

# **Toward Effective Education of Innovative Entrepreneurs in Small Business: Initial Results from a Survey of College Students and Graduates**

by

**Summit Consulting, LLC**

for



Under contract no. SBAHQ-08-M-0251

Release Date: September 2009

*This report was developed under a contract with the Small Business Administration, Office of Advocacy, and contains information and analysis that was reviewed and edited by officials of the Office of Advocacy. However, the final conclusions of the report do not necessarily reflect the views of the Office of Advocacy.*

# Toward Effective Education of Innovative Entrepreneurs in Small Business: Initial Results from a Survey of College Students and Graduates

## Abstract

This paper describes preliminary results from a pilot survey of college and MBA students and alumni from five universities. This survey was designed and conducted by a team of researchers from the Berkley Center for Entrepreneurial Studies at the Stern School of Business and the Steinhardt School of Culture, Education, and Human Development, both at New York University (NYU),<sup>1</sup> and was funded through a challenge grant from the Ewing Marion Kauffman Foundation. This survey project is intended to identify the nature of the courses and their teaching approaches and materials that were most useful, later, in carrying out entrepreneurial activities. The goal of the project is to provide the foundation for an evidence-based redesign of educational programs that focus on training innovative entrepreneurs. It also seeks to contribute to the effectiveness of public policies that are designed to promote and support economic growth.

The educational goal of this study is arguably crucial for the future prosperity and growth of our economy for, as history repeatedly demonstrates, even in a society whose record of invention of valuable new products is exemplary, in the absence of innovative entrepreneurs who have the preparation and knowledge required to ensure that these inventions are put to effective use, economic growth is likely to lag and poverty can be expected to persist. Thus, the preparation of a cadre of capable innovative entrepreneurs is essential to a strong economy.

It is important to note, however, that while business schools throughout the United States have programs that generally seem to be well designed and effective for the training of entrepreneurs who can be expected to establish new firms of some conventional variety, matters are very different for the nation's prospective *innovative entrepreneurs*. There are few, if any, business schools with programs that specialize in the education of this group. Surely it should be disquieting that so little is known about this important matter and that relatively little is being done about it.

Thus, the central purpose of the study whose initial results are reported here is to focus on one critical subject: how prospective innovative entrepreneurs can be trained most effectively. As such, this study cannot be carried out overnight. As a general approach, it requires investigation of the relationship between the educational experiences of subjects studied and their subsequent innovative performance. Certainly, we can learn from these preliminary efforts, but the deeper investigation will require continued effort to produce effective insights. The report provided here offers only the results of the first year of investigation, which are limited, as expected, and should be evaluated accordingly.

For this report, the researchers at NYU agreed to share the data from this project with the SBA. This paper analyzes these data to provide some initial results that indicate whether, and the extent to which,

---

<sup>1</sup>The team of NYU researchers who are conducting this research project is led by William Baumol, Academic Director at Berkley Center for Entrepreneurial Studies at the Stern School, and is composed of Matt Mayhew at the Steinhardt School of Education, and Batia Wiesenfeld and Jeff Simonoff of the Stern School of Business. This report was authored by Summit Consulting under contract #SBAHQ08M0251 from the U.S. SBA.

courses that cover entrepreneurial topics influenced future participation in entrepreneurial activity particularly in small business, by survey participants. The findings from the initial round of surveys—which represent only the beginning of the information and analysis that can be expected to emerge from this study—indicate that:

- Graduates who have taken entrepreneurial courses are significantly more likely to select careers in entrepreneurship, which is defined as ever having founded, run, or been employed in a start-up or entrepreneurial team.
- Graduates who have taken entrepreneurial courses are more innovative, as quantified by the number of patented innovations, new production processes, and new services and products.
- Graduates who have taken entrepreneurial courses and those who have not taken such courses are equally likely to work for small businesses (defined as businesses with 500 or fewer employees).
- There is no discernable relationship between overall educational achievement (as defined by GPA and SAT scores) and selection of a career in entrepreneurship.
- Students who have taken entrepreneurial courses are more likely to self-report stronger skills in areas related to entrepreneurship.

## Background

At present, the U.S. is beset by severe economic difficulties. These include falling real gross domestic product (GDP), dramatic declines in employment, a weakened financial sector, and continued consumer and business pessimism. In addition, some of our economic challenges are not new. For instance, the U.S. maintains an unfortunate balance of trade, with U.S. imports materially exceeding exports, and an increase in outsourcing that threatens American jobs and wages.<sup>2</sup> In the past, when similar challenges emerged, the United States always managed to remain internationally competitive with the aid of its innovative products and technology, as well as the abundance of innovative entrepreneurs who ensured effective development and utilization of these innovations. Newly created firms—especially small ones—played a critical role in recognizing promising new products and processes and adapting these for use as inputs or as needed to meet consumer preferences as final products.<sup>3</sup>

Although inventors make a direct contribution to economic growth through their advances, the entrepreneurs who bring these advances to market play an equally important role. Generally speaking, any individual who initiates a new firm is considered an entrepreneur. However, many of these individuals simply replicate other businesses, and do not actually bring new products or innovations to market. These replicative entrepreneurs are, of course, important for the economy. However, they are not the critical contributors to economic *growth*, and this study is therefore primarily concerned with the *innovative* entrepreneurs, whom we define as individuals who introduce new products and new production processes, find new markets, or innovate in other ways. In addition, we also include in this category “intrapreneurs” who innovate within the structure of an existing firm.

These entrepreneurs play an indispensable role in ensuring that the U.S. economy continues to prosper and grow. Given the importance of their contribution, it is essential that colleges and universities adopt effective programs to train prospective entrepreneurs of this sort. Until recently, however, little attention has been devoted to investigating this critical topic. The study whose initial results are

---

<sup>2</sup> Brainard & Riker, 1997.

<sup>3</sup> Baldwin, 1991.

reported here may well be the first systematic study of the issue, and its goal—identifying practical ways to enhance innovative entrepreneurial education—is particularly unique.

There is considerable evidence showing the need for well-educated entrepreneurs.<sup>4</sup> This evidence indicates, however, that rigidly structured teaching methods, which help to produce personnel skilled in operating techniques and well-versed in previously accumulated information, may not be the best way to prepare students to explore the kinds of breakthrough innovations and radically different ideas and approaches that have kept the U.S. economy in the vanguard of innovation and new product development. In fact, rigid educational structures have been identified as a major barrier to economic growth in developing countries.<sup>5</sup>

## Literature Review

The United States has a history of outstanding performance in the arenas of innovation and especially entrepreneurship. A forthcoming study by Baumol, Schilling, and Wolff finds that even before 1800, the U.S. ranked first in the number of entrepreneurs, with almost half (47 percent) of the world's total.<sup>6</sup> The U.S. expanded its lead in the twentieth century. At that time, U.S. leadership was even stronger in entrepreneurship than in invention. The U.S. accounted for almost 80 percent of all entrepreneurs and a little over 60 percent of all inventors—two-thirds of whom were both inventors and entrepreneurs.<sup>7</sup> The U.S. maintained its lead in the twentieth century.

To remain competitive, we believe the United States must keep its innovative and entrepreneurial traditions alive. Educating future entrepreneurs is more important than ever. But while educators evidently have learned how to create effective programs to train the engineers, physicists, and others who contribute to the economy by standard, well-tested means, innovation and entrepreneurship continue to suffer when taught by routine educational approaches. Unfortunately, more information is necessary to help educators impart entrepreneurial skills to students more effectively.

## Education and Entrepreneurial Performance

Many existing studies examine the relationship between both general education and education specific to entrepreneurship, and entrepreneurial performance. These studies paint a complex and nuanced picture, with many suggesting a positive link between education and entrepreneurial performance. These conclusions are far from settled, however. For example, in one of the first multi-country<sup>8</sup> studies focusing on a wide range of entrepreneurial issues, the authors of the Global Entrepreneurship Monitor (GEM) research program suggest that the relationship between the average level of general education and the rate of venture formation is ambiguous and differs greatly across countries.<sup>9</sup> In a comprehensive meta-analysis of existing research, Van der Sluis et al. (2004, 2005) agree with the GEM finding, but also conclude that the evidence strongly indicates a positive relationship between education and entrepreneurial performance.<sup>10</sup>

---

<sup>4</sup> Franke & Luthje, 2002.

<sup>5</sup> Caicedo & Siqueira, 2006.

<sup>6</sup> For fuller data and sources, see Baumol, Schilling and Wolff (forthcoming).

<sup>7</sup> *Ibid.*

<sup>8</sup> The Global Entrepreneurship Monitor research program studied 34 countries in 2004.

