conducted in a living business laboratory (business incubator or start-up facility) or in an existing business. As Starzynski (2000) attests, a center with an incubator provides a nurturing environment for young companies. Benefits in having an incubator affiliated with the university include the availability of shared facilities, the opportunity for scientific collaboration, and access to a larger and more highly skilled work force pool (Mazur, 2001). From the teaching and learning perspective, the incubator provides a living laboratory where students can validate innovative business concepts before making the ultimate commitment of financial resources to the actual business venture. For technical environments, one may decide to include a shop and a fabrication lab in the facility as Lehigh has in their center (Ochs et al, 2001). However, most universities do not have the financial resources to provide access to complex laboratory and manufacturing equipment. Whereas existing business and government laboratories have already made these financial investments to accomplish their objectives. Here the strategy of mutually beneficial partnerships and joint ventures has a major strategic influence on the outcomes as suggested in Figure 2. The ETSU's partnerships-based experience with Oak Ridge National Laboratories; local businesses such as Eastman Chemical, Siemens, Sprint, AFG Industries and Amerace; and local hospitals and health care organizations has provided real-world opportunities for our students in entrepreneurship.

The importance of life-long learning opportunities for community members is underscored in the Teaching and Learning sub-process. With the rapid pace of change of technology and the challenges of global competitiveness, the need for enhanced skills becomes a requirement for technology-based businesses to survive. Physicians, and other advanced degree holders also need these skills. However, they encounter barriers when approaching institutions of higher learning

because they cannot afford the time commitments to gain another full graduate degree. One strategy for overcoming this difficulty is to offer a graduate certificate program delivered on-site to the existing business' facility. In ETSU's situation our Innovation Laboratory has implemented a virtual incubator through the use of web-based information technology. This same technology creates an electronic boardroom environment where business plans and concepts can be reviewed with students worldwide.

Exhibit 2: Characteristics Of Technology Based Start-Up Companies And R&D Organizations		
Characteristics of Technology Based Start-Up Companies		
1.	Strengths	
	a.	Strong scientific knowledge and know-how
	b.	Proprietary technology and intellectual property often protected with a patent
	c.	Laboratory technical knowledge of the application
2.	Improvement Opportunities	
	a.	Business acumen often underdeveloped
	b.	Little marketing expertise
	c.	Under appreciation of the commercialization process
Characteristics of Many Research and Development (R&D) Organizations		
1.	Strengths	
	a.	Detailed knowledge of the science and technology
	b.	Passion for the technical discipline
	c.	Experience with the laboratory test and validation processes and procedures
2.	Improvement Opportunities	
	a.	Little understanding of the commercialization process
	b.	Unable to determine the commercial value of the technology or the R&D effort
	c.	Little customer interaction to determine the value proposition the technology represents

GRADUATE CERTIFICATE PROGRAM IN ENTREPRENEURIAL LEADERSHIP

The ETSU graduate certificate program in entrepreneurial leadership is structured to implement the open-system-partnership approach illustrated in Figure 2. The program is comprised of five core courses and one elective (See Exhibit 1).

CONCLUDING REMARKS

The closed system traditional framework for teaching entrepreneurship with separate and distinct engineering and business curriculum may have provided satisfactory results when business and industry were relatively static. However, the rapidly changing global competitive environment faced by most high-tech businesses today has created a misalignment between technical entrepreneurship education and stakeholders that seek to benefit from such education. Flexibility is a competitive dimension that an organization can utilize to respond to environmental uncertainty and change (Butler & Ewald, 2000). However, to capitalize on this flexibility, cross-disciplinary skills appear to be essential.

Entrepreneurship education has transitioned through three distinct phases over the past 40 years. A closed system traditional orientation presented in Figure 1 is deeply influenced by teaching culture rather than the technical and business needs of agile high-tech firms and other stakeholders. Stage two represents a step between the closed and open system orientations. During this stage limited cross-disciplinary activities between business and engineering courses provided some benefit to external stakeholders. In response to the high-tech business needs for innovation, agility and flexibility the authors advocate an open-system partnership approach given by the conceptual model for technical entrepreneurship education in Figure 2. For ETSU, this approach has resulted in substantial benefits for students, faculty, and start-up ventures, the professional community, and existing business and industry.

Guided by this framework, a systematic strategically effective approach for commercializing previously dormant intellectual knowledge can be implemented to benefit the university, the faculty and students, and the university's strategic community partners. Once the potential commercial value of the intellectual property and the pathway to success is quantified through the due diligence process, potential joint ventures between the university and external stakeholders are possible. In the ETSU experience, this led to the transfer of ownership of three patents from a major chemical company to the university and a faculty led biotechnology venture.

A significant lesson learned in implementing the framework shown in Figure 2 was that innovative entrepreneurship skills are also vitally important to those responsible for business development within existing businesses. This is significant because seventy-five percent of new jobs are created by existing businesses. In this context, technical entrepreneurship education contributes to economic development along two dimensions: new venture creation and growth of existing businesses. Furthermore, this benefit is helpful in attracting students for programs in entrepreneurship. When coupled with web-based or distance learning technologies, entrepreneurship education can be delivered to students on-site in existing businesses suggesting expanded markets for entrepreneurship courses and programs. Companies stand to benefit from these innovative business developments because resulting business plans provide needed financial and marketing information to link R&D efforts to future commercial value with the corresponding ROI. This benefit is especially attractive to small to medium manufacturing and high-tech firms that lack the resources to fully implement their own new business development functions.

From a teaching and learning perspective another lesson learned was that graduate students can enter the sub-system (see Figure 2) at the Strategic Experience phase with partial benefits

resulting for the students, faculty and strategic partners. This is especially true in dealing with the high-tech companies such as those in the ORNL CEG. Small high-tech firms led by highly trained scientists and engineers benefit from the outside perspective provided by the faculty and graduate students. Although this is especially true in marketing and financial areas, technical value can be added as well. Using digital media skills, for example, graphical animation is often helpful in capturing the salient features of the technical innovation in a readily understandable format for venture capitalists and other investors. The outcome of partnership with high-tech start-ups is often that the students experience high-tech entrepreneurship first hand, while the high-tech start-up gains help in raising venture capital.

In summary, the authors advocate the framework shown in Figure 2 as a guide in implementing technical entrepreneurship education. The ETSU experience suggests that students, faculty, staff, the institutions of higher learning's strategic partners will benefit from this approach. The university has received three patents, formed of a separate not for profit research foundation, improved technology transfer, and gained a market for our technical entrepreneurship program within existing businesses. Our existing business partners have benefited from an income tax write-off from their donations, business plans to accelerate the commercialization of their intellectual property, and refinements to their business models using technical innovation to gain a sustainable competitive advantage in their markets. A start-up partner received second round venture capital funding aided by the digital animation designed by our student team. A faculty member benefited by becoming CEO of a new venture and by receiving a government grant to further his commercialization efforts. Another faculty member is consulting for a start-up company in our Innovation Laboratory. Technology students gain new business and marketing skills that help them contribute more effectively to company development projects. Hopefully, this article makes a positive step in helping align technical entrepreneurship education with the needs of external stakeholders and suggest lessons learned and approaches that might be helpful should others choose a similar pathway.

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WHAT WOULD YOU DO FOR \$20?: QUALITATIVE AND QUANTITATIVE OUTCOMES

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ABSTRACT

Entrepreneurship education helps students to identify opportunities and then pursue them. Too often this is confined to reading about it in textbooks, but one method has students fully immersed in running their own micro-enterprises of their own choosing. Each student receives \$20 cash from the professor and with 243 students having participated in the exercise they have earned nearly \$19,000 in profits and learned many valuable entrepreneurial lessons. Both qualitative and quantitative outcomes are shared in the article.

INTRODUCTION

One purpose of entrepreneurship education is to introduce students to the opportunities that exist in the environment and teach students how to develop them. Additionally, education should propagate the opportunities that lie within the students themselves. Textbook lessons alone often do not achieve these objectives, unless they are married with lessons that build a fire in the belly of budding entrepreneurs. Merely reading about Herb Kelleher (Southwest Airlines), Mary Anderson (inventor of the windshield wiper), or Conrad Hilton (Hilton Hotels) is not enough; personal passion and sweat equity must be experienced in order to comprehend the entrepreneurial spirit.

There are many methods for conveying information to others. The traditional, instructor-controlled lecture, facilitates the communication of a vast amount of information within a limited period of time, in a standardized format (Benjamin 1991; Perry et al. 1996). Perhaps, a better alternative method for introducing students to the rigors and enjoyment of entrepreneurial endeavors is to have them actively participate in the experience. Course participation has been defined as "readily speaking, thinking, reading, role-taking, risk-taking, engaging oneself and others, and may occur inside or outside the classroom confines" (Peterson 2001, p. 187). Certainly drafting a team, pursuing an opportunity, satisfying customers, and turning a profit would be one way of learning and understanding what is involved in entrepreneurial undertakings.

The purpose of this paper is to: 1) explore one method for getting students to learn entrepreneurship principles by involving them in low risk micro-enterprises, and 2) document their learning qualitative and quantitative outcomes from this experience. The paper begins with a brief review of active participation and experiential learning, followed by an explanation of what was required of them. Next, student examples are offered as an illustration of what can transpire when students are empowered (and required) to initiate a start-up enterprise. Finally, conclusions are offered to the reader.

ACTIVE & EXPERIENTIAL LEARNING

Active learning is "the process of making students the center of their learning" (Warren 1997 p. 16). Several studies have shown improved learning resulted through active learning approaches (Johnson and Johnson 1993; Mayes et al. 1997; Young 1997). Warren (1997) suggests that students not only learn the content of information, but additionally "improve their critical thinking, learn to manage their time, practice interpersonal, listening and speaking skills, become better writers, and gain a sensitivity to cultural differences" (p. 16). One powerful finding demonstrated the link between active learning and higher student motivation (Garcia and Pontrich 1996; Stipek 1998). This type of active participation has also been found to enhance student intellectual development (McKeachie 1990; Balenky et al. 1986). Thus, active learning engages students vigorously and critically in the process of learning, a worthy outcome at any level. Jacobsen (1995, p. 3) believes that active learning promotes "the kinds of activities that help the student connect the new academic subjects they are learning with other things they already know or have experienced." How to identify new opportunities from a very busy and complex environment is a quintessential task for any entrepreneur.

Experiential learning, a "process whereby knowledge is created through the transformation of experience" (Kolb 1984, p. 38), may result in higher levels of comprehension, but the professor must be willing to let the students exert greater control over their own learning, in content as well as speed of acquisition. Experiential and active learning approaches encourage students to become involved with the materials they are attempting to learn, in part by requiring them to apply theory to real-life situations involving ambiguity, change, and risk (Lewis and Williams 1994). While not a panacea, experiential methods should improve decision-making, problem solving, and communication. These "soft" skills, prized by corporate employers (Wright, 1994), are invaluable to entrepreneurs as well. The bottom line is that experiential exercises enhance student learning by increasing students' involvement in the learning process (Morgan et al. 1987; Slavin 1980).

In the end, lecturing students is not the best way to engage them to think actively about the material in a critical manner (Hamer, 2000). Thus, the active and experiential learning approaches, where the student is the center of the learning, appears to yield much more positive results. Melding these teaching theories together and then supporting a student as he or she attempts to acquire entrepreneurial expertise should result in dramatic personal and business education outcomes. Learning that takes place outside the classroom is "the most significant educational experience for roughly 40% of students" (Moffatt 1989, p. 32). With such matters in mind, this assignment was developed where students must actively pursue business opportunities outside the classroom.

THE ACTIVITY

Within an introductory sophomore level course titled "Entrepreneurial Marketing", each student would be required to act entrepreneurially and learn the lesson of starting an enterprise first hand. The students had eight weeks to undertake this endeavor with the written instructions to the student stated as such:

Each student will receive \$20 cash from the professor. You are to be entrepreneurial with this "seed money" and create your own opportunities. Your idea must abide by all the norms and expectations that this university has for you. Thus, anything considered illegal, immoral, or even remotely questionable is not a true opportunity. In short, please do not resort to using the cash as your bail money. You must repay the original \$20 seed money given to you. No excuses, no extensions, no sad stories.

Keep records of your cash flow, as you will be expected to update the class on your progress. Detail the basic accounting information (sales, cost of good sold, accounts receivable and payable, etc), plus other sales/marketing/customer "war" stories.

A certain portion of your profits will be confiscated in the name of taxes, but we will donate this money to charity. Important: under no circumstances can you pitch the idea to your customers that the money will be going to charity!!! Entrepreneurs don't have this luxury of playing upon a person's noble cause.

The students would be evaluated on three criteria, which included their ability to 1) create and execute a viable entrepreneurial idea, 2) the amount of money they earned (a sliding scale based on a class curve), and 3) documentation of business achievements including accounting records and replies to a series of questions (see Appendix A).

THE RESULTS

Over the course of four semesters, 243 students participated in the exercise and started a myriad of businesses. Many sold baked goods, others cut hair, and some offered photography services. See Table 1 for a partial list. Profitability ranged from a few students losing money to some earning profits 10 times their seed money. Overall sales were nearly \$29,000, with expenses roughly \$10,000, thus \$19,000 in gross profits, or a 34% profit margin. The return on investment was 390% in eight weeks, with 100% of the loans repaid. Over \$3,800 was given to charity (an orphanage, an infant/toddler nursery, and a battered women's shelter). See Table 2 for an overview of the financials.

Chop and Sell Firewood	Cleaning Services(laundry, gutters, car)	Detail Agricultural Equipment
Dog Walking	Errand Service	Face Painting
Greeting Cards	Hair Cutting	Ironing
Landscaping	Making Business Cards	Piano Lessons
Selling Baked Goods	T-Shirt Sales	Various Sports Lessons (golf,
		basketball, baseball)

Student Participants	234
Total Revenue	\$28,983
Expenses	\$9,987
Gross Profit	\$18,996
Profit Percentage	34%
Return on Investment	390%
Donations to Charity	\$3,874
Range of Student profits	\$465 to -\$16

Numerous questions were posed to the students in order to debrief their learning experience with this novel exercise (see Appendix A). A content analysis was performed in order to better understand what affect this approach had on their behaviors and/or cognitions. Two reviewers were used and themes were gleaned from the student responses. An inter-rater reliability coefficient of .89, indicated a high level of agreement among the raters, and compare favorably with Kassirjian's (1977) 85 percent rule of thumb for reliable content analysis. The raters identified the following five main themes:

1. *Real World Experience- learning by doing was phenomenally influential.*

Representative student comments: This hands-on project has been one of the most influential in my college career. I wish more of my teachers supplied me with hands-on projects that enabled me to learn outside of the classroom. It makes a far greater impact to learn something the hard way than it does in a lecture. This was by far the best hands-on activity I have been involved in. A superior learning experience is one that will stay with you forever, one that you enjoy and that takes something out of you. I liked the fact that we were forced to go out to the real world and test our ideas to see how others react to them.