<sup>9</sup> Weaver, Dickson, & Solomon, 2006.

<sup>10</sup> Van der Sluis,, van Praag, & Vijverberg, 2005.

There is also a stream of thought arguing that entrepreneurs are “born—not made,” and cannot be developed through an educational process.<sup>11</sup> The varying levels of educational attainment by those who become entrepreneurs seem to reinforce this view.<sup>12</sup> However, Donald Kurato (2004) argues that it is now definitively evident that entrepreneurship can be taught.<sup>13</sup> Indeed Gorman, Hanlon, and King’s 10-year study (1997)<sup>14</sup> argues that “...most of the empirical studies surveyed indicated that entrepreneurship can be taught, or at least encouraged, by entrepreneurship education.”

Another important recent study by Weaver, Dickson, and Solomon<sup>15</sup> provides robust evidence supporting a positive link between education and entrepreneurial performance. Although the link between education and selection of an entrepreneurial career remains somewhat ambiguous, the study’s results suggest that, when “necessity entrepreneurship” and “opportunity entrepreneurship”<sup>16</sup> are considered separately and country differences are taken into account, that link becomes less ambiguous. The article also contends that the relationship between education and a career in entrepreneurship is not linear in nature, as the highest levels of entrepreneurship are linked to individuals with at least some college education. However, the authors report, educational courses beyond those taken as part of a baccalaureate degree program have generally not been found to be positively linked to entrepreneurship.

## Education and Selection into Entrepreneurship

This round of survey data addresses another important and related question, which is whether and to what extent education influences *selection of an entrepreneurial career*. Many researchers have investigated whether general levels of education are correlated with selection of this activity, and have come to various conclusions. In addition to his work cited above on education and entrepreneurial performance, Van der Sluis also linked education to selection of a career of entrepreneurship.<sup>17</sup> Specifically, he argued that the groups of people with the largest proportion of members who select entrepreneurship as a career generally have at least some college education.<sup>18</sup> However, education beyond a college degree did not increase the likelihood of selecting entrepreneurship as an occupation. This suggests that there is some relationship between education and selection of a career in entrepreneurship, albeit a non-linear one.

Markus Poschke (2008) argues that, in the United States, the distribution of entrepreneurs is “U-shaped” with entrepreneurs existing in the most substantial numbers at both extremes of talent and education. Individuals with relatively high or low wages when employed, or with high or low levels of educational attainment, are more likely to become entrepreneurs and spend more time engaged in entrepreneurship.<sup>19</sup> Conversely, Poschke found, self-employment rates are lower for people with intermediate levels of education. He argues that economic need is a critical determinant of which individuals choose to become entrepreneurs, having found that there is a substantial fraction of people

---

<sup>11</sup> Forthcoming paper by Peter G. Klein and J. Bruce Bullock.

<sup>12</sup> Weaver, Dixon, & Solomon, 2006.

<sup>13</sup> Kuratko, 2006.

<sup>14</sup> Gorman, Hanlon, & Wayne, 1997.

<sup>15</sup> Weaver, Dixon, & Solomon, 2006.

<sup>16</sup> Several writers in this field refer to “necessity entrepreneurship” meaning those who become entrepreneurs out of necessity because they have few other employment options, and “opportunity entrepreneurship,” which connotes a person who has other career options available, but chooses to become an entrepreneur.

<sup>17</sup> “Selection into entrepreneurship” refers to the choice of an individual to forego employment by an existing business in order to pursue some form of self-employment.

<sup>18</sup> Van der Sluis, van Praag, & Vijverberg, 2004.

<sup>19</sup> Poschke, 2008.

who “become entrepreneurs out of necessity,” and not to pursue an opportunity.<sup>20</sup> Poschke found rates of entrepreneurship highest among those with the greatest and least amounts of education: 42.1% of Ph.D.’s (only 0.5% of the population) become entrepreneurs—the largest percentage, while 37.3% of those with less than a high school education (11.6% of the population) become entrepreneurs, the second largest percentage.

Other scholars have found that the greater the amount of schooling, the greater the likelihood of forming a small business. Moutray argues that obtaining more education increases the probability of self-employment, as heads of households with some college are 3.3% more likely than those without college to be self-employed; those with a bachelor’s degree are 4.4% more likely to be self-employed; and those with some graduate level of training are 8.3% more likely to be self-employed.<sup>21</sup> Using 1980 Census data, Borjas and Bronars<sup>22</sup> conclude that U.S. entrepreneurship rates (expressed as a percentage of working people who have started their own firm)—at 6.5%—are highest among those with a college degree and lowest—4.2%—among those with a high school diploma.<sup>23</sup> Several other studies have also found a similar relationship.<sup>24,25</sup> However, these analyses do not focus on *innovative* entrepreneurs exclusively. Whether or not education correlates with entrepreneurship remains unclear. In any case, this relationship is complex, and probably non-linear.

Nevertheless, entrepreneurship as an area of study in colleges and universities continues to flourish. A 2000 survey of educational institutions conducted by George Washington University indicates that there is a growth trend in terms of courses, concentrations, and degrees in the field of entrepreneurship.<sup>26</sup> This trend highlights the need for a more concrete understanding of how educational institutions and educational programs can catalyze entrepreneurial development, and the implications of this for public policy. This report in particular will focus on one issue—determining whether courses specifically focused on entrepreneurship influence the decision of students to become entrepreneurs, or to join entrepreneurial organizations or teams.

## About the Survey

This survey, whose purpose, as already stated, is to determine better ways to train innovative entrepreneurs and intrapreneurs, was designed and conducted by a team of researchers from the Berkley Center for Entrepreneurial Studies at the Stern School of Business and the Steinhardt School of Culture, Education, and Human Development, both at New York University (NYU). It was funded through a challenge grant from the Ewing Marion Kauffman Foundation.<sup>27</sup> This first round of the survey is intended as an experimental pilot project that will assist in the design of the questionnaire and will also offer some independently valuable initial results. The full text of the survey instrument is included as Appendix B.

---

<sup>20</sup> *Ibid.*

<sup>21</sup> Moutray, Chad, 2007.

<sup>22</sup> Borjas & Bronars, 1989.

<sup>23</sup> *Ibid.*

<sup>24</sup> Hamilton, 2000.

<sup>25</sup> Hipple, 2004.

<sup>26</sup> Solomon, Duffy, & Tarabishy, 2002.

<sup>27</sup> Funding for this survey did not come from U.S. Small Business Administration (SBA) Office of Advocacy, nor did it have an operational role in the survey implementation. Therefore, Paperwork Reduction Act requirements did not apply.

For this first pilot study, five universities were asked to participate. The five participant U.S. universities were three private universities in the Northeast with enrollment between 8,000 and 40,000 students, and two large public research universities located in the South and Southwest. The five universities have chosen to remain anonymous.

As part of the survey, students were asked to complete a release form granting the survey team permission to access their institutional records. The survey team then was granted access to institutional data, including GRE/ACT/SAT scores and GPAs, for each participant who signed the release form.

Each university provided email addresses for the four populations of potential survey subjects, noted below:

- MBA students in their final year (Class of 2008)
- Senior undergraduate students (Class of 2008)
- MBA alumni (Class of 2000)
- Undergraduate alumni (Class of 2000)

The following numbers of students and alumni responded:

- Undergraduate Students: 4,731
- Undergraduate Alumni: 283
- MBA Students: 431
- MBA Alumni: 153

Another round of the survey is planned for 2010 and will involve additional universities in the United States, as well as universities in Europe, China, and the Middle East.<sup>28</sup> A number of research papers will emerge from this work. Reports stemming from this survey project will be used to create future conference submissions, scholarly papers, and book-length works.

## Response Rates

For this pilot study, the five participant universities were chosen on the basis of their willingness to participate in the survey, and questionnaires were sent out to a full census of available respondents. Data constraints prevented us from conducting a thorough analysis of possible sources of non-response bias. Although some demographic and educational information was provided by the participating universities, privacy concerns led us to make such data available only after a participant signed a waiver form that was part of the online survey instrument. Therefore, demographic variables are only available for survey respondents. University websites and yearbooks were consulted, but no reliable source for academic variables or demographic data specific to the universities and class years of potential respondents was found. Future iterations of the survey may use statistical sampling and/or collection of auxiliary variables that may allow use of methods that are designed to correct for non-response bias, including weighting of responses to provide results that may be extrapolated to the larger population. However, the preliminary nature of this pilot survey precludes the group of respondents from constituting a random sample of the population under study.

---

<sup>28</sup> While this survey focuses on U.S. students, future versions of the survey will be presented to international respondents. We turn to other countries for pertinent data because we seek to study how, if at all, their different approaches to teaching affect whether or not students choose innovative entrepreneurial careers and how successfully such careers are carried out.

This pilot survey was conducted between April and June 2008 using an online survey questionnaire. The online surveys were open for periods of time ranging from one week to two months, as determined by each university. Survey subjects were contacted through email addresses gathered from the universities, and potential respondents were contacted by an email directing them to a Web-based survey on a third-party website. Potential respondents who did not complete the survey received one to two reminder emails. Potential respondents were encouraged to complete the survey through incentives.<sup>29</sup> Table 1 below provides the survey response rates for various populations.

**Table 1: Survey Response Rates**

<b>Group</b>	<b>Number of Respondents</b>	<b>Total Email Addresses</b>	<b>Response Rate</b>
MBA Alumni (Class of 2000)	153	597	25.6%
MBA Second-Year Students	431	1,409	30.6%
Undergrad Alumni (Class of 2000)	283	4,730	6.0%
Graduating Senior Undergraduates	4,731	20,005	23.6%

The response rates in Table 1 count as respondents all individuals who began the survey. Of those, approximately 88% of those who began the survey completed it.

For undergraduate students/alumni, women made up 68% of respondents, while for MBA students/alumni, women made up 36% of the sample. Table 2 below provides a breakdown of respondents by ethnic group

**Table 2: Ethnic Groups of Survey Respondents**

<b>Group</b>	<b>African American</b>	<b>Asian American</b>	<b>Hispanic/Latino</b>	<b>Native American</b>	<b>White/Caucasian</b>	<b>Multi/Biracial</b>
Undergrad Alumni & Seniors	3.8%	11.3%	5.5%	0.9%	69.4%	9.1%
MBA Alumni & Second-Year Students	2.8%	18.4%	7.2%	0.2%	63.4%	7.9%

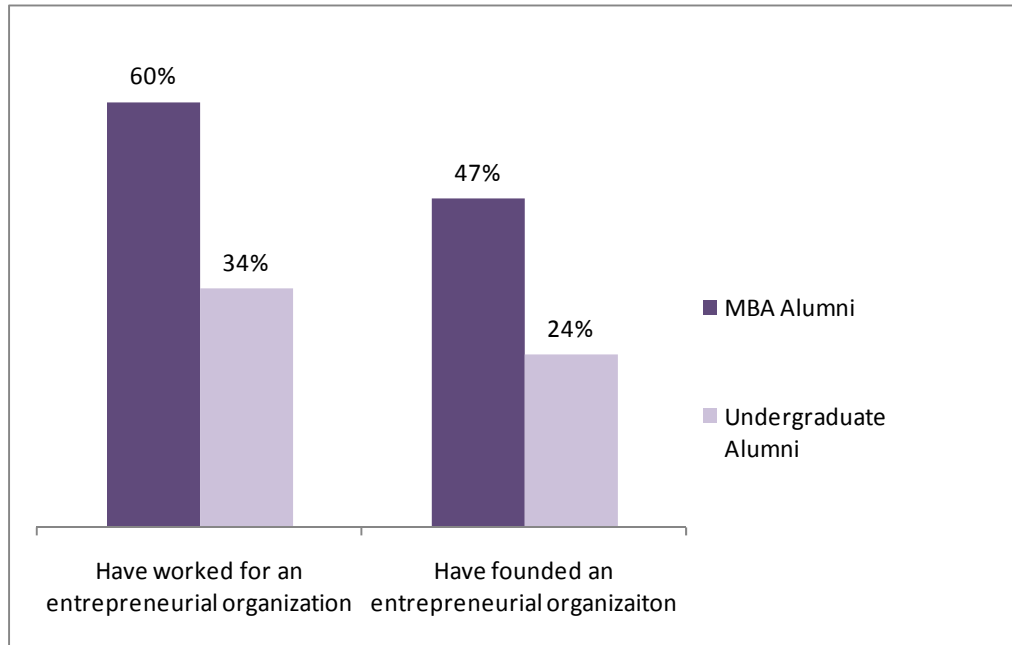
There appears to be some self-selection bias toward those who participated in entrepreneurship. Based on entrepreneurship rates provided in the literature review from studies of the general U.S. population, we would expect perhaps 6 to 10% of respondents to have founded an entrepreneurial organization. However, the percentage of respondents reporting participation in entrepreneurship was much higher than we would expect had the respondents been randomly selected from the general college-educated U.S. population (see Figure 1 below), with approximately 43% of alumni reporting employment in a start-up or entrepreneurial organization. Those involved in entrepreneurship may have been more likely to complete the survey, as a result of their interest in the subject matter.<sup>30</sup>

<sup>29</sup> These incentives include an offer of entry into a drawing for a gift certificate and consumer electronics.

<sup>30</sup> This could be attributable to a self-selection bias from respondents. The notification email received by potential respondents starts with the following sentence: "We are a group of researchers from New York University who are interested in learning more about the ways in which colleges and universities prepare students for future roles as entrepreneurs. In order to better understand this topic, we need your input." Therefore, potential survey recipients may be more likely to respond if they are interested in and/or involved in entrepreneurship.



**Figure 1: Percentage of Alumni Who Have Participated in Entrepreneurial Activity**



## Research Methods

This study's basic objective is to determine correlations (or their absence) among participants' educational curriculum, formal learning experiences, and subsequent careers. The survey data we are analyzing contained two types of questions: 1) outcome questions intended to measure students' self-reported level of entrepreneurial skills and alumni's involvement in innovative entrepreneurship, and 2) explanatory questions regarding personal traits and educational background that may contribute to such outcomes.

We considered those who answer "yes" to either of the questions below to be "participating in entrepreneurship":

- Have you ever been employed in a start-up or entrepreneurial organization?<sup>31</sup>
- Have you ever founded or run an entrepreneurial organization or team?

We then estimated a series of logistic regressions to examine correlations between various outcomes involving entrepreneurial skills, participation in entrepreneurship, and entrepreneurial performance and various explanatory factors. Due to the often binary nature of our outcome variables, we often utilized a logistic regression model. The goal of using regression analysis was not to model the drivers of the entrepreneurial outcome comprehensively, but to determine whether correlations between the outcome and the explanatory factors exist, and to determine whether the correlations found were the result of other confounding factors, or whether they represent a true relationship between entrepreneurial courses and the outcomes at issue. In other cases, we also used difference of means

<sup>31</sup> "Entrepreneurial organization" is not defined for the respondents.

tests to determine whether those who participated in entrepreneurship or who took an entrepreneurial course were significantly different from those who did not.

We used these methods to test the following hypotheses:

- Graduates who have taken entrepreneurial courses are more likely to participate in entrepreneurship.
- Graduates who have taken entrepreneurial courses are more likely to work for small businesses.
- There is no linear relationship between overall educational achievement and participation in entrepreneurship.
- Graduates who have taken entrepreneurial courses are more likely to participate in *innovative* entrepreneurship.
- The type of coursework taken by students affects the decision of an alumnus whether to select entrepreneurial activity.
- Graduates who have taken entrepreneurial courses are more likely to self-report higher skills, in particular skills related to entrepreneurship.

## Findings

Approximately 62% of MBA alumni and 13% of undergraduate alumni reported having taken a course focused on entrepreneurship at some time during their educational careers. Our survey does provide evidence of a relationship between taking such courses and later participation in entrepreneurial organizations. However, it is important to note that this indicates a correlation, but not necessarily causation. We would expect that many students who are interested in entrepreneurship even before entering a course of study would tend to take entrepreneurial courses.