2. *Entrepreneurship is Challenging- creating, running, and maintaining a business is demanding, time intensive, and requires various skills.*

Representative student comments: This project made me realize what a great deal of hard work goes into running a successful business. Starting a business takes an enormous amount of time and effort! But, if you believe and enjoy what you are creating and doing then the time and effort are totally worth it. You have to go out and find your customers when you first start a business; they won't just come to you. Selling is tough!

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3. *Motivating Assignment- a stimulating exercise that roused students to new levels of enthusiasm and a desire to try their best.*

Representative student comments: I was really excited when I first heard about the project. Finally an assignment that I actually wanted to do. I learned that being an entrepreneur takes a lot of work and planning, and I loved it. I see now that being an entrepreneur is a challenge, but an exciting ride. It truly was a rewarding experience for me. Once I got started making my cards, I was addicted to completing them - even though I had a ton of other graded assignments to do! I was excited to see the final product!

4. *Knowledge Acquired- the process of devising, sourcing, pricing, promoting and satisfying customers cemented in the student's minds the insight needed to launch new enterprises.*

Representative student comments: Every store or stand I visit, I am constantly evaluating the products that are being sold, how do these companies go about getting their products recognized, why would anybody choose their product and how effectively are the demands of these products being met. I have learned more about real life business ethics, organization, planning, budgeting, and advertising than I could have ever learned taking tests all semester long. I couldn't figure out what would be a reasonable price for the customer and myself. From this exercise I learned that in order to be successful, you have to really look at your market and decide the best way to use your skills and knowledge in order to tap into something that they will buy.

5. *Comfort Zone- for some it was empowering, for others it allowed them to understand that being an entrepreneur is not appealing to them.*

Representative student comments for those empowered: After completing the project I really began to consider starting my own business. I can see how an entrepreneur would feel a great deal of satisfaction knowing that they made their income by their own ideas and effort. When looking back at my profits and the people that I satisfied I began to consider starting a business of my own someday.

Representative student comments for those disillusioned: I've decided I do not wish to be a businessperson after doing this project. I want to lead a life of helping others. I was somewhat uncomfortable about this activity because I have never been good at selling things and I didn't think that I could come up with a good idea.

Other comments illustrated students also had fun and maintained a sense of humor while pursuing this activity. At the outset one student noted, "When you announced this assignment I felt anxious and angry. My thoughts included not so nice things about my teacher." Another shared a serious inventory problem, "I could have sold more, but I left my room door open and my cocker spaniel ate \$15 worth of raw materials, soap." Still others made declarative statements like, "Taxes are a painful experience," and yet another young entrepreneur noted, "My target was elderly people, over the age of 50."

DISCUSSION AND CONCLUSIONS

This motivating, challenging, and knowledge-oriented activity has had powerful and gratifying effects on many students. One of the goals of the assignment was to teach students that while we tend to covet "correct" answers, discovering the thinking and logical deduction processes involved offers the most value for an individual's development. Several studies have suggested that business instructors devote too much time to information dissemination and not enough time to helping students develop the leadership and interpersonal skills critical to success in today's workplaces (Chonko, 1993; Lamb, Shipp, and Moncrief, 1995). It appears that this project aids in resolving this dilemma because students are fully engaged in making daily business decisions that affect their course grade, customer satisfaction, and profitability.

Entrepreneurship education involves living with ambiguity instead of oversimplified answers to complex situations. In order to allow students to maximize their understanding of entrepreneurship, the teaching environment should allow them to be entrepreneurial in their actions, not just cognitions. Because active learning will encompass fewer lectures, students need to understand these alternative forms of instruction (Schuyler 1997). However, it appears today's students are ready and eager to "do" things, and not merely "read" about things. Research suggests that those students with initiative will be the ones who succeed in life, rather than those with the highest grades (Warren 1997). This assignment is an occasion for initiative to take center stage, with the guidance from the professor when needed, the amount of learning about market opportunity, personal devotion and individual strengths is beyond reproach. We do know that if the instructor's standards are high, students will generally rise to meet those standards (Cross 1987), and with part of their grade dependent on a sliding profitability curve, everyone was motivated to do their best.

The aim of this paper was to examine an experiential learning method involving students creating their own micro-enterprises and the valuable lessons they learned. Both quantitative and qualitative findings explored, and the goal was to have them better understand the entrepreneurial process, but also themselves and their capability. One student exemplified what can be done and learned when challenge by this course assignment. "The dorm prohibited advertising, so I requested a meeting with the powers that be and was rejected. I then appealed this decision to a higher authority in student housing and won. Now other students can advertise as well. I am a pioneer I guess." There are few other assignments that might teach as much, empower as much, all the while earning profits and credit. Not to mention the ability to donate money to charity, which can in turn help those with fewer opportunities in life. This is what entrepreneurship education can be.

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APPENDIX A

Demographic Information

- 1) Name:
- 2) Age:
- 3) Year in school:
- 4) Gender:
- 5) Major:

Business Preparation

- 6) What were your exact thoughts when this activity was announced in class?
- 7) Describe your product.
- 8) What market opportunity were you tapping?
- 9) How did the idea originate?
- 10) Did your initial idea work out or did you have to change ideas? Explain.
- 11) What was your marketing strategy for your opportunity?
- 12) Who was your target market?
- 13) How did you set the price for your product?
- 14) How did you promote and sell your product?
- 15) Exactly how did you spend/invest the \$20 given you?

DO NOT INCLUDE THE \$20 GIVEN TO YOU IN THIS INCOME STATEMENT!

General Format:	Example:		
Sales Revenue (earnings)	Sales Revenue:	\$60.00	
less: Expenses Incurred	less: Exp incurred		
Exp #1: description	Exp #1: Paint	\$6.00	
Exp #2: description	Exp #2: Screwdriver	\$3.60	
Exp #3: description	Exp #3: Nails	\$2.25	
Total Expenses:	Exp #4: Paintbrush	\$4.69	
Gross Profit:	Total Expenses:		\$16.54
	Gross Profit:		\$43.46

Business Aftermath

- 16) What was the best action you took to ensure success?
- 17) What was your biggest mistake/oversight?
- 18) What would you do differently if you were able to do it over again? (be specific)
- 19) What did you learn from this exercise?
- 20) What was the best & worst aspect of your team?

Circle Appropriate Response	Highly	Slightly	Neutral	Slightly	Highly
	Agree	Agree		Disagree	Disagree
21) This activity made me want to explore a career in sales?	1	2	3	4	5
22) This activity made me want to own my own business?	1	2	3	4	5
23) Doing this activity made me uncomfortable?	1	2	3	4	5
24) This activity was a valuable experience?	1	2	3	4	5

Additional Comments:

ENTREPRENEURSHIP TRAINING FOR AT-RISK STUDENTS

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ABSTRACT

The ASU SIFE Team participated in developed a program that was funded by a grant from the Horizon Institute of Technology. This program offered 28 at-risk students from two Arkansas delta school districts, Osceola and Forrest City, an opportunity to explore the role of technology in a free market economic system and to motivate them to pursue careers in the areas of math, science, business, entrepreneurship and technology. We examined the results to determine the effectiveness of the program using raw data, standard regression analysis and loglinear models and determine the significance of 8 factors in success on the MAME; Age, gender, race, access to home computer, education level of mother, education level of father, hours of computer use at school, and hours of play on computer video games as dependent variables. The independent variable was the score on the MAME Standardized Test. Of the factors tested; Age, ownership of home computer, success in the program; mothers education level, hours of computer use at school, and hours of play on computer video games were all significant at the .01 level. Only gender, race and father's education were not significant at the .01 level of significance.

INTRODUCTION

An opportunity exists to "brand" the minds of area school children with collegiate aspirations in a hands-on environment That explores the world of entrepreneurship The focus was on children that are from low income, disadvantaged and minority backgrounds and expose them to an educational experience that will promote continued investments in their own human capital by seeking a higher education. The students are frequently left behind unless some intervention takes place. We also planned to help them explore the world of entrepreneurship by making them real decision makers in a business simulation.

This collaborate effort offered a variety of distinct venues that encompass technology and education. Each venue will focus on attracting middle school aged students (6th - 8th graders) within the Northeast Arkansas area and exposing them to a unique educational experience. Including exposure to math, science, business and technology. Emphasis will be placed on these topics as life and career choices.

We began by selecting two of our more progressive area school districts with a high percentage of at-risk children and asking them to identify and contact children for the program. The two districts selected the participants, provided chaperons and bus drivers for the 4 weekend excursions. A team of 38 SIFE members provided additional chaperons and program coordinators who helped plan and execute the camp. Together these teams planned and executed a program on each of four consecutive Saturdays running beginning February 7, 14, 21, and ending on the 28, 2004. Module #1 began with students taking a pretest version of the test of Marketing, Accounting, Management and Economics [MAME], which became the basic instrument for our study. This session was under the guidance of Dr. Larry R. Dale Sam Walton fellow from the department of economics in conjunction with SIFE student Chris Sanders. We then proceeded to present a SIFE developed Power point presentation called "Economics and Free Enterprise", which provided basic information on the free enterprise economy. We introduced the concept of economics and then proceeded to explore the market, command and traditional economic systems. Our focus quickly turned to the Market system, where consumers and producers interact to determine prices and quantities sold through something called "dollar voting". Next we introduced students to the natural, capital and human resources used to produce goods or services. Then we talked about the mixed nature of the economy of the USA with input from government and traditions, but a dominance of consumers led production through various markets

We ended the first program by showing the film "The Kingdom of Mocha", which reviewed all of the concepts previously covered. Mocha has a maturing market economy. The film covers basic economic vocabulary such as: Supply, demand, markets, Price, Productive resources [natural, capital, human], entrepreneur, production, consumer, producer, goods and services. It also reviews the basic tenants of a free enterprise economic system with producers providing a good or service that consumer's need or want; with vary little interference from government.

Module #2 Finance under the leadership of Mrs. Patricia Toney-McLin, instructor in the Accounting department and Sam Walton Fellow. Modules 2 and 4 were both designed to aid students in development of their Annual Report. Mrs. Toney-Mclin Pat and her team were in charge of the Accounting and bookkeeping records of the camp. The Finance module included a balance sheet and income statement using computer software. Students learned about assets, liabilities and stockholders equity as part of a balance sheet. The wide use of Accounting Information Systems were described with general examples such as using spreadsheets for small businesses to Quickbooks and the more advanced systems such as Peopl Soft Accounting and Finance software. While learning the basics of accounting, students were introduced to Microsoft Excel spreadsheets used in bookkeeping. A spreadsheet was created by each student allowing them to make entries ending in calculated sums to feed the income statement. The income statement included: revenue from sales, costs of goods sold and operating items covered. Once complete, this became a series of presentations based created by using MicroSoft Power Point on overheads developed by the students. team.

Module #3 Business law was led by Dr. Jeff Pitman professor of Business Law. The overall purpose of this section was to expose the participants to the concept of legal regulation of business, with a particular focus on regulation and technology issues. We wanted to show that the rule of law

was designed to protect business from unethical practices of competitors as well as to protect consumers and investors.

The first concept in this section was the definition of the law, essentially asking the participants to consider the question, "What is the law?" This initial inquiry led to a discussion of related questions, "What purpose does the law serve?" and "Where does the law come from?" Answers offered by the participants included "our courts, legislatures, and executives (President Bush and the Arkansas governor)." After the legal introduction, attention was turned to business technology and the law. Here participants examined how businesses are legally organized. This included a discussion of the legal considerations involved in naming a business and its products, and in acquiring a website. We took the time to design a legal website for our corporation www.crazyshirt.com which was attached to the college of business website at ASU.

The participants next examined the online tools available for organization of a business in Arkansas. The main government agency related to business organization is the office of the Arkansas Secretary of State. We examined the tools available through the Secretary of State's web site, <http://www.sosweb.state.ar.us/>. Several of the specific areas analyzed included the following: Entity Online Filing Fees, Entity Forms, and Entity Filing. We went through the process of filing out these forms but did not submit them to the appropriate agency. The rest of the lesson looked at web sites

Module #4 Planning and Management was directed by Mr. Henry G. Torres instructor professor of Management Information Systems. This module included learning to create a forecast budget to use as a working tool to plan and manage day-to-day operations. Students created basic management tools using the excel program to calculate budgets and create graphs that would later appear in our annual report. All of this led to individualized help in producing and printing our professional looking annual report.

Module #4 was directed by Mrs. Carleen Marburger in a Marketing /management presentation that looked at the role of advertising in getting consumers to notice your product. The best product in the world is a flop if nobody knows about it. Students used MicroSoft Publisher software computer programs to create an advertising brochure about their company and the great product that it produced and sold. Teams of two students each were created to compete for the best brochure design award. Teams used graphics, colors and typesetting to create a company logo and the winning brochure.

Each module of instruction was conducted in a computer lab setting where students would take a business scenario of a real business and expand it into a fully assorted real company that made and sold Tye Dye T-shirts, socks and shoelaces with the use of basic technology business solutions. The experience was fun, profitable and memorable for the attendees. Students developed an annual report, kept track of their income and eventually showed a profit of 14% on sales of over \$4,000 in sales. We pointed out that corporations would have paid half of their profit, on average, for corporate taxes. We gave half our profit to the two school districts for a total of \$600 to provide technology software for the schools involved in the project. The rest was returned to the students in one of three forms wages, commissions and dividends. By a vote of all stockholders wages were set at \$1 per Saturday, \$2 for officers. Commission equal to 25% of sales on each item for every student. Dividends were awarded each stockholder. Everyone in the group was provided with 10 shares of

stock at \$1.00, which they paid back from their income. In addition students bought an additional 121 shares when they found out that they would in all likely hood receive dividends on each share of stock they owned. Ownership of stock. Shares in the company, entitled then to one vote. Thus every share they owned gave them some decision making power in the company. We also had awards for the top three sales persons and other productivity awards for individual performance and creativity.

Students spent half their time in learning modules and half their time creating their product; Tye- Dye T -Shirts, socks and shoelaces. Students learned how to create a PowerPoint presentation for the Stockholders meeting and closing ceremonies of the camp.

The class consisted of 61 % Female students, 39% Male students. The racial mix was 78.7% African-American Students, 18% Caucasian students and 3.3% Hispanic. 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. Regarding parental education level, 18 % of the children's father and 35% of the mothers had a college education. The average education of the mothers was 14.33 years and the fathers 13 years. In terms of computer use at school 61 % of the children said they spent more than two hours per week on the school computer, with 11 % more than 6 hours per week.