**Figure 2: Percentage of Alumni Who Reported Ever Founding or Working For an Entrepreneurial Organization**

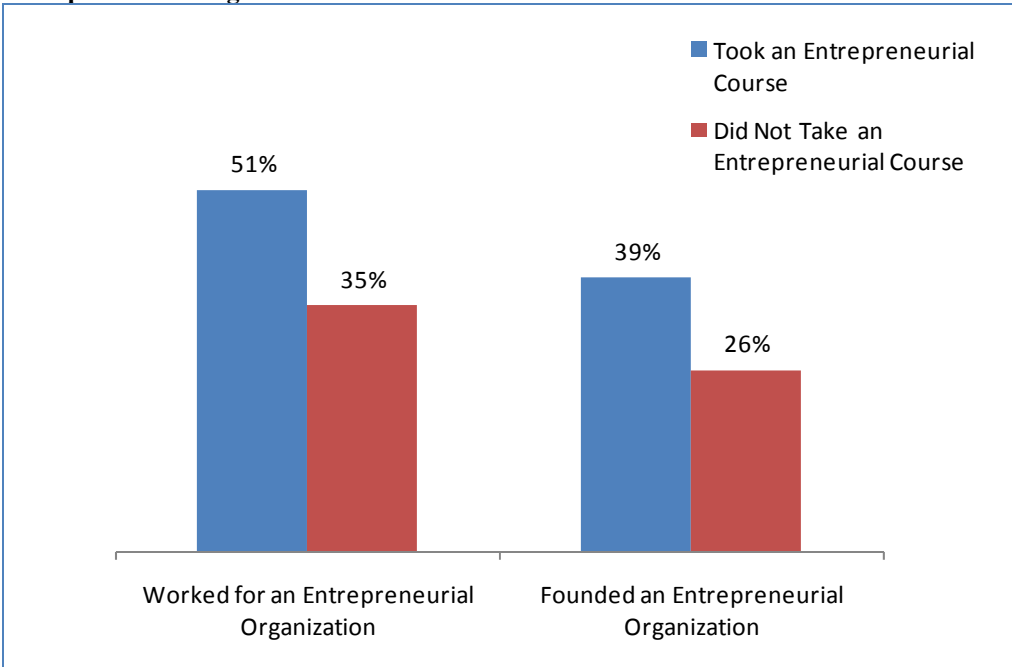
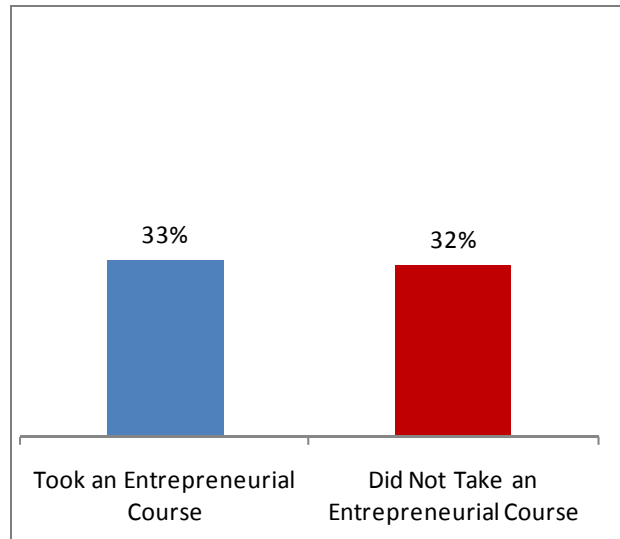


Figure 2 above shows that alumni who took a course specifically focused on entrepreneurship were more likely to be involved in a start-up or entrepreneurial organization.

However, we found that taking an entrepreneurial course is not related to whether an alumnus works for a small or a large firm. Figure 5 illustrates that there is no strong correlation between taking an entrepreneurial course and working for a small business.

**Figure 3: Percentage of Alumni Who Reported Taking an Entrepreneurial Course and Who Are Currently Working for a Small Business (Less Than or Equal to 500 Employees)**

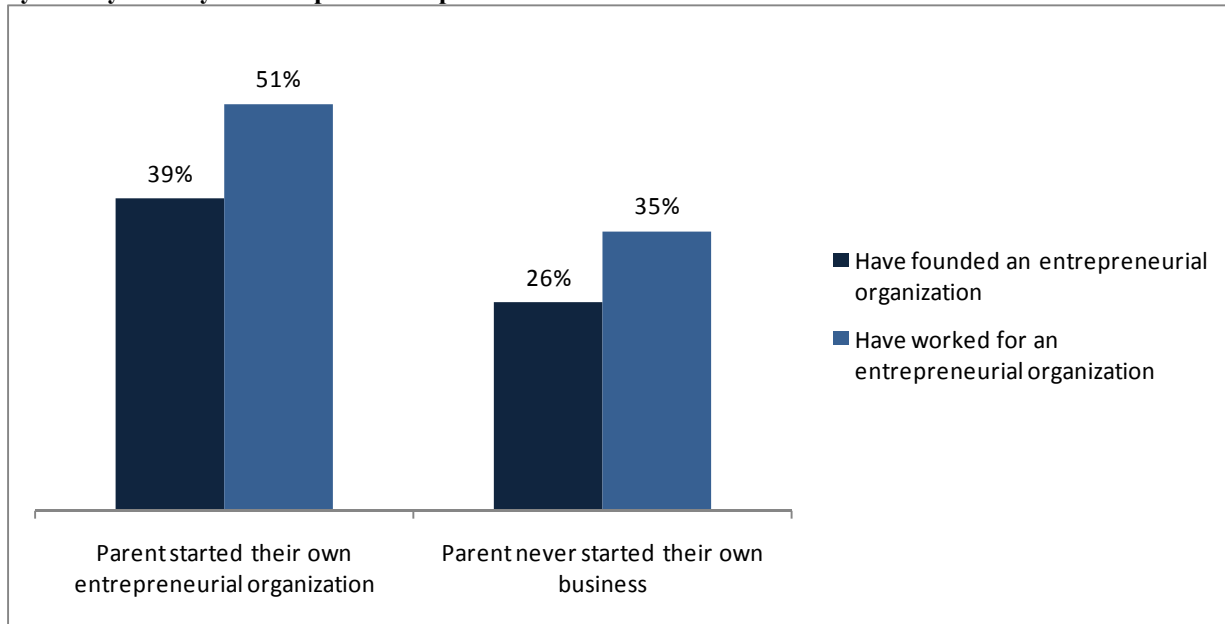


### **Personal Factors and Participation in Entrepreneurship**

Although our main concern was the effect of academic predictors on entrepreneurship, we also attempted to determine what some of the other predictors of entrepreneurship were, to determine whether confounding factors were affecting our results.

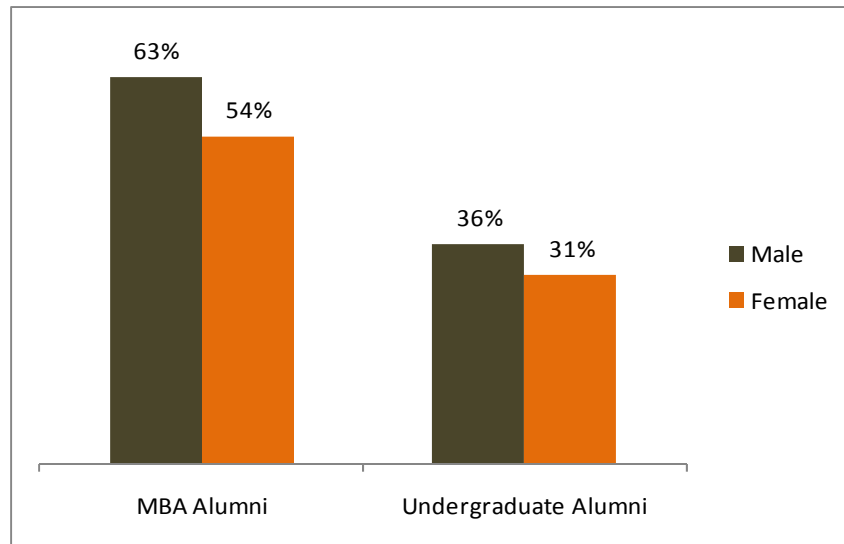
Not surprisingly, one of the personal history factors most strongly correlated with participation in entrepreneurship is parental involvement in a similar business environment. As Figure 4 below shows, a family history of entrepreneurship strongly correlates with participation in entrepreneurial organizations and with founding of an entrepreneurial organization or team.

**Figure 4: Percentage of Students and Alumni Who Worked for a Startup or an Entrepreneurial Organization by Family History of Entrepreneurship**



We also explored the relationship between gender and participation in entrepreneurship. Overall, female survey participants reported lower rates of participation in entrepreneurship than their male counterparts. Women and men also seem to have fairly proportional increases in entrepreneurial activity as a result of additional education. For men, participation in entrepreneurial organizations is approximately 75% higher for MBA alumni than it is for undergraduate alumni, while for women, participation in entrepreneurship is approximately 74% higher for those with an MBA.

**Figure 5: Percentage of Respondents that Have Worked for an Entrepreneurial Organization by Gender and Education**



Other demographic factors that could influence participation in entrepreneurship include age and ethnic group. However, because of the composition of the population surveyed (the classes of 2000 and 2008), the age range of respondents was narrow. Also, the size of the sample provided very small sets of respondents with respect to analysis by ethnic group.

We then looked at these two demographic predictors of entrepreneurship – gender and family history, and tried to determine whether the relationship between educational courses and entrepreneurship can be explained merely by a greater propensity for men and those with a family history of entrepreneurship to take such courses. To control for these factors, we constructed a logistic regression model that attempts to predict participation in entrepreneurship based on three factors: gender, family history of entrepreneurship, and having taken an entrepreneurial course. The results of this regression (found in Appendix A), indicate that taking entrepreneurial courses significantly increases the odds of a student later participating in entrepreneurship, even controlling for the effects of gender and family history of entrepreneurship.