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 58.23 percentile was well below the national norm of 72 percentile, but well above the posttest performance at the 89.61 percentile. They also showed greater interest in technology. Most important students over whelming expressed interest in obtaining a higher education 83%, and a willingness to study hard to make that dream possible by 77%. This was a marked improvement over the pre-camp survey with only 22% saying they planned to go to college. We believe that our project succeeded in training students to be skilled entrepreneurs and taught them to appreciate the economic system that makes such a dream possible. We also ran a standard regression analysis and a loglinear model to examine the following 8 independent variables to see which were significant predictors of success on the MAME [y-dependent variable]; gender [GEN], race [RC], age [AG], fathers education [FE], mothers education [ME], owned a home computer [HC], use of a computer at school [SC], hours playing video games [HV]. This is expressed in the functional relationship;

$$Y=X1 GEN+X2 RC +X3 AG+X4FE+X5 ME+X6HC +X7 SC +X8 HV$$

Of the dependent variables examined we discovered that the following were significant at the .01 level of significance; age, mother's education level, owning a home computer, use of a computer at school and hours spent playing video games. Some of these elements were expected. We were not surprised with the finding that 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 14.

Owning a computer should also improve scores on computer and technology questions. We pulled those and looked at them separately. Students with home computers had a mean score on those questions of 83% as compared to 71 % for those without a computer. A similar pattern existed in students who spent more time playing video games or using the computer at school. We also were

not surprised that the hours of computer use at school and playing video games should be correlated with knowledge of technical terms. Students scoring high on these items showed only slightly more knowledge of economics and marketing concepts, but the total mean score was higher.

The one surprise is that the mother's level of education was significant, but not the father's. One explanation is that the mother has more influence over a child's attitude toward education and therefore toward their achievement level.

We believe that our program was effective in improving students understanding of basic business and technology concepts since the difference between the pre and post test scores of 31.10% was significant at the .01 level of testing using the chi-square test of significance. Our other data supported this conclusion as well.

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Table 1 - Statistical Data from Study					
INDEPENDENT VARIABLE	RAW DATA	R ²	T STAT	F STAT	SIGNIFICANT .01 LEVEL
GENDER	MALE 39.21%				
	FEMALE 60.79%	.0131	.023	.871	NS
AGE	10YR-7.7%,				
	11Y-19.2%				
	12Y-34.6%,				
	13Y-23.1%				
	14Y-15.2%	.9899	3.81	241.97	SIGNIFICANT
RACE	BLACK- 78.7%				
	WHITE-18%				
	HISPANIC 3.3%	.0011	.187	.004	NS
MOTHERS ED	MEAN 14.33 YRS				
	85% HSG				
	35% C G	.9799	.734	876.21	SIGNIFICANT
FATHERS ED	MEAN 13.00 YRS				
	85% HSG				
	35% C G	.010	.2017	.003	NS
HOME COMPUTER	42% YES				
	58% NO	.997	24.88	826.09	SIGNIFICANT
COMPUTER HRS AT SCHOOL	LESS 1-38%				
	2-5 -50%				
	6+ -11%	.981	18.44	27.90	SIGNIFICANT
HRS VIDEO GAMES	28% 2 HR +				
	24% LESS 1				
	31% NONE	.939	9.23	14.41	SIGNIFICANT
PRETEST MAME	58.34				
POSTEST MAME	72.62				
DIFFERENCE	+14.2				

VARIATIONS ON A THEME: TEACHING ENTREPRENEURIAL FINANCE

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ABSTRACT

In response to the increasing number and economic prominence of small and entrepreneurial firms, a growing number of colleges and universities are developing programs and courses in the various aspects of entrepreneurship including entrepreneurial finance. Many of the principles and techniques taught in corporate finance can also be applied in a course on entrepreneurial finance. In some instances, however, these corporate finance principles and techniques need to be modified to "fit" entrepreneurial firms. This paper will discuss some of topics that should be addressed in a course on entrepreneurial finance and ways in which entrepreneurial finance differs from corporate finance.

INTRODUCTION

Small and entrepreneurial firms are major contributors to the economic well-being of the United States. Small firms, defined as firms having fewer than 500 employees, represent approximately 99 percent of all firms. Obviously, most, if not all, entrepreneurial ventures fall into this category. Entrepreneurial firms are firms that start out being small but then grow rapidly and often explosively. As many larger firms have merged and restructured over the course of the last decade, entrepreneurial firms have become an increasingly important source for new products, services, and technologies as well as a source of new jobs for American workers (The state of small business, 1998). In response to this economic trend, a growing number of colleges and universities are offering courses and degree programs in entrepreneurship (Falkang & Alberti, 2000; Finkle & Deeds, 2001; Gartner & Vesper, 1994; Vesper & Gartner, 1997). These address both the needs and opportunities of the marketplace as well as the interests and aspirations of students and entrepreneurs.

This article will address the distinctions between corporate and entrepreneurial finance. It will also highlight some of the issues that should be addressed in a course on entrepreneurial finance. In doing so, it will discuss the ways in which entrepreneurial finance builds upon the theories of corporate finance. In some instances, those theories can be adapted to entrepreneurial situations. In other instances, however, theories from corporate finance do not really fit in entrepreneurial settings. Thus, it becomes necessary to compose a "variation on the theme", the theme being the principles and practices of corporate finance.

DISTINCTIONS BETWEEN CORPORATE FINANCE AND ENTREPRENEURIAL FINANCE

Corporate finance is typically a required course for all undergraduate business majors. For many students, this course may be their only exposure to finance. For others, however, corporate finance serves as the building block for more advanced study in the areas of investment, international finance, or entrepreneurial finance. Major topics addressed in an introductory course on corporate finance include financial statements and financial statement analysis, forecasting, working capital management, the relationship between risk and return, the time value of money, valuation, cost of capital, capital structure, and capital budgeting. Each of these topics is revisited and re-applied in a course on entrepreneurial finance, often with refinements that are applicable to the specific circumstances inherent in entrepreneurial situations.

Several recently released textbooks on entrepreneurial finance have addressed the link between corporate and entrepreneurial finance in a broader context. In the introduction to their text, Gompers and Sahlman (2002) note that entrepreneurial finance focuses on financial management within the context of entrepreneurial firms. This has implications for the investment analysis, valuation, and financing of the firm. In the areas of investment analysis and valuation, the prospects and cash flows for an entrepreneurial firm are typically much more uncertain than they are for an established firm. Similarly, in the area of financing, entrepreneurial firms, unlike established publicly held firms, do not have access to a full range of debt and equity alternatives. This point is also noted in *Entrepreneurial Finance* by Adelman and Marks (2001).

In the *Venture Capital Handbook*, Gladstone and Gladstone (2002), observe that newer, rapidly growing companies pose a higher level of risk to investors and other providers of capital. Thus, they are often required to turn to sources of high risk capital such as venture capitalists as opposed to relying on more traditional sources of financing such as bank loans. Gladstone and Gladstone go on to point out that venture capitalists are also an important source of management talent and experience for new firms that may not have the breadth and depth of management that one would expect to find in an established firm.

In their text on entrepreneurial finance Smith and Smith (2004) highlight eight major differences between corporate and entrepreneurial finance in the introductory chapter. The authors note that, unlike the investors in established firms, entrepreneurs are typically not able to diversify their risks because all of their resources and energies are devoted to the new venture. Entrepreneurs also differ from most investors in that they may not realize any significant return for many years until they "harvest value" by selling the firm or doing an initial public offering. Smith and Smith note that informational problems are particularly acute in new privately held entrepreneurial ventures. Insiders have access to far more information about the firm than outsiders thus making it more difficult to attract external sources of capital.

ISSUES TO BE ADDRESSED IN A COURSE ON ENTREPRENEURIAL FINANCE

As noted above, many of the issues that are pertinent in a course on corporate finance are also pertinent in a course on entrepreneurial finance. Often, however, the theories developed to

explain corporate finance behavior are not entirely applicable in entrepreneurial situations. Thus, modifications and refinements of existing corporate finance theory become necessary and appropriate to explain the behavior of entrepreneurial firms and their owners. The following section will address some of the key concept areas covered in a course on corporate finance from an entrepreneurial finance perspective.

a) Access to capital is an on-going problem

Retained earnings are a major source of financing for mature, established firms. In some industries, in fact, it is the major source of financing. In contrast, entrepreneurial firms spend a tremendous amount of time hustling for sources of capital. Since entrepreneurial firms are rapid growth firms, their capital requirements typically outpace their ability to generate cash. Further, many entrepreneurial firms are unprofitable, particularly during their early years, and others do not generate sufficient profits to fund their own needs. Most entrepreneurial firms require substantial amounts of external capital in the form of debt and/or equity. This "quest for capital" can be a full-time job or close to it for some entrepreneurs, most of whom are not trained in finance and would prefer to be doing just about anything else. Failure to secure sufficient external funding, however, can result in slower growth, a loss of competitive position, and the eventual sale or failure of the firm when it runs out of cash.

b) Life cycle theory of financing

One of the distinctions between entrepreneurial finance and corporate finance is that entrepreneurial finance deals with companies that have not yet "arrived". As with individual products, entrepreneurial firms go through a life cycle. An entrepreneurial firm may be at the "idea" stage, the prototype stage, the rapid growth stage, or the maturity stage. A number of researchers have pointed out that different types of capital are appropriate for different stages of firm development (Berger & Udell, 1998, Walker, 1989).

For example, during the earliest stages of the company, funding typically comes from the entrepreneur's personal financial resources and savings or from family and friends. This is because, at this stage, the firm often lacks a viable product, customers, or stable revenues. As the firm grows and begins to generate revenues, however, angels and venture capitalists may take an interest. When the firm achieves profitability and some measure of stability, bank loans may become an option. Finally, when the company has achieved significant revenues and growth, it may be a candidate for sale or for an initial public offering. Thus, potential sources of capital vary in accordance with the age and size of the company. Unlike large, mature companies, however, entrepreneurial firms do not consistently have a full range of debt and equity alternatives available to them.

c) Informational opacity

Informational opacity is sometimes also referred to the problem of asymmetric information or incomplete flows of information between seekers of capital and providers of capital (Berger &

Udell, 1998). Asymmetric information is a particular problem for smaller, privately held firms. Unlike large, publicly held firms, privately held firms are not required to publicize their financial statements or results. Thus, providers of capital have a more difficult time evaluating their financial condition and prospects. Their reaction to this problem is often to either deny capital or to provide it only at a substantially higher cost.

In dealing with entrepreneurial firms, providers of capital try to circumvent the problem of asymmetric information in a variety of ways. Venture capitalists often place one of their own people on the management team or Board of Directors for firms that they fund (Kolari, 1994). They also establish specific performance benchmarks and dole out successive rounds of financing only when designated targets have been achieved.

Several researchers have also noted that establishing on-going banking relationships is another way to deal with the problem of asymmetric information. In a study of small firms, Petersen and Rajan (1994) found that firms that concentrated their borrowing among a smaller number of banks benefited from lower interest rates and greater availability of financing. Similarly, Berger and Udell (1995) found that longer banking relationships led to lower interest rates on loans. Further, banks were less likely to require collateral from firms with whom they had longer term relationships. These relationships provide lenders with the opportunity to learn about privately held firms and to gain a better understanding of their prospects for growth and profitability.

d) Traditional capital structure theory does not fit.

Capital structure theory as put forth by Modigliani and Miller (1958) asserts that firms select a capital structure that minimizes their weighted average cost of capital. This, in turn, maximizes share price and the value of the firm. There are a number of assumptions implicit in M&M that do not fit in the case of entrepreneurial firms, however. First, M&M assume that firms have access to a full range of debt and equity alternatives. This is typically not the case for entrepreneurial firms, because privately held firms do not have access to the public debt and equity markets. Unlike larger publicly held firms with target capital structures, entrepreneurial firms often select sources of capital based upon what they can get at a given point in time. Their capital structures may also be partially determined by the risk preferences of the entrepreneur and his or her desire to maintain control over the firm.

M&M also assume that information regarding the firm is readily available to capital providers and that there are no transaction costs. In contrast, as noted above, privately held entrepreneurial firms suffer from the problem of asymmetric information or incomplete flows of information. This raises the cost of information gathering and monitoring for providers of both debt and equity capital resulting in less availability and a higher cost of capital.

Subsequent work in the area of capital structure is more consistent with the experience of entrepreneurial firms. Myers and Majluf (1984) and Myers (1984) developed a "pecking order" theory for capital structure. According to this theory, firm managers have an order of preference for the use of various sources of capital. They will choose to use internal equity in the form of "financial slack" or retained earnings first, followed by external debt. External equity or new stock is used only as a last resort. The pecking order theory assumes that managers have superior

information about the firm's prospects and that they will act to protect the interests of "old" stockholders.

In a study of small British firms, Chittenden et al. (1996) found some support for the pecking order theory. In particular, they found that more profitable firms financed their operations with retained earnings while less profitable firms relied more heavily on short term debt. They concluded that M&M does not really apply to smaller, privately held firms, because those types of firms do not have the same access to sources of capital that publicly held firms do. In a study of privately held U.S. firms, Coleman and Cohn (2000) also found that the pecking order theory was consistent with the sample firms' use of internal rather than external sources of capital. Firms that were capable of self-financing with retained earnings did so before turning to external sources. This strategy enabled firm owners to avoid giving up ownership or control to new shareholders who would expect to participate in the firm's future cash flows.

e) Access to capital is dependent on the qualifications of the entrepreneur

Because many entrepreneurial firms are not yet "going concerns" in the sense that they are able to consistently generate revenues and profits, capital providers often base funding decisions on the qualifications of the entrepreneur as much as on the performance of the company. Venture capitalists, in particular, evaluate the strengths of the entrepreneur and his or her management team in terms of relevant education and experience, reputation and industry contacts, and history of prior entrepreneurial successes. "Serial entrepreneurs" are the dream of venture capitalists; these are individuals who have a prior history of launching successful ventures.

Similarly, banks weigh the characteristics of the entrepreneur in evaluating loan requests, particularly the ability or willingness to provide personal collateral and guarantees and prior credit history. A history of credit difficulties is one of the main factors in loan denials (Coleman, forthcoming). In many instances, the entrepreneur may find it necessary to pledge personal collateral or guarantees in order to secure a loan. This increases the risk to the entrepreneur and eliminates the supposed corporate benefit of limited liability protection.

f) Higher cost of capital.

The Capital Asset Pricing Model (CAPM) teaches us that a firm's cost of capital is raised or lowered by its level of systematic risk or the risk that cannot be diversified away. As beta, or the firm's measure of systematic risk increases, so does the cost of capital required by investors who must be compensated for bearing additional risk. Entrepreneurial firms face a higher cost of capital than established, publicly held firms for a variety of reasons. First, the securities of entrepreneurial firms are not publicly traded, so there is no ready market for buying and selling debt and equity. Thus, equity holders, including the entrepreneur, are not able to easily transfer ownership (McMahon & Stanger, 1995).