### **Educational Achievement and Participation in Entrepreneurship**

We hypothesized that we would not find a linear relationship between overall educational achievement and selection of a career in small business, and we found this to be true. To examine this hypothesis, we investigated whether business students who had participated in entrepreneurship or a start-up had significantly different SAT scores or GPAs from those who had not. T-tests determined that there was no statistically significant difference between average GPAs ( $t=0.146$ ,  $p=0.6074$ ) or average SAT scores ( $t=0.2859$ ,  $p=0.7753$ ) for these two groups of respondents. GPAs for both groups of respondents were approximately 3.4. The average SAT score for those who participated in entrepreneurship was 1307, while it was 1300 for those who did not participate in entrepreneurship (from a total SAT score of 1600).

Of course, such an investigation will only reveal a linear relationship. So only further research could determine whether Poschkes' "U-shaped" relationship is present. To determine whether this may be so, in addition to a t-test, we explored a logistic regression in which the dependent variable was whether or

not a person reported participating in entrepreneurial activity, and the independent variable is an SAT score. We tried specifications with both linear and squared terms, and found no statistically significant relationship between either GPA or SAT and propensity to participate in entrepreneurial activity. Thus, we can conclude that there is no discernable association between educational achievement, as evidenced by a strong SAT score or high GPA, and whether or not respondents participate in entrepreneurial organizations.

### Participation in Innovative Entrepreneurship

As was stated earlier, one of the primary foci of this study is the training of innovative entrepreneurs, as contrasted with replicative entrepreneurs. Innovative entrepreneurs are those who create and commercialize *new* products, services, and business practices. The following questions were intended as indicators of innovative entrepreneurial performance for those who had worked for or started an entrepreneurial organization or team:

1. Did your entrepreneurial organization or team:
  - a. Offer products or services that are new or unfamiliar to its primary customer?
  - b. Use production techniques and processes that differ from the main competitors in the industry?
  - c. Receive venture capital funding?
  - d. Obtain a patent or copyright?
  - e. None of the above.

Figure 6 illustrates the relationship between taking an entrepreneurial course and participating in innovative entrepreneurship. Figure 6 includes only those survey respondents who reported belonging to an entrepreneurial organization or team, and provides percentages of those respondents who reported three types of innovation within those entrepreneurial teams: (1) offering new products or services, (2) obtaining patents/copyrights, and (3) using production techniques that differ from those of the industry's main competitor. The figure compares the percentage of respondents reporting innovative entrepreneurial activity by whether or not they took an entrepreneurial course. For example, while only 18% of all participants in entrepreneurship report offering new products or services to customers, 86% of those who also took an entrepreneurial course reported belonging to a team that offered new products or services.

**Figure 6: Percentage of Respondents Reporting Participation in Innovative Entrepreneurship**

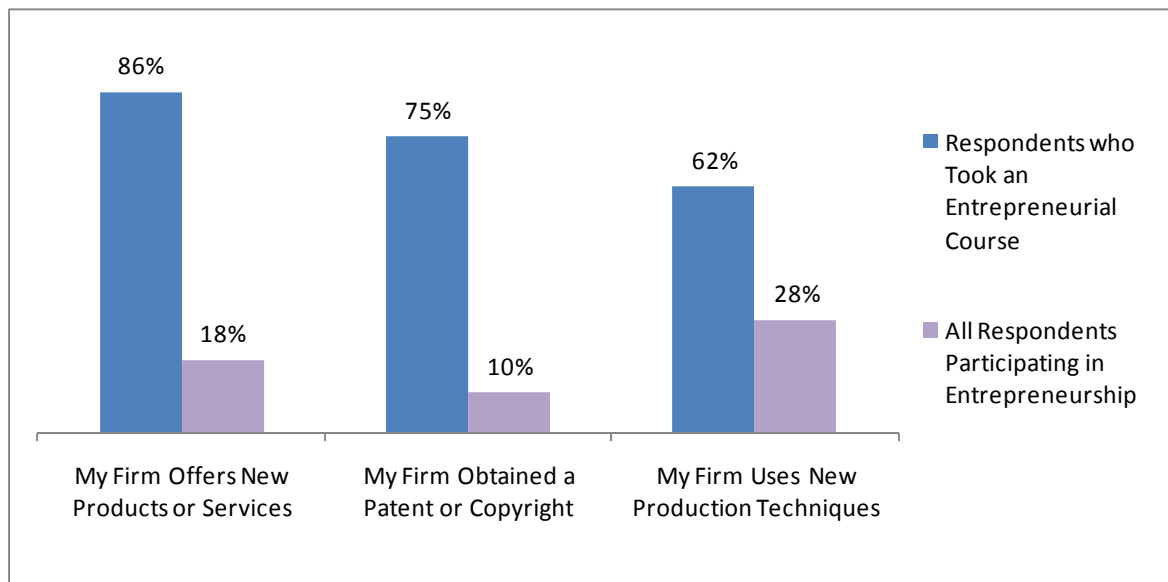


Figure 6 illustrates a relationship between taking an entrepreneurial course and later participation in innovative entrepreneurship. Those who have taken an entrepreneurial course are evidently far more likely to be involved in each of the three types of innovative activity recognized here.

### **Entrepreneurial Courses and Their Influence on Entrepreneurial Skills**

In addition, we hypothesized that the *type* of coursework taken by students—whether it expressly concerns entrepreneurship or not—affects the decision of an alumnus whether to select entrepreneurial activity. To explore the hypothesis that there is such an effect, students were asked to rate the following statements on a Likert scale from 1 (“strongly disagree”) to 5 (“strongly agree”). We found no discernable relationship between responses to the following statements and choice of a career in entrepreneurship:

- Academic work instilled in me the confidence needed to explore new ideas in non-conventional ways.
- Exams or assignments required me to write essays and/or solve problems.
- Exams or assignments required me to use course content to address a problem not presented in the course.
- Exams or assignments required me to compare or contrast topics or ideas from a course.
- Exams or assignments required me to point out the strengths and weaknesses of a particular argument or point of view.
- Exams or assignments required me to argue for or against a particular point of view and defend my argument.
- Exams or assignments required me to create innovative solutions to presented problems.
- Academic work pushes me out of my comfort zone.



## Entrepreneurial skills

Within entrepreneurship education, there are two opposing streams of thought: one that advocates focusing on small business management and another that concentrates on entrepreneurship itself.<sup>32</sup> As a field, “entrepreneurship education” is defined as the process of providing individuals with the knowledge, skills, and self-esteem to recognize opportunities overlooked by others and act where others have hesitated.<sup>33</sup> In general, this includes instruction in opportunity recognition, marshaling resources in the face of risk, and initiating a business venture. It also includes instruction in business management processes, such as business planning, capital development, marketing, and cash flow analysis.

The relevant differences in educational approach stem from the ultimate goal of the course at issue. Small business management courses aim to provide students with solid foundations in managing and operating existing companies, while entrepreneurship courses cover the activities involved in originating and developing new growth ventures. The former approach focuses on how to manage a business successfully in order to achieve normal sales, profits, and growth, with emphasis on planning and organization, selection of employees, marketing of goods and services, and financial planning and control. In contrast, the latter approach emphasizes the principal objectives of an entrepreneur: growth and the resulting profitability.<sup>34</sup>

While skills like business plan preparation and cash-flow modeling are fairly easy to quantify, it is difficult to quantify the other entrepreneurial skills that students may be learning in entrepreneurial courses. In order to examine whether entrepreneurship skills are being effectively communicated in entrepreneurship courses, and whether these skills actually translate into success as an entrepreneur, we asked students and alumni to rate their mastery—on a Likert scale from 1 (“extremely ineffective”) to 5 (“extremely effective”)—of the following skills often taught in entrepreneurial courses:

1. Ability to Identify new business-related opportunities (such as a new product or service people need, but that is not currently available, or a more effective way of producing or running an organization)
2. Acquiring the resources necessary to take advantage of a new business-related opportunity (such as financial resources or expertise)
3. Design of a strategy to direct your and others' efforts, with the goal of taking advantage of a new business-related opportunity (such as creation of a business plan)
4. Developing a new entity to take advantage of new business-related opportunities (for example, a team or organization devoted to the new opportunity)

We found that students who have taken entrepreneurial courses consistently have higher self-reported skill levels in all the areas described above.