Second, entrepreneurial firms take time to reach profitability and maturity. During that time, they may lose money for a number of years. As privately held firms, they do not provide the

opportunity for either dividends or realized capital gains during this growth period. The maturity and liquidity risk premiums for smaller firms are thus much higher.

Third, there is a higher risk of failure for entrepreneurial firms. Many never reach maturity and the public debt or equity markets due to insufficient capital, weaknesses in management, or competition from the marketplace (Bates & Nucci, 1989). Venture capitalists consider themselves fortunate if they have one or two "winning" companies out of a portfolio of twenty. Similarly, banks are typically unwilling to lend to entrepreneurial firms until they have achieved some stability in revenues and profits, because their risk of default is much higher.

Because of these factors, entrepreneurial firms face much higher costs for both debt and equity capital. In some instances, they may be unable to secure debt at all, because the risk of default is so high. In other instances, they can obtain loans, but only if they pay a higher interest rate and provide collateral or guarantees. Equity investors, though more willing to assume risk, also demand higher returns for investing in privately held firms.

g) Lack of separation between the finances of the firm and the firm owner

James Ang (1992) discusses the lack of separation between the firm and the firm owner, or the mingling of business and personal financial resources. Oftentimes, entrepreneurs are required to provide personal guarantees or personal collateral in exchange for a bank loan. If this is the case, the limited liability protection afforded by the corporate form of organization is meaningless, since the firm owner has put his own assets and wealth at risk. Failure of the firm may lead to personal bankruptcy as well.

Ang also noted that most small firm's owners have undiversified personal portfolios; all of their assets and wealth are tied up in the firm. To make matters worse, the firm is typically their employer and may also employ other members of the family. If the firm fails, the entrepreneur, in addition to his friends and relatives, lose not only their wealth but their jobs as well. This lack of diversification adds to the riskiness of operating an entrepreneurial venture.

h) Issues of control and willingness to disclose information

Many entrepreneurial ventures start out very small, i.e. in the home of the entrepreneur with the help of a few key people. Initially, the entrepreneur performs a broad range of company functions including product design and development, marketing and sales, financial management, and raising capital. In the early stages of the firm, it is very easy for the entrepreneur to have his or her fingers in every aspect of the business.

One of the entrepreneurial challenges that comes with firm growth, however, is adding to the depth and breadth of management and sharing control and decision-making (Ang, 1991; Ibid, 1992). This is often a difficult but necessary transition for entrepreneurs who may have grown accustomed to doing everything themselves. Entrepreneurs who cannot give up control to develop an organizational infrastructure and management team are often doomed to remain small or to fail.

Similarly, just as the entrepreneur needs to share decision-making and control in order for the firm to grow, he also needs to share ownership in exchange for infusions of external capital.

Initially, ownership typically resides in the hands of the entrepreneur, members of his or her immediate family, and key employees. Over time, however, it becomes necessary to give away pieces of firm equity in order to raise capital from angels, venture capitalists, and eventually public shareholders. By the time all is said and done, the entrepreneur may find himself owning a very small percentage of the company. At that stage, however, it is a much larger company, so he is ultimately better off financially with a small slice of the much larger equity pie. Not all entrepreneurs see it that way, however, and their reluctance to give up equity may restrict their access to external sources of capital.

i) Managing rapid growth

As noted above, entrepreneurial firms are firms that start out small and grow rapidly, often explosively. This type of growth puts tremendous strain on the management capabilities, organizational structure, and finances of the firm. Although established firms also go through their ups and downs, they do not experience the Warp-9 type of pressure faced by rapidly growing firms. From a management perspective, the firm outgrows the capabilities of its initial management team and its relatively simple management structures. It becomes necessary to bring in additional managerial talent and to develop systems and controls.

During its rapid growth stage, the firm also consumes cash faster than it brings it in. This necessitates identifying and securing external sources of financing. Failure to do so in a timely fashion can result in slower growth or failure of the firm.

Rapid growth often causes or is accompanied by periods of financial distress. In entrepreneurial firms working capital accounts including cash, receivables, and inventory get out of control due to missing or inadequately developed systems and controls. The inability to secure external sources of equity capital can lead to over-reliance on personally secured debt and cash shortages eventually resulting in a liquidity crisis. Problems with liquidity management are a major reason for firm failure.

SUMMARY AND CONCLUSIONS

The good news about teaching entrepreneurial finance is that many of the principles and techniques learned in corporate finance can be adapted and applied to entrepreneurial situations. The challenge, however, is to recognize that, although corporate finance provides a valuable framework for understanding, it does not exactly "fit" in the case of entrepreneurial firms. Some issues have to be addressed in a slightly different way. For example, attention should be given to the difficulties that entrepreneurial firms have in their attempts to secure sources of capital. Many of these difficulties are created by informational asymmetries or problems in obtaining and evaluating financial information on privately held firms.

Asymmetric information also has an effect on capital structure and cost of capital for small firms. The assumptions implicit in Modigliani and Miller's theory of capital structure do not apply in entrepreneurial situations, and growing firms typically do not have the luxury of aiming for a

"target" capital structure. Rather, capital structure is dictated by availability of funds and the entrepreneur's personal preferences for risk and control. Similarly, the cost of capital is higher for entrepreneurial firms, because providers of both debt and equity have a more difficult time securing and evaluating information regarding the firm.

The rapid growth of entrepreneurial firms poses some challenges of its own. Prior research has noted that entrepreneurial firms go through various "stages" of growth, and that different sources of capital are appropriate at different stages. As the firm grows also, managerial structures need to be developed and the entrepreneur needs to start relinquishing some of his or her control and ownership.

The close link between the finances of the firm and those of the firm owner is another characteristic of entrepreneurial finance. Business and personal finances are intermingled, and the asset portfolios of entrepreneurs are highly undiversified since most of the entrepreneur's assets are tied up in the firm. The firm may also be his employer as well as the employer for other members of his family. In contrast to agency theory from corporate finance which is based upon the premise that owners and managers are separate and may have conflicting interests, the entrepreneur and the manager are the same person, particularly during the early stages of firm growth.

An appreciation for some of the similarities and differences between corporate and entrepreneurial finance can heighten students' understanding of both. In addition, in spite of the dramatic growth and economic prominence of small and entrepreneurial firms, most business school curricula continue to be heavily focused on theory and examples using large, publicly held firms. Entrepreneurial finance provides some balance to that large firm perspective, and may better reflect the realities that many students will experience in the workplace.

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PERCEPTIONS OF ENTREPRENEURSHIP, SMALL BUSINESS MANAGEMENT AND VENTURE CAPITALISM

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ABSTRACT

Entrepreneurship has been heralded as a key to the 21st Century economy as well as personal fulfillment (e.g. Amos, 2001; Bailey, 2003; Dunham, 2003; Medintz, 2003; Smith, 2003). The terms entrepreneurship, small business management, and venture capitalism have been bandied about in the popular press and on television as virtually interchangeable. Perceptions of the attractiveness and activities associated with various employment fields may influence the career choices of students. Consequently, understanding how students view the differences in the meaning of these terms, as well as the similarities, will provide additional information for students to make better career decisions and allow business programs to adjust curricula to improve student outcomes.

Small liberal arts institutions with strong business programs increasingly find enrollments often include more women than men. An additional trend is adults returning for advanced business degrees with dissimilar objectives from those obtaining their first business degree. The implications of student perceptions and interests in business areas such as entrepreneurship are relevant to institutions desiring to provide a quality business education with limited resources and changing demographics. This research examines some of these perceptions and whether differences appear to exist based on gender or experience.

THE IMPORTANCE OF A DEFINITION

Definitions tend to be used for purposes beyond simple understanding - they are also used to distinguish one specific concept from other concepts. Definitions mark the domain or boundaries of a concept and in the case of disciplines (such as entrepreneurship) establish two separate columns; which activities, decisions, and implications are considered part of the discipline and which are not. Where there is potential overlap among terms, confusion may arise.

It has long been a precept of the fields of psychology, sociology, and consumer behavior that individuals make decisions based not upon reality, but rather their perceptions of reality. Decision-making based upon a perception of reality has been studied and well documented in a wide

range of arenas including highly autocratic senior executives (Heller, 1987); stock picks (Antonides & van der Sar, 1990); and with new product decisions (Forlani, et al, 2002). By extension, the perceptions of the attractiveness and activities associated with various career fields will have an effect on the choices students make. Given the premise that the terms entrepreneurship, small business management, and venture capitalism have been bandied about in the popular press and on television as virtually interchangeable, exploring how students view these terms is warranted. The first step in the process is to review relevant literature to determine the extent the terms share aspects or are unique.

DEFINING THE TERMS

According to Malonis (2000), one of the first writers to investigate the work of entrepreneurs in the national economy was Austrian, Joseph Schumpeter, a renowned Harvard economist. Schumpeter argued that the defining characteristic of entrepreneurial ventures was innovation. Arthur Cole, another Harvard professor, defined entrepreneurship as purposeful activity to initiate, maintain, and develop a profit-oriented business. Other efforts to define entrepreneurship include "a systematic, professional discipline available to anyone in an organization" (Drucker, 1986) and "the ability to create and build something from practically nothing" (Timmons, 1989).

The Encyclopedia of Business (Malonis, 2000) has the following listings for the three terms: Entrepreneurship, involves taking a risk, either to create a new business or to greatly change the scope of and direction of an existing business. Entrepreneurs typically are innovators who start companies to pursue their ideas for a new product or service. Small Business Management, [a person who manages a company that is] independently owned, i.e., not a subsidiary of a large company. One that employs fewer than 100 employees. Venture capitalist: Venture capital usually refers to third-party private equity capital for new and emerging enterprises. Venture capital firms often provide the entrepreneur with more than just money; since they usually become part owners in the firm, they frequently take an active role in shaping the company's business strategy and its management.

In their textbook, *The Best of the Future of Business* (2003), Gitman and McDaniel also define these terms. Entrepreneurship: Involves taking a risk, either to create a new business or to greatly change the scope and direction of an existing firm. Small Business Management: Small business managers are people with technical expertise who started a business or bought an existing business and made a conscious decision to stay small. Venture capitalists: ...invest in new businesses in return for part of the ownership, sometimes as much as 60 percent. They look for new businesses with high growth potential, and they expect a high investment return within 5 to 10 years. Venture capitalists generally get a voice in management through a seat on the board of directors.

The encyclopedia definitions for entrepreneurship echo many of the same themes found in textbook definitions, namely the notion of risk taking, opportunity, and innovation (see Allen, 1999; Coulter, 2003; Hisrich & Peters, 2002; Kuratko & Hodgetts, 2004; Lambing & Kuehl, 2003; Longenecker, Moore & Petty, 2003; Megginson, Byrd & Megginson, 2003; Scarborough & Zimmerer, 2003; Zimmerer & Scarborough, 2002).

The definitions of small business management appear to differ most from the encyclopedia to the textbooks. Encyclopedias do not directly define the phrase small business management so the terms management and small business were combined to provide a comparative definition. Encyclopedias stick with the use of company size when defining small businesses. They make use of the categories as provided by the U.S. Chamber of Commerce and The Small Business Administration. Textbooks expand their definitions to include the activities in which the small businesses do or do not engage; such as "they do not engage in any new or innovative practice" (Coulter, 2003). "They make a conscious decision to stay small" (Gitman & McDaniel, 2003). "They have relatively little impact on their industry" (Allen, 1999).

Similarly, the encyclopedia and textbook definitions for venture capitalism/venture capitalist/venture capital include the ideas of investing in high risk ventures with the potential for high returns. Both address the fact that venture capital firms generally play a significant role in the management as well as the ownership of the venture in which they invest, thus providing guidance as well as capital.

In an article entitled "Split Personalities" (Green, 2002) there was an extensive discussion on the confusion between the terms entrepreneurs and small business owners. In that article, Bruce Kemelgor, a University of Louisville Professor of Management, asserts that small business owners and entrepreneurs have different goals, strategies and styles. This underscores the need for examining whether people view these terms differently. Two of the group characteristics of interest are gender and experience.

GENDER AND EXPERIENCE DIFFERENCES WITH RESPECT TO ENTREPRENEURSHIP

Previous research has pointed to various explanations as to why female entrepreneurs might differ from their male counterparts. One study found that differences between female and male entrepreneurs become larger if the entrepreneurs are married with dependent children (DeMartino & Barbato, 2003). It is not unreasonable to assume that having dependent children is in part an age related phenomena. Traditional undergraduates (i.e. 18-22 years of age) would therefore be less likely to have dependent children than their graduate program counterparts. It is important to note however, that an increasing number of adult students, particularly women, are returning to complete undergraduate educations and that over time potential differences between those attending undergraduate business programs versus graduate programs, if any, may tend to lessen.

The importance for educational institutions that wish to promote an interest in entrepreneurship is that numerous studies indicate gender does play a role in explaining the different decisions and choices made by owner/managers (Mukhtar, 1998). Furthermore, according to Mukhtar (1998) the differences between male and female entrepreneurs persist even when the owner/manager has been in business for a long time. The implication that gender influences choices with respect to entrepreneurial decision-making provides additional support that the motivations for starting and continuing a business may be quite different for men relative to women (see: Nelton, 1990; Brush, 1992; Catley & Hamilton, 1998, for examples). Given that male and female business

owners make different choices over the lifetime of their respective businesses would suggest that their individual needs during this time period might also be different. If so, then their educational preparation might very well benefit from some sort of adjustment that would take into consideration the differences in how male and female entrepreneurs operate their respective businesses. The issue of whether experience also has a potential impact on entrepreneurial activity is a different question.

Early studies on the subject indicated that previous work experience is critical in developing future entrepreneurs, yet its relative importance does vary with gender (Watkins & Watkins, 1984). Male entrepreneurial ventures were related to previous work experience at twice the rate of those begun by females. The traditional explanation has been that women had less business experience prior to starting their own businesses than their male counterparts. Therefore, the experience viewed critical for entrepreneurial success would be gained primarily from their own businesses. Consequently, these different paths into entrepreneurial activity were viewed as factors contributing to perceptions that women had weak financial skills, average marketing and operating skills, and that their primary advantages were in idea generation and people skills (Hisrich & Brush, 1984). Such perceptions may be reinforced by the more traditional approaches to entrepreneurial study that do not force female students to confront not only their classmates' perceptions of their skills but also their own perceptions.