Of all the entrepreneurial skill areas considered, “Developing a new entity to take advantage of new business-related opportunities” was the area in which the greatest difference can be seen in those who did and did not take an entrepreneurial course. As is shown in Figure 3, there appears to be a strong correlation between whether respondents have taken an entrepreneurial course and their self-reported skill in identifying new business-related opportunities. Only 13% of respondents who had not taken an entrepreneurial course rated themselves as “extremely effective” in identifying new business-related

---

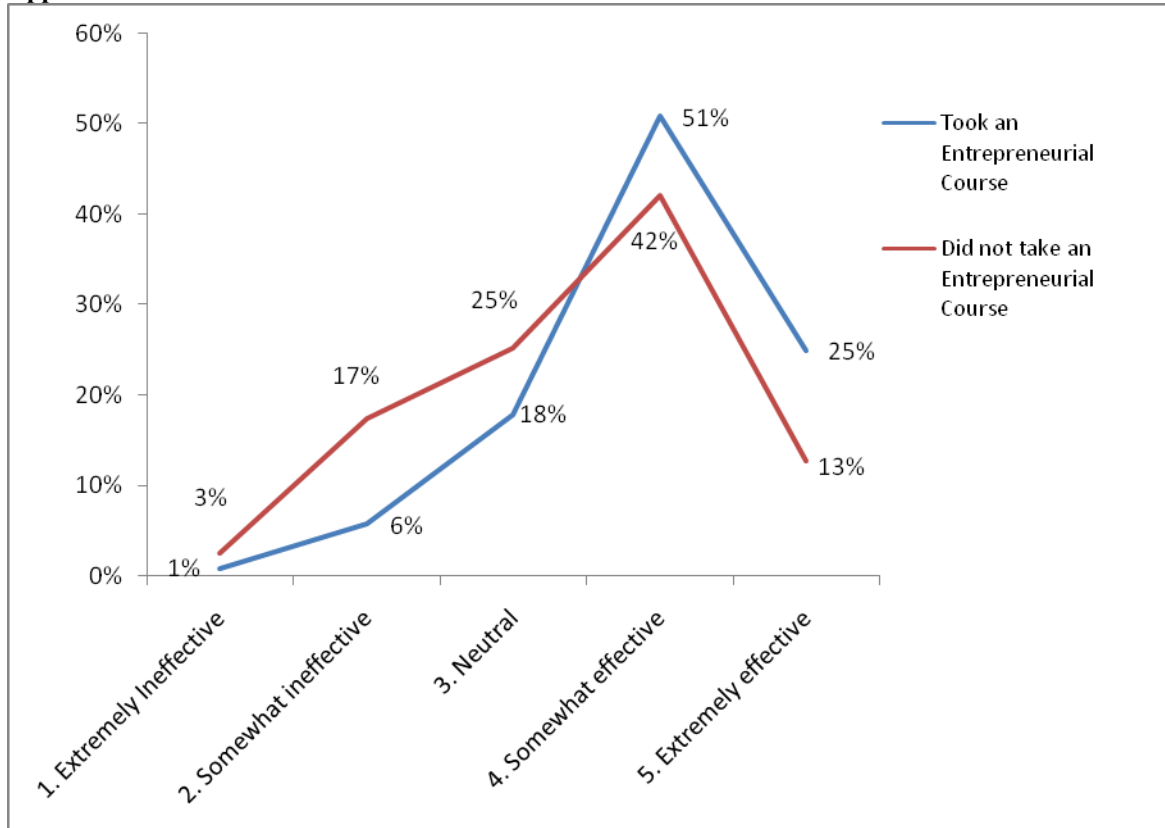
<sup>32</sup> McIntyre & Roche, 1999.

<sup>33</sup> *Ibid.*

<sup>34</sup> McIntyre & Roche, 1999.

opportunities, while 25% of respondents who had taken an entrepreneurial course rated themselves “extremely effective” in this skill area.

**Figure 6: Respondents’ (All Students and Alumni) Self-Reported Skill in Identifying New Business-Related Opportunities**



As we did above when examining the relationship between entrepreneurial courses and entrepreneurial participation (see Figure 6), we again examined whether this relationship holds when we also consider our two greatest demographic drivers of entrepreneurship – gender and family history. In addition, we want to include the effect that participation in entrepreneurial activity itself may have on self-reported skill. To do this, we estimated a simple logistic regression model that attempts to predict self-reported skill in identifying new business-related opportunities based on four factors: gender, family history of entrepreneurship, and having taken an entrepreneurial course. The results (provided in Appendix A) indicate that we can say with certainty that taking entrepreneurial courses significantly increases self-reported skill in identifying new business-related opportunities, even controlling for the effects of actual work experience in this area.

However, it is important to note that many other factors may affect respondents’ self-reported skills. Some may have gained these skills through work experience—not coursework, for example. We also examined whether this effect was merely a result of the fact that participants in entrepreneurial courses have a higher rate of entrepreneurship generally, and that this results in the increase in self-reported skills. However, we found this not to be the case. The results of our logistic regression were not

significantly altered by the inclusion of a variable indicating whether a person participated in entrepreneurship.

Therefore, we can say that those who become entrepreneurs are stronger in these business skills areas than the average, and that those who also took an entrepreneurial course have even stronger (self-reported) skills in these areas. Alternatively, the findings could merely illustrate the fact that those who take entrepreneurial courses are more likely to have confidence in their skills in these areas, a result of self-selection bias. Further study and modeling may succeed in teasing out the relationships between these outcomes and entrepreneurial courses of study.

## Conclusions

This paper describes preliminary results from a pilot survey questionnaire of college and MBA students and alumni from five universities, conducted by a team of researchers from New York University. The exploration of this first round of the survey data has produced the following key findings:

- Graduates who have taken entrepreneurial courses are significantly more likely to select careers in entrepreneurship, which is defined as ever founding, run, or being employed in a start-up or entrepreneurial team.
- Graduates who have taken entrepreneurial courses are more innovative, as quantified by the number of patented innovations, new production processes, and new services and products.
- Graduates who have taken entrepreneurial courses and those who have not taken such courses are equally likely to work for small businesses (defined as businesses with 500 or fewer employees).
- There is no discernable relationship between overall educational achievement (as defined by GPA and SAT scores) and selection of a career in entrepreneurship.
- Students who have taken entrepreneurial courses are more likely to self-report stronger skills in areas related to entrepreneurship.

As this study moves forward in future phases, the NYU Team will focus on providing data that will help instructors to train prospective innovative entrepreneurs more effectively. As part of this, the research team will continue to accumulate evidence that enables it to identify the educational approaches that should be emphasized and those that should be avoided, or at least minimized, in order to stimulate students' creativity and alertness to promising technological developments and other opportunities for innovation. Such an approach will enable students to recognize promising designs of new products and production processes that are crucial to economic growth, impart the skills necessary for development of these novel items to the point where they can be put to effective use, and ensure that these items are effectively utilized. More evidence is needed before one can confidently assert which current practices fall into each category, but for now, these results confirm that the issue merits further study using the approach employed here, and indicates that the approach promises to provide very useful and illuminating results as the research progresses.

## Works Cited

- Baldwin, William. "Innovation and Small Firms: A Review." *Review of Industrial Organization*, 6 (1991): 313-316.
- Brainard, Lael, and David A. Riker. "Are U.S. Multinationals exporting U.S. jobs?" Paper presented at the National Bureau of Economic Research. (1997).
- Borjas, G.J, and S.G. Bronars. "Consumer Discrimination and Self-Employment." *Journal of Political Economy*. 97(3) (1989): 581-605.
- Gorman, Gary, Dennis Hanlon, and Wayne King. "Some research perspectives on entrepreneurship education, enterprise education, and education for small business management." *International Small Business Journal*, 15(3) (1997).
- Caicedo, Guido and Jose Lerosa Siqueira. "Entrepreneurship in Latin America." Paper presented at the Roundtable on Entrepreneurship and Education. Stanford, California, (2006).
- Franke, Nikolaus, and Christian Luthje. "Fostering entrepreneurship through university education and training: Lessons from MIT." Paper presented at the 2nd Annual Conference on Innovative Research and Management. Stockholm, Sweden, (2002).
- Hamilton, B. H. "Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment." *Journal of Political Economy*. 108(3) (2000): 604-631.
- Hipple, S. "Self-employment in the United States: an update." *Monthly Labor Review*. 127(3) (2004): 13-23.
- Kuratko, Donald. "Entrepreneurship Education in the 21st Century: From Legitimization to Leadership." Paper presented at the USASBE National Conference. (2004).
- McIntyre, John R., and Mathieu Roche. "University Education for Entrepreneurs in the United States: A Critical and Retrospective Analysis of Trends in the 1990s." Paper presented at the Georgia Institute of Technology, Center for International Business Education and Research. (1999).
- Moutray, Chad. "Educational Attainment and Other Characteristics of the Self-Employed: An Examination using Data from the Panel Study of Income Dynamics." Paper presented at the Office of Advocacy of the U.S. Small Business Administration. (2007).
- Poschke, Markus. "Who Becomes an Entrepreneur? Labor Market Prospects and Occupational Choice." Paper presented at the Institute for the Study of Labor. Bonn, Germany, (2008).
- Solomon, George T, Susan Duffy, and Ayman Tarabishy. "The State of Entrepreneurship Education in the United States: A Nationwide Survey & Analysis." *International Journal of Entrepreneurship Education*. 1(1) (2002): 1-21.

Van der Sluis, J., M. van Praag, W. Vijverberg. "Education and Entrepreneurship on Industrialized Countries: A Meta-Analysis." Paper presented at the Tinbergen Institute. Amsterdam, The Netherlands, (2004).

Van der Sluis, J., M. van Praag, W. Vijverberg, "Entrepreneurship selection and performance: A meta-analysis of the impact of education in developing economies." *The World Bank Economic Review*, 19(2) (2005): 225-261.

Weaver, Mark, Pat Dickson, and Solomon, George. "Entrepreneurship and Education: What is known and not known about the links between education and entrepreneurial activity." *The Small Business Economy: A Report to the President* (2006): 113-156.

## Appendix A

**Figure 7: Output for Regression Relating Entrepreneurial Courses, Gender, and Family History of Entrepreneurship to Participation in Entrepreneurship**

Logistic regression		Number of obs =		327		
		LR chi2(3) =		35.65		
		Prob > chi2 =		0.0000		
Log likelihood = -208.57658		Pseudo R2 =		0.0787		
<b>entrepreneur</b>	<b>Odds Ratio</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>	
<b>course</b>	3.500757	.9354936	4.69	0.000	2.073474	5.910514
<b>male</b>	1.200676	.2896966	0.76	0.448	.7482553	1.926646
<b>parents</b>	1.805373	.4239546	2.52	0.012	1.139409	2.86058

**Figure 8: Output for Regression Relating Entrepreneurial Courses, Participation in Entrepreneurship, Gender, and Family History of Entrepreneurship to Self-Reported Skill in Identifying New Business-Related Opportunities**

Ordered logistic regression		Number of obs =		326		
		LR chi2(4) =		33.32		
		Prob > chi2 =		0.0000		
Log likelihood = -417.46211		Pseudo R2 =		0.0384		
<b>q13identified</b>	<b>Odds Ratio</b>	<b>Std. Err.</b>	<b>z</b>	<b>P&gt; z </b>	<b>[95% Conf. Interval]</b>	
<b>course</b>	1.958003	.4793344	2.74	0.006	1.211805	3.163692
<b>entrepreneur</b>	2.293043	.5044385	3.77	0.000	1.489908	3.529109
<b>male</b>	1.265641	.2732198	1.09	0.275	.829006	1.93225
<b>parents</b>	.9054376	.188428	-0.48	0.633	.6021677	1.361443
<b>/cut1</b>	-3.164838	.3873144			-3.92396	-2.405715
<b>/cut2</b>	-1.38612	.2269823			-1.830997	-.9412432
<b>/cut3</b>	-.1860497	.2031404			-.5841976	.2120983
<b>/cut4</b>	1.970814	.2355274			1.509189	2.432439

## Appendix B

The following is the survey questionnaire that was presented to the students:

Page - 2

Please indicate how much you agree with each of these statements:

***I see myself as...***

Q2 Extroverted, enthusiastic

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

*Required answers: 1*

*Allowed answers: 1*

Q3 Critical, quarrelsome

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

*Required answers: 1*

*Allowed answers: 1*

Q4 Dependable, self-disciplined

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

*Required answers: 1*

*Allowed answers: 1*

Q5 Anxious, easily upset

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q6 Open to new experiences

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q7 Reserved, quiet

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q8 Sympathetic, warm

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q9 Disorganized, careless

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1



Q10 Calm, emotionally stable

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q11 Conventional, uncreative

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q12 Complex

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Please indicate how effective you believe you are in each of the following areas.

Q13 **Identifying new business-related opportunities** (such as a new product or service people need but that is not currently available, or a more effective way of producing or running an organization)

Extremely effective[Code = 5]

Somewhat effective[Code = 4]

Neutral[Code = 3]

Somewhat ineffective[Code = 2]

Extremely ineffective[Code = 1]

Required answers: 1 Allowed answers: 1

**Q14 Acquiring the resources necessary to take advantage of a new business-related opportunity** (such as financial resources or expertise)

Extremely effective[Code = 5]

Somewhat effective[Code = 4]

Neutral[Code = 3]

Somewhat ineffective[Code = 2]

Extremely ineffective[Code = 1]

*Required answers: 1      Allowed answers: 1*

**Q15 Developing a strategy to direct your and others' efforts with the goal of taking advantage of a new business-related opportunity** (such as developing a business plan)

Extremely effective[Code = 5]

Somewhat effective[Code = 4]

Neutral[Code = 3]

Somewhat ineffective[Code = 2]

Extremely ineffective[Code = 1]

*Required answers: 1      Allowed answers: 1*

**Q16 Developing a new entity to take advantage of new business-related opportunities** (for example, a team or organization devoted to the new opportunity)

Extremely effective[Code = 5]

Somewhat effective[Code = 4]

Neutral[Code = 3]

Somewhat ineffective[Code = 2]

Extremely ineffective[Code = 1]

*Required answers: 1      Allowed answers: 1*

*Next Page: Sequential*

Page - 3

The following series of questions ask you to think back upon your graduate business school experiences.

*Required answers: 1      Allowed answers: 1*

**Q17** Below are some activities in which students often participate while in business school. Please indicate which of the following experiences you had during your time in business school. (Check all that apply)

Held a leadership position in a student club, campus organization, or residence hall[Code = 1]

Worked on a research project with a faculty member outside of course or program requirements[Code = 2]

Served as a resident assistant, peer educator, student orientation leader[Code = 3]

Participated in an internship or co-op experience[Code = 4]

None of the above[Code = 5]

Required answers: 1      Allowed answers: 5

Below are statements about your contact and interactions with business school faculty. Indicate your level of agreement/disagreement with each.

Q20 My **non-classroom** interactions with faculty had a positive influence on my personal growth, values, and attitudes.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Q21 My **non-classroom** interactions with faculty had a positive influence on my career goals and aspirations.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Q22 When I attended this institution, I developed a close, personal relationship with at least one faculty member.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Below are statements about experiences you may have had in class. Indicate how often you experienced each during your time in business school.

Q23 Faculty asked challenging questions in class.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q24 Faculty asked me to show how a particular course concept could be applied to an actual problem or situation.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q25 Faculty asked me to point out any fallacies in basic ideas, principles, or points of view presented in the course.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q26 Faculty asked me to argue for or against a particular point of view.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q27 Faculty challenged my ideas in class.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q28 Faculty encouraged me to explore an original idea.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q29 Faculty challenged me to think outside of the box to create solutions to problems presented in class.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

The statements below describe activities often emphasized in courses. Select the response that best fits the frequency with which faculty or coursework emphasized these activities.

Q30 **Analyzing** the basic element of an idea, experience, or theory, such as examining a particular case or situation in depth and considering its components

Very much[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

Q31 **Synthesizing** and organizing ideas, information, or experiences into new, more complex interpretations and relationships

Very much[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

**Q32 Making my own judgments** about the value of information, arguments, or methods, such as examining how others gathered and interpreted data and assessing the soundness of their conclusions

Very much[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

**Q33 Applying** theories or concepts to practical problems or in new situations

Very much[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

**Q34 Creating** solutions to problems

Very much[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

Indicate your level of agreement/disagreement with each of the following statements.

**Q35** Students at this school spent significant amounts of time studying and on academic work.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Q36 Academic work pushed me out of my comfort zone.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Q37 Academic work instilled in me the confidence needed to explore new ideas in nonconventional ways.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1      Allowed answers: 1

Next Page: Sequential

Page - 4

Below are descriptions of the types of exams or assignments you may have had in business school. Indicate how often you experienced each.

Q38 Exams or assignments required me to write essays and/or solve problems.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1      Allowed answers: 1

Q39 Exams or assignments required me to use course content to address a problem not presented in the course.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q40 Exams or assignments required me to compare or contrast topics or ideas from a course.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q 41 Exams or assignments required me to create innovative solutions to presented problems.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q42 Exams or assignments required me to point out the strengths and weaknesses of a particular argument or point of view.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q43 Exams or assignments required me to argue for or against a particular point of view and defend my argument.