Women and men both aspire to entrepreneurial undertakings given the opportunity to do so. Male and female entrepreneurs have been found to be motivated by similar needs for autonomy, achievement, a desire for job satisfaction and other non-economic rewards as well as improving their financial situation (Cromie, 1987). Cromie (1987) also found that female entrepreneurs were frequently less concerned with making money than dealing with previous career dissatisfaction and finding a mechanism for meeting their own career needs and that of their family. It is reasonable to assume that in real terms there are no substantive differences in the capabilities of men and women in terms of entrepreneurial skills. But clearly there have been differences captured in both motivating factors and values.

Given these findings, it is warranted to explore whether differences in perceptions exist among male and female students with different levels of experience at one critical point in time (i.e. in their post-secondary educational programs) when they may consider future career plans.

METHODOLOGY

Convenience samples of advanced undergraduate students in business and graduate students beginning their MBA programs of study were surveyed. The undergraduate sample was comprised of 84 juniors and seniors enrolled in a required New Venture Creation class (58% male / 42% female; average age = 23). The graduate sample was comprised of 43 students (63% male / 37% female; average age = 35). Students in both groups were provided with a short pencil and paper questionnaire. They were asked a series of questions to respond to anonymously.

RESULTS

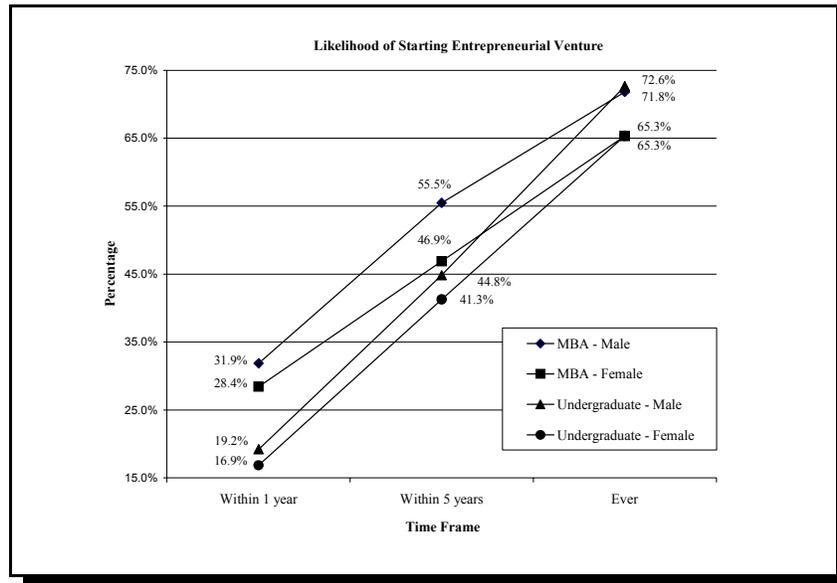
When asked on the first day of class, "how would you rate your level of knowledge about what entrepreneurship is and how it works", on a 1 (extremely low) to 10 (extremely high) scale undergraduate students rated their level of knowledge as substantially higher (5.7) than their graduate counterparts (4.7) (See Table 1). Part of the explanation for this gap may rest with the background of the two sets of student respondents. Members of the graduate cohort are largely returning to higher education, some after a considerable number of years. The undergraduate student respondents by comparison, while not having had course instruction in entrepreneurship, may by virtue of their previous two to three years of coursework simply perceive that they hold higher levels of knowledge in many areas. While there were numerical differences between averages of males and females at both experience levels, they were not as pronounced as when experience levels were combined.

Table 1. First Day Self-reported Knowledge about Entrepreneurship										
	1	2	3	4	5	6	7	8	9	10
	Extremely Low								Extremely High	
MBA Males (5.0)	4%	15%	7%	15%	19%	11%	15%	11%	0%	4%
MBA Females (4.3)	6%	19%	13%	31%	0%	0%	31%	0%	0%	0%
Undergraduate Males (5.9)	0%	0%	8%	14%	18%	17%	30%	6%	4%	2%
Undergraduate Females (5.5)	3%	0%	14%	11%	20%	17%	20%	11%	3%	0%
All Males (5.6)	1%	5%	8%	15%	18%	15%	25%	8%	3%	3%
All Females (5.1)	4%	6%	14%	18%	14%	12%	24%	8%	2%	0%
All MBA (4.7)	5%	16%	9%	21%	12%	7%	21%	7%	0%	2%
All Undergraduate (5.7)	1%	0%	11%	13%	19%	17%	26%	8%	4%	1%

Aside from self-reported levels of knowledge, the intention of starting their own business may speak more directly to how respondents view entrepreneurship. When asked the likelihood of starting their own business over three different time frames, graduate students expressed more immediate plans for doing so in the next year as well as within the next 5 years than their undergraduate counterparts, although the gap narrowed in the longer time frame. Interestingly, the percentages were virtually identical in response to the question of starting their own business at some point in their lives. That, combined with the likelihood level (in the mid 70% range) indicates

that both groups envision this activity as not just a potential activity but a likely one although males are more likely at both experience levels (see Figure 1).

Figure 1. Likelihood of Starting an Entrepreneurial Venture



In response to the question to list three adjectives that they associate with the term entrepreneur, the undergraduate student cohort provided 127 responses, 62 of which were either unique adjectives or constructs so similar they were grouped together. The most frequently mentioned were related to risk and risk taking. A listing of those mentioned by at least three or more students are presented in Table 3 in decreasing order of popularity (see Table 2).

The cohort of graduate students provided 61 total responses, 31 of which were unique adjectives or constructs. The listing of those mentioned by at least three or more students are presented in Table 2 as well. The similarities among the four sub-groups in their responses indicate that to at least a significant degree, all groups have similar perceptions (right or wrong) about entrepreneurship and its activities. It should be noted that with the exception of the adjective "stubborn" (not part of the presented list) all are considered as positive or positive leaning. Indeed even stubborn may be considered as positive by some and in some circumstances. The pattern of responses reinforces the overwhelmingly positive nature of entrepreneurship with this generation of students.

When asked to assess what the typical entrepreneur does on a number of 5-point Likert scales the response of both student cohorts were in agreement for the most part - without significant differences (see Table 3). One area to note is the expressed view by graduate student respondents that entrepreneurs deal more with marketing services than goods - a view not particularly shared by their undergraduate counterparts.

Table 2. Entrepreneurial Adjectives and Traits*

	MBA Students	Undergraduate Students
Males	Risk**	Risk
	Self***	Self
	Independent	Confident
	Ambitious	Hard Worker
	Adventure	Motivated
	Hard Worker	Creative
Females	Risk	Risk
	Creative	Self
	Innovative	Creative
	Self	Leader
	Aggressive	Organized
	Open Minded	Adventurous

* Presented in decreasing order of mention.
** Includes risk-tolerant, -taker, -seeker, etc.
*** Includes self-motivated, -actualizer, -employed, reliant, etc.

Table 3. Evaluation of Entrepreneurs

	MBA - Males	MBA - Females	Undergraduate Males	Undergraduate Females	All Males	All Females	All MBA	All Undergraduate
Relatively unorganized (1) / relatively organized (5)	4.0	4.1	4.1	4.4	4.1	4.3	4.0	4.2
Has many good ideas (1) / has one good idea (5)	2.6	2.8	2.5	2.4	2.5	2.5	2.7	2.5
Older individual (1) / younger individual (5)	3.2	3.3	3.2	3.0	3.2	3.1	3.3	3.1
Markets a service (1) / markets a good (5)	2.7	2.8	2.9	2.9	2.8	2.9	2.7	2.9
Relies on planning (1) / relies on inspiration (5)	3.3	3.1	2.9	3.0	3.0	3.0	3.2	2.9
Delegates few tasks (1) / delegates many tasks (5)	2.9	3.3	3.3	3.5	3.1	3.4	3.0	3.4
More interested in numbers (1)/more interested in ideas (5)	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Easy going (1) / intense (5)	3.9	3.4	3.5	3.5	3.6	3.5	3.7	3.5

The final question posed to students was in actuality, a task. Specifically, each student was asked to construct a Venn diagram involving entrepreneurship, small business management, and venture capitalism. The intent was to see whether graduate students, with their presumed greater experience with business issues, would have a significantly different perspective than that of undergraduate students. The results are presented in Table 4 (see Table 4). Graduate students tend to view small business management and venture capitalism activities as more significant in terms of all business activity than their undergraduate counterparts. The amount of perceived overlap between the activities associated with these fields is very similar. This general agreement between graduate and undergraduate student groups regarding their perceptions of entrepreneurship, small business management, and venture capitalism appears to be influenced by the different degree of experience between the two groups as well as their age difference (a 15 year age difference on average).

Table 4. Student Perceptions of Interrelationships

	Entrepreneurship	Small Business Mgt	Venture Capitalism	Entrepreneurship and Small Business	Entrepreneurship and Venture Capitalism	Small Business Mgt. and Venture Capitalism	Intersection of all three areas
	a	b	c	d	e	f	g
MBA - Male	19.3%	24.1%	15.5%	13.2%	10.1%	8.0%	9.7%
MBA - Female	22.8%	27.2%	17.5%	9.5%	10.6%	6.2%	6.7%
Undergraduate - Male	34.1%	20.7%	14.6%	11.1%	7.5%	6.2%	5.9%
Undergraduate - Female	30.9%	21.6%	12.1%	11.1%	9.8%	8.2%	6.3%
MBA's	20.5%	25.1%	16.2%	12.0%	10.3%	7.4%	8.8%
Undergrads	32.8%	21.1%	13.6%	11.1%	8.4%	7.0%	6.1%
All Males	29.2%	21.9%	14.9%	11.8%	8.4%	6.8%	7.2%
All Females	28.7%	23.1%	13.6%	10.6%	10.0%	7.7%	6.4%

CONCLUSIONS

Given the experience differences between the undergraduate and graduate student samples, the amount of agreement between respondents concerning how they view entrepreneurs and entrepreneurial activity is notable. The fact that such a high percentage of both groups plan to start their own business at some point in their lives also supports the reviewed literature that points to entrepreneurship as a career path increasingly significant to the economy.

Differences in the relative reporting of entrepreneurial knowledge between female MBA students and male undergraduate business students as compared to other reference groups may be worth additional exploration. Women, as reported earlier, have often viewed entrepreneurial activities through a different experiential lens than men. Most gender differences in entrepreneurship research are believed to be absorbed by variables such as education and experience with little evidence of a pure gender effect (Delmar & Davidsson, 2000). Still, the question remains whether altering either the approach or content used to discuss entrepreneurship, teach entrepreneurial concepts or encourage entrepreneurial activity would enhance the educational experience female business creators. Even with women now constituting the majority of college students men are roughly twice as likely to be active in starting a business as women are (Anonymous, 2001).

The social, political and economic consequences inherent in the creation of new businesses are of great importance. If the primary distinction between male and female entrepreneurs is primarily that of experience and education as has been suggested in the literature (e.g. Scherer & Brodzinski, 1990) then two additional observations may be appropriate. First, that the experience component will eventually become less relevant as more women move through the workforce and obtain advanced business degrees. Business experience will become sufficiently diffused that gender is no longer even an issue. Some evidence of that effect is seen in how female MBAs in our sample reflect upon entrepreneurship. Second, the educational component may become more relevant as female driven business startups create a cadre of women whose experiences can be passed back into the educational system (e.g. Wang, 2004). It may very well be that as business schools increase the number of female deans, faculty members, advisors, board members, contributors, guest speakers etc. their input will change the content and approaches used to teach various business skills and/or include new ones.

While the specific boundaries of business that entrepreneurship, small business management, and venture capitalism occupy are viewed differently by these groups, again there is significant agreement - with differences more likely attributable to the increased experience of graduate students rather than any fundamentally different view by undergraduate students of entrepreneurial activity's value.

From this data one might conclude that there is a need to assure that scholars and teachers deliver a consistent and clear message when discussing terms such as entrepreneur, small business manager and venture capitalist. Such distinction will enable the students, both undergraduate and graduate, to assess their interest in one of these fields and thus design an academic and career path toward the appropriate goal. Altering some portions of business curricula to reflect these findings would benefit all of the entrepreneurs of tomorrow.

Beyond this exploratory study, a more in-depth investigation of different populations, their attitudes toward entrepreneurship, and their current understanding about these areas is warranted. Knowledge about the role of gender, ethnicity, and different levels of work experience in individual's attitudes and decisions to start their own business should afford insights for more efficient allocation of human and financial resources by potential business owners, creditors, and others.

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APPLYING THE STEWARDS OF PLACE MODEL: INTEGRATING TEACHING, RESEARCH AND SERVICE THROUGH ENTREPRENEURSHIP EDUCATION

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ABSTRACT

Entrepreneurship Education provides fertile ground for a higher education model that promotes the importance of university outreach and public engagement and the integration of teaching, research and outreach in service to a regional and state community. This paper suggests that many of the current problems facing entrepreneurship education - limited supply of qualified faculty coupled with a seemingly limitless supply of opportunities - may translate into a significant opportunity for the discipline to create a new model for education. In this paper the authors describe an example of how an outreach project may be translated into the classroom and into scholarly output. The project included the creation of an assessment model for early stage entrepreneurs that was designed for use through a program funded by the Commonwealth of Kentucky. The program is described and plans for how the project will be utilized in the classroom and shared via academic publication are outlined.

INTRODUCTION

According to Timmons and Spinelli, (2003 p. 3) "America has unleashed the most revolutionary generation the nation has experienced since its founding in 1776." Increasingly, this new generation of entrepreneurs has called for an emphasis on academic programs in the field. Today there are over 1,800 colleges, universities and community colleges with entrepreneurship classes, programs and initiatives (Timmons and Spinelli, 2003). In 1971, there were only 16 schools who reported teaching entrepreneurship (Fiet, 2001). Furthermore, an analysis of a 1995 Gallup poll by Kourilsky and Walstad (1998) reported 72% of high school males and 62% of high school females indicated a desire to start a business of their own. Ninety percent (90%) of these students said more schools should teach the skills associated with entrepreneurship.

While the resulting interest and demand for entrepreneurship education has led to tremendous opportunities for university entrepreneurship programs and centers, the increasing desire for entrepreneurship education has caused some challenges for the discipline. As is common in most subjects, entrepreneurship educators are called on to contribute with a mix of teaching, research and service. A mix of productivity in these three areas of education has long been supported as

important for a well-rounded academic career. In the field of entrepreneurship the opportunities for service contributions are often much greater and are frequently viewed as more critical to the success of the entrepreneurship center programs and curriculum than in other disciplines. As an applied field, entrepreneurship students and classes not only benefit from, but require the involvement of, business leaders who have gained experience with new ventures from start-up to growth and harvest. In addition, entrepreneurs are often more willing to engage the consulting services offered by entrepreneurship centers and give back support for the programs.

Added to the significant increase in demand and opportunity is a limited supply of academically qualified faculty. "Lack of faculty at every rank is the number one limiting factor of the growth of the (entrepreneurship) field" (Katz, 2003, p. 297). Today there are more than 20 vacant endowed chairs and only a handful of Ph.D. programs to prepare faculty (Katz, 2003). Furthermore, Ph.D. students are often discouraged from the study of entrepreneurship because of the historical debate regarding its legitimacy as an academic discipline. Young faculty members at some of our best research institutions fear they will not be tenured if they attempt an academic career in entrepreneurship. Despite tremendous opportunity, young faculty opt for "safer" careers in management, marketing and finance.

How can the discipline respond to the challenge of increasing interest and demand for entrepreneurship education with a limited supply of qualified faculty? One solution is more Ph.D. programs. A second is to find ways to help faculty integrate service with teaching and scholarly output. In other words, junior faculty could benefit from more examples that demonstrate how to integrate the outcome of service projects into the classroom and create scholarly output from that same service project.

STEWARDS OF PLACE THEORY

Universities are aggressively building capacity for public engagement as they are being called upon to serve their communities at increasing rates. Many community leaders have recognized an engaged university as a vital component for growth in today's knowledge-based economies. Traditionally, research universities have been the source of innovations in thinking and in products and services. In contrast, it is less clear how non Ph.D. granting institutions benefit their communities.

Traditional structures and strategies have made it difficult, if not impossible for universities to adequately and appropriately serve the economic development needs of communities. The rhythm of the university does not move with the rhythm of business (White, 2004). Business leaders must move quickly to exploit innovative ideas and opportunities. Universities typically operate on academic calendars and in very distinct and methodical ways. These behaviors are very much consistent with the scientific method of discovery and the shared governance model of decision-making. It is unlikely either business or academic values will change or that a common paradigm will drive both forms of organization. As a result of these disparate styles, business leaders do not look to universities for help with solving their business problems.

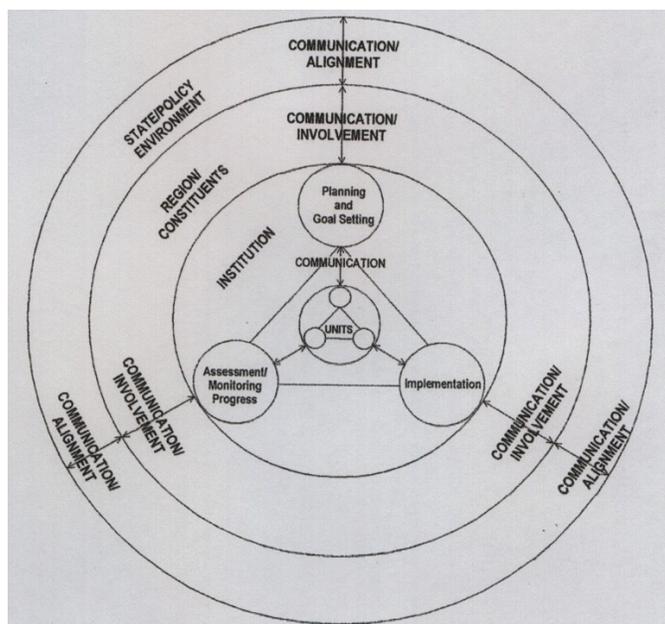
The authors of this paper do not suggest that either traditional university or business models change. Both provide value. Businesses must move quickly to exploit market opportunities and

because of their scientific approach to information, universities can provide an objective ground for the study of timely business problems. However, entrepreneurship education can serve as a bridge linking the best of both approaches.

Some progressive universities have effectively moved to identify and address issues associated with developing institutions that are fully engaged in the vitality of their communities. As an example, outreach has been defined as "...a form of scholarship that...involves generating, transmitting, applying and preserving knowledge for the direct benefit of external audiences in ways that are consistent with university and unit missions"(Michigan State University, 1993 p.1). Moreover, an American Association of State Colleges and Universities (AACSU) task force on public engagement developed a model and guide for becoming Stewards of Place. The focus of this report and the model it suggests sets forth important criteria for the development of "two-way partnerships between America's colleges and universities and the publics they serve."

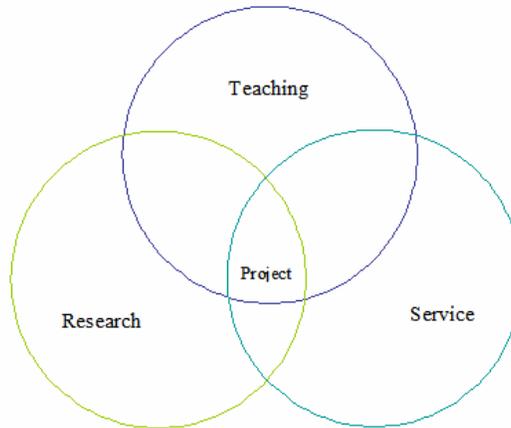
In their guide for universities who wish to become Stewards of Place an AACSU task force identified five overarching themes. Universities are encouraged to "address the future of the region/community as well as the future of the institution, recognize that communication is key and that information is key to communication, approach involvement systematically - aligning institutional and intra-institutional efforts as well as institutional and community efforts, build engagement into the normal processes of the institution, understand that leadership matters, (and) recognize the importance of shaping the external environment" (AACSU, 2002). Figure 1 illustrates this approach to university outreach.

Figure 1: A Guide for Leading Public Engagement at State Colleges and Universities



A faculty model for public engagement must build on the traditions of the university culture while creating opportunity to re-calibrate to the approach of the business community. We suggest a model (figure 2) for entrepreneurship educators that will serve the needs of students, faculty and business "clients."

Figure 2: The Academic Trilogy - Teaching, Research, Service



Entrepreneurship education provides an excellent opportunity for applying these principles. If the university is focused on public engagement as part of its mission, entrepreneurship provides the most meaningful place to begin. Entrepreneurship education is, by its very nature, the most broadly focused program in business colleges. In addition, the challenges facing entrepreneurship lend themselves to solutions that engage faculty in research, teaching and service simultaneously. The intersecting space results in projects that provide teaching, research and service opportunities that have the capability to benefit both university and business constituencies.

THE THREE STAGE ENTREPRENEURIAL ASSESSMENT TOOL©

In 1998, the Kentucky Long Term Planning and Development Commission concluded that "entrepreneurship is Kentucky's most neglected resource." (Childress and Smith-Mellow, 1998, p.1). Based on that study and others that reported the dismal levels of state support for entrepreneurship, Kentucky established the Office for the New Economy (ONE). ONE's mission is to create a globally competitive innovation system resulting in a continuously higher standard of living for all Kentuckians. "The Commonwealth plans to achieve these goals by re-engineering government policies and operations to promote a culture that 'recognizes and rewards innovation and entrepreneurship wherever [it] might take root.'" As a result, the Office for the New Economy created a statewide program to encourage innovation and to prepare qualified entrepreneurs for capital markets.

ONE's program established six Innovation and Commercialization Centers (ICC) throughout the state. In addition to the ICCs, the Commonwealth is adding 16 rural Innovation Centers (ICs). The ICC and IC programs are overseen by the Innovation Group of the Kentucky Science and Technology Corporation, a non-profit private corporation that seeks to encourage entrepreneurship among Kentucky scientists and engineers. The ICC and IC programs assist nascent and early stage entrepreneurs who have businesses or business concepts that are considered to be potential high growth companies. The entrepreneurs of these companies are led through a series of programs and assessments to prepare them for equity markets.

After only a year of operation, it became apparent that the program needed to have a model for assessing entrepreneurs and their businesses and for determining their readiness for seeking equity funds. It was envisioned that the assessment tool would provide consistency for the ICC and IC programs on a statewide basis. In response to this need, the Fifth Third Bank Entrepreneurship Institute at Northern Kentucky University (NKU) was commissioned, via a grant, to create the assessment model.

The Entrepreneurship Institute at NKU was selected based on its reputation for effective public engagement. As a comprehensive, metropolitan university comprised of approximately 14,000 students served by 1,700 faculty and staff on a campus located in the Northern Kentucky Greater Cincinnati, Ohio metropolitan area, NKU has a singular mission within the Commonwealth of Kentucky. This mission is to serve as a metropolitan and regional institution offering baccalaureate, graduate, and professional programs addressing the educational needs of a large and diverse population. Situated in the Ohio River Valley, NKU is just seven miles southeast of Cincinnati, Ohio. The location of the University places it in the largest metropolitan area of all the state universities in Kentucky: Greater Cincinnati has a population of nearly 1.75 million.

THE PROJECT

In order to achieve the objectives of the project, a team of students and faculty was formed. The team was initially charged with revising a document previously used in the state of Oklahoma. After some initial research, it became apparent to the team that a new set of assessment tools was needed. Based on these assumptions, the project was directed toward that effort.

Stage One - Literature Review

The first stage of the project involved a review of the academic literature. The team found eight key studies that examined the characteristics considered important by venture capitalists making investment decisions. Table 1 outlines the methodology used in these eight studies.

Following this review, a content analysis of two books and one assessment instrument was conducted. The characteristics from the journal articles and books are summarized in Table 2.

Tyebjee and Bruno (1984) divided the investment process into five stages. These stages included: deal origination, screening, evaluation, deal structuring and post investment activity. This research concluded that venture capitalists were primarily interested in the market attractiveness, product differentiation, managerial capabilities, and the cash-out potential of a prospective venture.

Table 1: Research Methodology	
Study	Participants and Data Collection Process
Wells (1974)	8 VC's - Personal Interviews
Tybejee & Bruno(1984)	46 VC's -Telephone Survey (More than 50% were Small Business Investment Companies or SBIC's) 41 VC's - Questionnaire via mail
MacMillan (1985)	14 VC's Interviewed 102 VC's - Questionnaire via mail
MacMillan (1987)	150 portfolios by 67 VC's - Questionnaire Follow up of study in 1985 62 VC's evaluated 1 successful investment and 1 failed venture that had been funded by them. 5 VC's rated 3 successful & 3 unsuccessful venture investments.
Dubini (1989)	Used database of MacMillan (1987) 150 portfolios by 67 VC's
MacMillan (1993)	2 Pools of companies 1. Reynolds data base: 1,600 Pennsylvania companies, which were relatively small (Average revenue \$1,350,000) 2. Price Waterhouse data base: 105 Companies through out the US, which were relatively large (Average revenue \$10.7 million)
Shepherd (1999)	47 Australian VC's Questionnaire
Per Stromberg (2003)	67 Portfolios by 11 VC's

Macmillan, Seigel and Narsimha (1985) identified the most important criteria used by venture capitalists, classifying them into the following five categories: the entrepreneur's personality, the entrepreneur's experience (which included both startup experience as well as relevant industry experience), the characteristics of the product or the service, market characteristics and finally, the liquidity potential of the proposed venture. They also studied the importance of a business plan, and concluded that the business plan should reflect the entrepreneurs' abilities.

Macmillan, Zemann and Narsimha (1987) went a step further by doing a follow up study of the Macmillan, Seigel and Narsimha (1985) paper. In this effort they studied both successful and unsuccessful ventures, and concluded that the most important characteristics for success were management staying power coupled with the industry experience of the management team.

Dubini (1989) sought to understand which managerial team characteristics would be useful in determining the potential for success of a new venture given the venture's product and market characteristics. He concluded that different managerial team characteristics were important for different product and market environments.

Research conducted by Shepherd (1999) examined investment decisions made by venture capitalists in Australia. This research concluded that Australian based companies deem the entrepreneurs' relevant industry experience, and startup experience as most important.

Table 2: Investment Criteria Findings

	Wells (1974)	Tyebjee & Bruno(1984)	MacMillan (1985)	MacMillan (1987)	Dubini (1989)	MacMillan (1993)	Shepherd (1999)	Kuratko	Per Stromberg	Timmons (2003)	Twelve Q's
Opportunity											
Market/ Customers	X	X			X			X	X	X	X
Value Added	X	X	X	X					X	X	X
Product Life							X			X	
Competitive Advantage		X							X		X
Timing		X				X	X	X	X		
Potential or Growth	X	X	X					X		X	
Competition			X	X			X	X	X	X	
Management Team											
Entrepreneurs Startup Experience								X		X	
Entrepreneurs Relevant Industry Experience			X				X	X		X	X
Management Team	X	X	X	X	X	X		X	X	X	
Entrepreneurs Personality			X						X	X	
Resources/Financials											
Intellectual Property	X		X	X				X	X	X	X
Technology									X	X	
Capital Requirements	X	X						X		X	X
Strategic Alliances/ Partners/References	X							X	X		
Exit Strategy									X		

After analyzing the content of more than sixty-five investment portfolios, Per Stromberg (2003) concluded that a strong management team and the entrepreneur's personality, coupled with significant references were the main characteristics of a business that was likely to receive equity financing. Unlike other studies, Stromberg specifically identified positive attributes that were likely to lead to an investment as well as the negative attributes that might deter an investment.

Timmons' model divides the entrepreneurial process into three categories. These consist of: the opportunity (which contains the market demand, structure and size and the potential for growth of the product and market); the entrepreneurial team (which includes the entrepreneur and the management team, their qualities and experiences); and, resources (those resources that the new business might possess, such as intellectual property (patents and strategic alliances/partners). (Timmons, 2003).

Stage Two- Focus Group Research

Focus group research is designed to obtain perceptions on a defined area of interest from a group of qualified individuals. For the purposes of the current project the objective was to facilitate a discussion of the decision-making criteria utilized by equity investors. The group consisted of a mix of venture capitalists, angel investors (both institutional and private), entrepreneurs, consultants, intermediaries and commercial lenders. Cumulatively, the participants constituted the lead investors in over fifty separate companies. As part of the exercise, these individuals were encouraged to share their ideas, experiences and perceptions. Two facilitators led the group through the exercise that was audio taped for future reference. The consensus among group members, ranked in order of importance was as follows: importance of the entrepreneur in regards to passion, persistence, risk averseness and leadership qualities; the importance of a well rounded management team which would help make up for or enhance any of the qualities that the entrepreneur lacked; prior experience in a successful venture; and relevant alliances within the industry

Stage Three - Exploratory Survey Research

Based on the information gathered during stages one and two, twenty-two characteristics were identified as being essential attributes of new ventures seeking equity funding. The results of the analysis were tested by way of a survey instrument distributed at a meeting of the Greater Cincinnati Venture Association. The sample consisted of one hundred twenty participants that included entrepreneurs, venture capitalists and angel investors from the Greater Cincinnati, Northern Kentucky area. Fifty-eight of the participants responded to the survey representing approximately 50% of the group. The respondents were asked to rank each of the attributes set forth in the survey, and to provide any additional criteria they considered relevant. Participants were also asked to identify the five most important factors they consider when making investment decisions.

Stage Four - Development of a Model

The final stage required the research team to adapt their findings to the ICC process. The resulting product was a three stage assessment tool. The entrepreneur and the new venture are evaluated at three distinct stages of development: pre-seed, seed or pre-commercialization and venture.

At the seed stage individuals develop and explore the viability of their business ideas. During this stage, the entrepreneur or researcher would be involved in building a business idea, a strong

team, and in the acquisition of resources that they feel would be necessary in the functioning of their business.

The Seed or Pre-commercialization stage is the period during which the entrepreneur seeks financing to conduct research and product development; e.g., proof of concept preoccupation. The venture may not yet have fully established commercial operations. During this stage, the entrepreneur or researcher would generally require small amounts of capital (\$25,000 to \$250,000) for research and product development, and also to develop prototypes, evaluate market potential, protect intellectual property, develop business plans, and build management teams.

At the venture stage, the entrepreneur is ready to explore equity markets. Sales and commercial operations would be fully established. The amount required by the entrepreneur at this stage is usually in the excess of \$1 million. The business plan should be completely developed by this stage.

As an ICC client, an entrepreneur preparing his or her company for the equity markets is evaluated by the ICC Director utilizing the new assessment tool. After completing the process at each stage, the entrepreneur receives feedback that provides strategies for improvement and steps to assist with moving to the next stage. Once the entrepreneur has reached the third, or venture stage, the company is considered ready to seek funding from equity markets.

CURRENT STATUS

Once the assessment tool was developed, the research team conducted a training seminar to explain the use of the tools to the ICC Directors. Following this program, the product was tested by the Kentucky ICC Directors for a six month period. At the end of the six months, a focus group was held with the directors to determine whether revisions were needed. Based on this discussion, a task force of ICC Directors and the research team has been formed to address the necessary changes.

A decision has been made to follow up with additional testing and input via a national focus group research process. Once this series of focus group sessions are complete the decision will be made whether to proceed with survey research or whether the product is ready for full-scale use.

CONCLUSION - INTEGRATION WITH TEACHING AND SCHOLARSHIP

The project engages students in several ways. First, the project was initially designed to be planned and implemented by a team that included both students and faculty members. As members of the design team, students were involved in the literature review, the focus group and survey research projects. Team members learned research design and implementation as well as specifics about the content - e.g., assessing entrepreneurial ideas. Other less tangible outcomes included the opportunity to interact with business leaders and enhance communication skills such as writing, listening and public speaking. Student members of the team were also vitally involved in the development of the computer program that ran the assessment tool.

Second, the assessment tool was used in a MBA level Business Policy class to evaluate students' investor presentations. Working in teams, students using business simulation software

made presentations to six investors each with 5 million dollars to invest. During each groups' presentation, data was entered into the assessment tool resulting in a "cumulative score". In a test of the assessment tools capabilities, one investor used the assessment tool's scoring of the proposals in making his investment decision.

A third application will include the revision of the tool for use in the classroom. The team plans to create a product that can be used in the Senior Portfolio: Writing the Business Plan class and in the graduate business plan writing course.

Fourth, because the assessment tool is an interactive, computer-based program, it is also a perfect fit for on-line learning programs. Whether utilized as a method for teaching students about successful entrepreneurial attributes or as a method to evaluate student performance, the assessment tool lends itself perfectly to the on-line environment.

This project is also rich with opportunities to share the findings with other scholars via academic publication. Both the process and the content of the research provide interesting academic discussions. The goal of this project is to provide research and publication opportunities for both the students and faculty involved in the process.

In sum, this project provides a rich example of how to simultaneously combine outreach, teaching and scholarship. The project included the creation of an assessment model for early stage entrepreneurs that was designed for use through a program funded by the Commonwealth of Kentucky. As argued, the research team also generated a number of learning opportunities for students and the chance to produce meaningful scholarship. This project serves as an example of how entrepreneurship faculty can blend traditional measures of academic success with the expectations and opportunities created by an emerging and growing field.

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SMALL BUSINESS UTILIZATION OF NONVERBAL COMMUNICATION INTERPRETATION: AN EXPLORATORY AND LABORATORY INVESTIGATION

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ABSTRACT

An investigation into the effectiveness of small business personnel utilizing nonverbal cues in determining the messages which others are conveying is examined. The paper provides an overview of the contributions of body language as a means of interpreting communication. In addition it sets forth the outcome of an inquiry which provides support for this methodology in understanding what others are communicating to small business personnel. The inquiry suggested that nonverbal cues, when used by a sample of subjects, generated more accurate insights of communicators' intended meaning and produced enhanced perceptions of listening ability than was the case for another sample of subjects who did not use nonverbal cues.

INTRODUCTION

The objective of this study is to assess the potential contributions of nonverbal communication (body language) to small business personnel, as a means of interpreting the thoughts, attitudes, and intended communications of other parties with whom the small business personnel interact in a person-to-person fashion. In other words, it explains the usages of body language, by these personnel, in "reading" other parties' messages in the course of interpersonal business relations. The paper reviews relevant literature on nonverbal communication. In addition it sets forth the results of a study into the effectiveness of this method in interpreting other parties.

Small business personnel, of course, engage in frequent communications with numerous other parties, in their day-to-day operations. These personnel have ongoing discussions with customers, suppliers, employees, financial institutions, government personnel, the media, and others. In these discussions, it is important to accurately determine the real meaning that the other parties are conveying. Of course, what these parties express verbally is of vital importance, if understanding is to take place. But what they communicate nonverbally is also of major significance.

Nonverbal communication has been defined simply as "silent messages" or "messages without words" (Manning & Reece, 1992). It includes behavior which utilizes movement of the hands and arms, facial expressions, handshakes, facial expressions, placement of the legs and feet, and posture. Reading body language tends to be more an art than a science, but this does not hinder

its usefulness. Research has indicated that this is a form of listening that can be learned-it is not merely an unborn trait that only a few are fortunate enough to inherit from their parents' genes (Clark, 1999; Fulfer, 2001).

Those small business personnel who listen solely or mainly to the spoken words of others to understand what they are communicating may be neglecting a valuable tool. In this regard, those who learn how to interpret and evaluate body language correctly can often enrich their interpersonal effectiveness with others. Researchers in psychology, sociology, social psychology, anthropology, criminal justice, education, and other areas have studied this form of listening in depth and have provided numerous practical applications which can be brought into play in a variety of circumstances.

LITERATURE REVIEW

Managers of small businesses are quick to learn that success is often related to the effectiveness of communications. In turn, those who communicate best tend to be keenly sensitive to listening (Inman, 1978; Pearce, Johnson & Barker, 2003). They realize that communication is a two-way process that involves speaking and listening, as well as checking for understanding (Baldoni, 2004). A study of 280 university department head chairs indicated that listening was a vital topic in business communication courses (Wardrope, 2002). However, discerning the difference between what customers and other parties are able to say and what they want, and then acting on those unspoken desires demands that companies go well beyond listening to verbal communications (Leonard, 2002). Interpretation and observation of nonverbal communication is also needed.

Experience indicates that listening to both verbal and nonverbal cues is one of the more critical processes required for effective small business management (Lloyd & Wickens, 2000; Sadler-Smith, Hampson, Chaston & Badger, 2003). It is perhaps even more important, given the current emphasis upon delegating activities to teams, rather than individuals (Kipp, 1999; Perrella, 1999). Research indicates that an essential ingredient for success is the use of the human resource base which the firm commands (Lussier & Pfeifer, 2001). Skill in this field can lead to subordinates having various positive effects, such as feeling more respected, visible, and less anonymous, and included in teamwork (Alvesson & Sveningsson, 2003). These attitudes are of paramount importance in attracting and retaining superior employees (Kickul, 2001).

Trustworthiness in management is an attribute which is sought by many subordinates and, in turn, listening is an important ingredient for trustworthiness (Bower, 1998). In turn, managers who desire to bring about changes in their organizations often discover that listening to the ideas of subordinates is an effective strategy in securing acceptance of the proposed changes (Crol, 2000). Listening can assist managers in achieving personal growth and, in turn, helping subordinates grow, in terms of building self confidence, competence, and the ability to confront difficult situations (Eales-White, 2003).

It is important that small business managers receive input on what their customers truly think and feel about their companies, personnel, products, and services. Whereas larger concerns often rely upon non-personal forms of receiving customer input-devices such as customer surveys and

analyses of complaints, smaller companies often rely more on direct contact with individual customers-where body language cues can be detected. Listening to customers enables an organization to possess a clear, concise, and succinct conception of what customers expect (McAtarsney, 1999). This is particularly significant when handling customer complaints (Anonymous, 2002). Small business managers are well advised to determine the customer's knowledge and understanding of the company-its products, organization, and management, in order to build an image of legitimacy (Shepherd & Zacharakis, 2003). Gathering information in this area is vital, especially when it comes to assessing overall customer satisfaction (Scott, 2001).

The business functions where nonverbal communication can be used by small business managers is extensive. This method of receiving input can be of value in selection decisions-determining whom to hire (Gurumurthy & Kleiner, 2002). Trainers sometimes employ the technique in evaluating the worth of their employee training programs (Rabey, 2001; Carrier, 1999). There are opportunities for its use in alternative dispute resolution-arbitration and mediation (Netzeley, 2001). Further there are applications in small business negotiations with suppliers and other firms with which strategic alliances are sought (BarNir & Smith, 2002; Beekman & Robinson, 2004). Experience indicates that sales representatives can benefit from this approach when they are making presentations (Bohn, 1999). Another application is in detecting evidences of theft and other crimes among customers and employees (Kuratko, Hornsby, Naffziger & Hodgetts, 2000).

Both the academic and the applied/practitioner literature have upheld the value of nonverbal communication as a means of discerning what others express. Studies have indicated that approximately 65% to 90% of the true meaning in every conversation is transmitted through this channel (Burgoon, Birk & Pfau, 1990; Warfield, 2001). This is understandable, as most persons are visually dominant and operate in a culture that is dominated by visual images and hence tend to rely on the evidence of the eyes more than that of the other senses (Drucker & Gumpert, 1991; Sampson, 1995). Research indicates that the ability to discern what a person is conveying nonverbally can be as significant as the dialogue that takes place between the two parties (Anderson, 2001; DePaulo, Blank, Swaim & Hairfield, 1992). However, many small business managers may be unskilled in this practice. Estimates are that only about four percent of the population understands how to employ it as a useful tool (Warfield, 2002). If small business managers seek enhancement of their ability to interpret meaning, they are in a position to benefit from this technique (Bone, 1998; Kendon, 1994). The nonverbal communication field has been the locus of a number of research efforts, some academic and some applied. Many reveal that a cluster or combination of body language behaviors is more likely to reveal meaning than a single behavior, such as avoiding eye contact or invading the personal space of another person (Molnar, 1997). However, one source indicates that individual body language actions do have unique meanings (Slattery, 2002).

It should be recognized that many nonverbal behaviors are culturally unique in meaning. They may convey a particular message or feeling in one culture and a different one in another culture. Snapping the fingers while whipping the hand out and down is done for emphasis in Brazil. However, in Thailand this is viewed as boisterous and overly aggressive behavior (Clayton, 2003). A large number of the observations set forth in this paper are applicable to norms in the United States and might not be relevant to other countries or even to some American subcultures.

THE STUDY

A research effort was undertaken to assess the potential effectiveness of nonverbal communication as a means of interpreting the meaning conveyed by others. Several scenarios utilizing members of one of the author's MBA marketing management classes were employed to this end. In the classes 30 students chosen at random were selected and assigned to an experimental group. In turn, the members of this group received three hours of verbal instruction in reading body language, conducted by the author. The instruction centered on the points set forth in Appendix C. In turn, a copy of this appendix was provided to each student for his or her review and study, as a supplement to the verbal instruction. A second group of 30 students was randomly selected and assigned to a control group. The members of this group did not receive body language training but were the recipients of three hours of training in effective techniques of listening to verbal messages. Two separate MBA classes were involved in the study. In each class, 15 students were selected for the experimental and 15 for the control group.

The members of both groups were informed that one of the course requirements was to undertake a role playing experiential exercise where they were to assume the role of a salesperson employed by a small business. Role playing scenarios of this nature, where students play roles have been widely employed in nonverbal communication studies (Babad, Avni-Babad & Rosenthal, 2003). In turn, the salesperson in the present study attempted to convince a manager/owner of a local restaurant to advertise in the university student newspaper. The group members were provided with a script, which they were instructed to memorize and to use in their presentations. A copy of the script appears in Appendix B. The sales presentation was to be made to an MBA student who was not currently enrolled in the MBA marketing management class and who had agreed to assume the role of the restaurant owner/manager. These "prospects" were given a script and told to study it carefully, so that they could realistically fit into the role. A copy of the script appears the Appendix.

All of the scripts employed in this study were pretested on a sample of MBA students who were not members of the class. The students were asked to evaluate the scripts for clarity, meaning, expression, and relevance. Based upon feedback from the students alterations in the original scripts were made.

Immediately after the presentations were made, each members of both groups were asked to reflect on their impressions on the presentation and to complete a questionnaire assessing what they believed the prospect was communicating to them. The prospects were also asked to fill out a similar questionnaire, which reflected their actual impressions. A Stapel Scale was employed in the questionnaire. It is widely used in marketing research for evaluating impressions such as those assessed in this study (Menezes & Elbert, 1979). All of the scales employed in the study have been validated in the original work by Osgood, Suci & Tannenbaum (1957) and have been utilized by the author in previous studies of communication impressions. The questionnaire was pretested on a sample of MBA students who were not members of the class. Based upon feedback on the pretest, several minor adjustments in the wording were made.

The completed questionnaires were submitted to the instructor on the next class meeting-which fell on the following week. The students had been instructed to work independently and not to collaborate with other members of either group. Copies of the questionnaires which were

furnished to the sales representatives and the prospects appear in Appendices D and E, respectively. The objective of the analysis was to compare the impressions of the sales representatives with those of the prospects. If nonverbal communication was a superior means of interpreting meaning, the impressions of the salespersons and prospects for the experimental group would more closely correspond than would be the case for the control group.

Table 1 sets forth the mean scale values for the experimental and the control group scenarios. For each scenario, the mean scale value for the sales representatives and the prospects is indicated. In turn, difference scores have been calculated by determining the difference between the sales representative and the prospect mean scale values for each item in the list.

Scale Impression	Experimental Group			Control Group			Contrasts
	Reps	Prospects	Difference	Reps	Prospects	Difference	
Liking	2	2	0	2	2	0	0
Respect	2	2	0	2	2	0	0
Interest	1	1	0	1	1	0	0
Defensiveness	1	-1	2	0	-3	3*	1
Disagreement	-1	-1	0	-1	2	3*	3
Boredom	-2	-2	0	-2	-1	1*	1
Trust	3	2	1	2	2	0*	1
Agreement	1	1	0	1	1	0	0
Shock	0	0	0	0	0	0	0
Understanding	3	2	1	3	1	2*	1
Negative feelings	-2	-2	0	-2	-2	0	0
Uncertainty	-2	-2	0	-1	-2	1*	1
Approval	2	1	1	3	1	2*	1
Secretiveness	-2	-3	1	-2	-2	0*	1
Withdrawal	-2	-3	1	-1	-3	2*	1
Doubt	-1	-1	0	-2	0	2*	2
Frustration	0	0	0	-1	0	1*	1
Careful consideration	3	2	1	2	3	1	0
Presentation analyzed	2	1	1	2	0	2*	1
Hostile	-3	-3	0	-2	-3	1*	1
Totals	5	-4	9	4	-1	21	16

* Indicates a significant difference between the experimental and control group difference scores, according to a Tukey k test at the .05 level.

The total of the difference scores for the experimental group (9) is substantially less than the total difference score for the control group (21). This signifies a closer correspondence between the impressions of the sales reps and the prospects for the experimental group. In the case of eleven of the scale impressions the difference score for the experimental group is significantly less than that of the control group, according to a Tukey k test at the .05 level. In only two cases is the difference score for the experimental group significantly larger than that of the control group.

The *Tukey* range is calculated as follows:

$$T \text{ range} = T \sqrt{MSW} \quad \text{Formula (1)}$$

where: *MSW* = mean square within groups

$$T = \frac{1}{\sqrt{n}} q$$

q = value from the Studentized range table for the alpha level

n = common sample size

$$\text{Thus: } T = \frac{1}{\sqrt{20}} 3.51 = .78$$

And the *T* range is $.78 \sqrt{1.04} = .80$

According to the *Tukey* test, any difference between means that exceeds this range is significant.

The Pearson coefficient of correlation (*r*) between sales representative and prospect impressions values is .51 for the experimental group and .18 for the control group, suggesting a closer relationship between the two variables for the experimental than for the control group. The correlation coefficient was calculated as:

$$r = \frac{n \sum XY - \sum X \sum Y}{\sqrt{[n(\sum X^2) - (\sum X)^2][n(\sum Y^2) - (\sum Y)^2]}} \quad \text{Formula (2)}$$

Taken together, the statistical measures suggest that nonverbal communication was more effective in measuring impressions in this study.

A second test was performed. Here the members of the experimental and control groups evaluated their own listening skills on self reports. Each student was asked to indicate and to report in writing which of the following groups he or she most resembled in attempting to determine what the prospect was expressing: {The descriptions of the listening categories appeared in Pearce, Johnson & Barker (2003).} Active listeners give full attention to listening when others are talking and focus on what is being said. These listeners expend a lot of energy participating in the

speaking-listening exchange, which is usually evidenced by an alert posture or stance and much direct eye contact.

Involved listeners give most of their attention to the speaker's words and intentions. They reflect on the message somewhat and participate in the speaking-listening exchange. They practice some direct eye contact and may have an alert posture or stance, but this alert stance may be intermittent.

Passive listeners receive information as though they are being talked to rather than as equal partners in the speaking-listening exchange. While assuming that the responsibility for the success of the communication is the speaker's, they are usually attentive, although attention may be faked at times. They seldom expend any noticeable energy in receiving and interpreting messages.

Detached listeners withdraw from the speaking-listening exchange and become the object of the speaker's message rather than the receiver. They are usually inattentive, disinterested, and may be restless, bored, or easily distracted. Their noticeable lack of enthusiasm may be marked by slumped or very relaxed posture and avoidance of direct eye contact.

The contents of the student reports were acquired and recorded. The results of the analysis of the data appear in Table 2. It is apparent that group One (nonverbal communication training) produced more self reported listeners in the higher order listening groups than did group Two (only verbal listening training). A Chi Square test indicates that the proportions differ significantly at the .05 level. The results provide evidence of the potential of nonverbal listening.

Listening Category	Group One	Group Two
Active	7	4
Involved	9	7
Passive	11	15
Detached	3	4
Total	30	30

In this case, Chi Square was calculated as follows:

$$\text{Chi Square} = \frac{(f_{oij} - f_{ejj})^2}{f_{ejj}} \quad \text{with } (r-1)(c-1) \text{ degrees of freedom} \quad \text{Formula (3)}$$

where:

$$i = 1$$

$$j = 1$$

$$r = 3$$

$$c = 3$$

$$\text{Chi Square} = 62 / 5 = 12.4, \text{ which is significant at the .05 level at 3 degrees of freedom}$$

After the study was completed, the students who participated in the study were debriefed and the specific purpose of the study was explained. The students were informed as to the findings of the study. Classroom discussion relating to the implications of the study to small business managers followed.

DISCUSSION

This manuscript has assessed the potential contributions of nonverbal communication techniques as means of enhancing the ability to accurately discern the meaning conveyed by others, in a small business context. The literature contains considerable material which supports the employment of this method as a useful tool in correctly evaluating intended meaning. A study undertaken by the author, in conjunction with students enrolled in MBA marketing management classes, supplied some support for the proposition that body language training has a role in enhancing listening effectiveness.

It appears that body language techniques may present advantages which could be important to small business managers. They can employ these techniques directly, in their daily dealings with employees, customers, suppliers, governmental authorities, and other parties. Further, they can include this body of material in the training which they provide for their employees, in order to sharpen their abilities. Certain personnel, such as those who have selling duties, may be particularly suited for such training.

This study has considered the employment of body language as a means of interpreting the meaning of others. It is of equal importance to consider the use of this technique as a means of conveying ideas to others and convincing them of the worth of various ideas. Nonverbal methods can be very effective in improving one's ability to communicate with others (Lincoln, 2000; Mindell, 1996). Practices such as maintaining eye contact, using gestures, erect posture, and respecting the private space of listeners may enable small business personnel to enhance their communication skills (Grahe & Bernieri, 1999; Mongrain & Vettese, 2003; Tiedens & Fragale, 2003).

This inquiry has limitations. The studies involved students enrolled in MBA marketing management classes in one university setting. Thus, the environment was somewhat removed from real world applications, and cannot be generalized to all industry situations. In addition, the dependent variables were somewhat subjective and cannot be interpreted as precise measures of effectiveness. Further, the sample size could be larger, in order to provide more statistical power or stability of results. Given the exploratory nature of the paper, however, it is believed that the results are sufficiently robust to justify the conclusions.

It is recommended that further studies be conducted in settings which more accurately portray realistic situations and which use dependent variables which are more likely to precisely assess effectiveness in interpreting the meaning of others.

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APPENDIX A

Role Playing Scenario-Small Business Owner

You are the owner/manager of a small restaurant with 16 employees, located on a side street on the South side of campus. Last year your firm grossed \$290,000 and earned a net profit before tax of \$73,000. The cash flow of the firm is generally positive and monthly earnings are relatively stable, except that they tend to decline slightly during the summer, when fewer students are on campus. Most of the company debt is in short-term obligations.

The restaurant is located in a three year old modern building that is described by most restaurant patrons as "comfortable" and "has a relaxed atmosphere". The parking lot is ample and the building is surrounded by deciduous trees. The facility is located near a bookstore and an office-supply outlet. The firm holds a ten year renewable lease on the property.

The menu is of the "American style" variety, featuring main courses centering on steak, chicken, pork, fish, and salads. Prices for most items are in the mid-range (between fast food, on the one hand, and upscale restaurants, on the other). The outlet offers low calorie and low carbohydrate meals. A wide range of side dishes, dinner salads, and desserts are on the menu. Also available are coffee, tea, soft drinks, wine, and beer. The breakfast menu is also somewhat standard, emphasizing egg, bacon, and toast items, along with pancakes, waffles and cereals.

Approximately half of the clientele are college students. Of the remaining half, most are city residents and a smaller number are business travelers and tourists.

This restaurant does relatively little advertising. It is listed in the yellow pages and infrequently places small ads in the city newspaper. The theme of the advertisements is always "great food at reasonable prices".

The owner believes that this unit should be able to generate larger revenues and profits. However, he is uncertain as to the best ways to do this. Currently he is searching for useful steps which might allow him to fulfill this objective.

APPENDIX B

Role Playing Scenario-Sales Rep

Hello. My name is ___ and I am on the staff of the college newspaper and would like to take a few moments of your time to describe what we can do for you. In my opinion, we can open up some real opportunities for penetrating the university and city markets.

You have a nice operation here. It is inviting and the food is good. I like to come in with friends, especially for breakfast and dinner. You sure have a lot of potential.

Let me make a brief rundown of what we offer. Our newspaper has a good circulation-we average a readership of 15,000 during the school year and 6,000 during the summer months. We are read by students, professors, staff, townspeople, campus visitors, and others. And most of our readers go through the entire newspaper-rather than just one or a few sections. They have genuine interest in what we have to say. Here are some past editions. Notice that they include a variety of ads. Show several past copies of the newspaper.

For just \$340 dollars a month you can run a weekly ad about the size and same format as this one-point to the ad for the sporting goods store. We can help you in working out what to say and how to word it, based on the knowledge of our advertising staff. The staff is experienced and has good academic background in how to prepare ads. They have done research and know what appeals to students, others on campus, and city residents. This expertise would be at your disposal.

Our ads reach more potential customers per dollar than does any other medium-radio, television, city newspaper, or other. Many readers give their copies to friends or relatives, after they have finished with the copies. This expands our reach even more.

Frankly, I think that you have an excellent restaurant. But it needs more exposure and publicity, so that it can keep up with the competition, which is getting tougher every day. We offer you an inexpensive way to do this, with little effort on your part. If you sign up today I can get you into the next edition, which will appear on the 21st of the month. Can I put you on the list of our advertisers? Thank the prospects for the time and effort.

APPENDIX C

Nonverbal Communication Instructions

Remember that you should look for clusters of behavior more than individual behaviors.

Overall:

Mirroring your body language may indicate liking and respect for you

Body Angle:

Leaning forward may indicate interest, leaning backward may indicate disinterest

An upright posture may indicate interest

A tight, closed body may suggest defensiveness

Turning away from you may mean lack of interest or disagreement

Turning a shoulder toward you may indicate boredom

Distance:

When people move away from you this may indicate distrust or disagreement

Face:

Eye contact may signal interest

Yawning may suggest difficult situation, bored

Head up may signify interest

Head nodding may indicate agreement

Several blinks in succession may imply shock

Frowning may indicate disagreement or lack of understanding.

Arms:

Folded arms may indicate negative, defensive, or uncertain feelings

The use of gestures may indicate interest

Scratching the nose may indicate disbelief

Hurried gestures may indicate lack of understanding of what you are saying.

Hands:

Touching you, as in long handshakes, may indicate liking and approval

Hands in pockets may signal secretive or withdrawn

Hand to ear and hand to face gestures may suggest that there is doubt about what you say

Clenching the hands may indicate frustration or a negative reaction

Rubbing the back of the neck may indicate negative feelings

Slowly stroking the chin may suggest your ideas are carefully considered

Resting the head on the thumb may suggest boredom

Resting the hand on the cheek may indicate the presentation is being analyzed

Legs:

Crossed legs may indicate defensive or hostile

Keeping the legs pointed toward you may indicate interest and agreement

The sources of the body language suggestions were derived from:

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APPENDIX D

Sales Representative Questionnaire

The objective of this questionnaire is to measure what you think the prospect was communicating to you during the sales presentation. Place an X on the scale which indicates the degree to which you think the prospect was thinking or feeling the impression mentioned in the scale. Basically, you are measuring the feedback which you received from the prospect.

Select a plus number for words that you think describe the prospect's thinking or feeling accurately. The more accurately you think the word describes the prospect, the larger the plus number you should choose. Select a minus number for words you think do not describe the prospect accurately. The less accurately you think the word describes the store, the larger the minus number you should choose. If you choose a 0 as the number, this signifies that you did not detect a positive or a negative impression.

	-3	-2	-1	0	1	2	3
Liking you	—	—	—	—	—	—	—
Respect for you	—	—	—	—	—	—	—
Interest in you	—	—	—	—	—	—	—
Defensiveness	—	—	—	—	—	—	—
Disagreement with you	—	—	—	—	—	—	—
Boredom	—	—	—	—	—	—	—
Trust in you	—	—	—	—	—	—	—
Agreement with you	—	—	—	—	—	—	—
Shock	—	—	—	—	—	—	—
Understanding you	—	—	—	—	—	—	—
Negative feelings toward you	—	—	—	—	—	—	—
Uncertainty	—	—	—	—	—	—	—
Approval of you	—	—	—	—	—	—	—
Secretiveness	—	—	—	—	—	—	—
Withdrawal	—	—	—	—	—	—	—
Doubt	—	—	—	—	—	—	—
Frustration	—	—	—	—	—	—	—
Careful consideration	—	—	—	—	—	—	—
Presentation was analyzed	—	—	—	—	—	—	—
Hostile to you	—	—	—	—	—	—	—

APPENDIX E

Prospect Questionnaire

The objective of this questionnaire is to measure your thinking and feeling about the sales representative during the sales presentation. Place an X on the scale which indicates the degree to which you were thinking or feeling the impression mentioned in the scale. Basically, you are measuring your evaluation of the prospect.

Select a plus number for words that you think describe your thinking or feeling accurately. The more accurately you think the word describes you during the presentation, the larger the plus number you should choose. Select a minus number for words you think do not accurately describe you during the presentation. The less accurately you think the word describes you, the larger the minus number you should choose. If you choose a 0 as the number, this signifies that you did not detect a positive or a negative impression.

	-3	-2	-1	0	1	2	3
Liking the rep	—	—	—	—	—	—	—
Respect for the rep	—	—	—	—	—	—	—
Interest in the rep	—	—	—	—	—	—	—
Defensiveness	—	—	—	—	—	—	—
Disagreement with the rep	—	—	—	—	—	—	—
Boredom	—	—	—	—	—	—	—
Trust in the rep	—	—	—	—	—	—	—
Agreement with the rep	—	—	—	—	—	—	—
Shock	—	—	—	—	—	—	—
Understanding the rep	—	—	—	—	—	—	—
Negative feelings toward the rep	—	—	—	—	—	—	—
Uncertainty	—	—	—	—	—	—	—
Approval of the rep	—	—	—	—	—	—	—
Secretiveness	—	—	—	—	—	—	—
Withdrawal	—	—	—	—	—	—	—
Doubt	—	—	—	—	—	—	—
Frustration	—	—	—	—	—	—	—
Careful consideration	—	—	—	—	—	—	—
Presentation was analyzed	—	—	—	—	—	—	—
Hostile to the rep	—	—	—	—	—	—	—

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