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]



Never[Code = 1]

Required answers: 1 Allowed answers: 1

Indicate the extent to which you agree/disagree with each of the following statements about your experiences in business school.

Q44 Courses helped me to see the connections between my intended career and its broad effect on society.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q45 My out-of-class experiences helped me to connect what I learned in the classroom with life events.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q46 My out-of-class experiences helped me to translate knowledge and understanding from the classroom into action.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q47 My out-of-class experiences had a positive influence on my intellectual growth and interest in ideas.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

Q48 My out-of-class experiences had a positive influence on my personal growth, attitudes, and values.

Strongly agree[Code = 5]

Agree[Code = 4]

Neutral[Code = 3]

Disagree[Code = 2]

Strongly disagree[Code = 1]

Required answers: 1 Allowed answers: 1

How often did you have the following interactions with **diverse students** (i.e., students differing from you in race) while attending this business school?

Q49 Had discussions regarding intergroup relations

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q50 Had meaningful and honest discussions about issues related to social justice

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q51 Shared personal feelings and problems

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q52 Had guarded, cautious interactions

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q53 Felt silenced by prejudice and discrimination from sharing my own experiences

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q54 Had hurtful, unresolved interactions

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q55 Had tense, somewhat hostile interactions

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

Q56 Felt insulted or threatened based on my race

Very often[Code = 5]

Often[Code = 4]

Occasionally[Code = 3]

Rarely[Code = 2]

Never[Code = 1]

Required answers: 1 Allowed answers: 1

How much emphasis did your school place on:

Q57 Helping you develop the confidence needed to take risks

A lot[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

Q58 Helping you channel your creativity into innovative products and solutions

A lot[Code = 5]

Quite a bit[Code = 4]

Some[Code = 3]

Very little[Code = 2]

Not at all[Code = 1]

Required answers: 1 Allowed answers: 1

Q59 Did you take any courses in business school that were specifically oriented towards entrepreneurship and entrepreneurial activity?

Yes[Code = 1]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Next Page: Sequential

Page - 5

The following questions are related to types of business activity that you might have engaged in during your career.

Required answers: 0 Allowed answers: 0

Q60 Have you ever been employed in a start-up or entrepreneurial organization?

Yes[Code = 1]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Q61 Have you ever founded or run (or are you now in the process of founding or running) an entrepreneurial organization or team?

Yes[Code = 1]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Next Page: Sequential

Page - 6

Display if Q59='Yes'

Q61(writen) Please indicate the name of your entrepreneurial organization or team in the space provided:

[Code = 1] [TextBox]

Required answers: 0 Allowed answers: 1

Q61 Does/Did your entrepreneurial organization or team: (Check all that apply)

Offer products/services that are new or unfamiliar to its primary customers[Code = 1]

Use production techniques and processes that differ from the main competitors in the industry[Code = 2]

Receive venture capital funding[Code = 3]

Obtain a patent or copyright (please indicate the number of patents or copyrights)[Code = 4]  
[TextBox]

None of the above[Code = 5]

Required answers: 1 Allowed answers: 4

Next Page: Sequential

Page - 7

QWhat were your scores on the GMAT, SAT and/or ACT?

GMAT[Code = 1] [TextBox]

SAT Verbal[Code = 2] [TextBox]

SAT Math[Code = 3] [TextBox]

ACT Composite[Code = 4] [TextBox]

Required answers: 1 Allowed answers: 4

QWhat was your approximate business school GPA?

Below 2.0[Code = 1]

2.0[Code = 2]

2.1[Code = 3]

2.2[Code = 4]

2.3[Code = 5]

2.4[Code = 6]

2.5[Code = 7]

2.6[Code = 8]

2.7[Code = 9]

2.8[Code = 10]

2.9[Code = 11]

3.0[Code = 12]

3.1[Code = 13]

3.2[Code = 14]

3.3[Code = 15]

3.4[Code = 16]

3.5[Code = 17]

3.6[Code = 18]

3.7[Code = 19]

3.8[Code = 20]

3.9[Code = 21]

4.0[Code = 22]

Required answers: 1 Allowed answers: 1

Q67 What educational degrees have you attained? (Check all that apply)

Bachelor's degree (B.A., B.S., B.Eng., etc.)[Code = 1]

Master's degree (M.A., M.S., MBA, etc.)[Code = 2]

Doctorate degree (Ph.D., Ed.D., etc.)[Code = 3]

Medical degree (M.D., R.N., etc.)[Code = 4]

Law degree[Code = 5]

Other (please specify)[Code = 6] [TextBox]

Required answers: 1 Allowed answers: 6

QHow would you characterize your political views?

Far right[Code = 1]

Conservative[Code = 2]

Middle-of-the-road[Code = 3]

Liberal[Code = 4]

Far left[Code = 5]

Required answers: 1

Allowed answers: 1

Next Page: Sequential

Page – 8

Q62 Select the code from the List of College Majors and Occupational Choices that indicates your occupational field:

Accounting[Code = 1]

Advertising/PR/Marketing/Communications[Code = 2]

Banking/Investment Banking[Code = 3]

Computer/Software/Information Systems[Code = 4]

Consulting[Code = 5]

Education[Code = 6]

Entertaining/Publishing[Code = 7]

Environment[Code = 8]

Financial Services[Code = 9]

Government [Code = 10]

Health Care/Pharmaceuticals[Code = 11]

Hospitality[Code = 12]

Insurance[Code = 13]

Internet/E-commerce[Code = 14]

Legal Services[Code = 15]

Non-profit[Code = 16]

Real-estate/Building/Construction[Code = 17]

Retail/Wholesale[Code = 18]

Other[Code = 19]

Required answers: 1

Allowed answers: 1

Q63 How committed are you to the career you are currently in?

Strongly committed[Code = 5]

Committed [Code = 4]

Moderately committed[Code = 3]

Minimally committed[Code = 2]

Not at all committed[Code = 1]

Required answers: 1 Allowed answers: 1

Q64 What is the size of the firm at which you currently work?

10 or fewer employees[Code = 1]

11-50 employees[Code = 2]

51-100 employees[Code = 3]

101-250 employees[Code = 4]

251-500 employees[Code = 5]

More than 500 employees[Code = 6]

Not applicable[Code = 7]

Required answers: 1 Allowed answers: 1

Q66 How did you pay for your graduate education? (Check all that apply)

Parental support[Code = 1]

Spouse/Significant other support[Code = 2]

Other family support[Code = 3]

Work Study[Code = 4]

Grant(s)[Code = 5]

Loan(s)[Code = 6]

Scholarship(s) from the university[Code = 7]

Outside scholarship(s)[Code = 8]

Employment[Code = 9]

Other[Code = 10]

Required answers: 1 Allowed answers: 10

Q68 How do you identify yourself? (Check all that apply)

African American/Black[Code = 1]

Asian/Asian American[Code = 2]

Hispanic/Latino[Code = 3]

Native American/American Indian[Code = 4]

White/Caucasian[Code = 5]

Multi-racial/bi-racial[Code = 6]

Other (please specify)[Code = 7] [TextBox]

Required answers: 1 Allowed answers: 7

Next Page: Sequential



Q69 What is your gender?

Male[Code = 1]

Female[Code = 2]

Transgendered[Code = 3]

Required answers: 1 Allowed answers: 1

Q70 What is your age?

Under 18 years old[Code = 1]

18 years old[Code = 2]

19 years old[Code = 3]

20 years old[Code = 4]

21 years old[Code = 5]

22-25 years old[Code = 6]

26-30 years old[Code = 7]

31-40 years old[Code = 8]

Over 40 years old[Code = 9]

Required answers: 1 Allowed answers: 1

Q71 What is the highest level of education completed by your father or male guardian?

Less than high school graduate[Code = 1]

High school graduate[Code = 2]

Some college[Code = 3]

Bachelor's degree[Code = 4]

Master's degree[Code = 5]

Doctoral[Code = 6]

I don't know[Code = 7]

Required answers: 1 Allowed answers: 1

Q72 What is the highest level of education completed by your mother or female guardian?

Less than high school graduate[Code = 1]

High school graduate[Code = 2]

Some college[Code = 3]

Bachelor's degree[Code = 4]

Master's degree[Code = 5]

Doctoral[Code = 6]

I don't know[Code = 7]

Required answers: 1 Allowed answers: 1

Q73 Have either of your parents ever started their own business?

Yes[Code = 1]

No[Code = 2]

Required answers: 1 Allowed answers: 1

Q74 When you were growing up, were any of the following individuals your entrepreneurial role model(s)? (Check all that apply)

Father[Code = 1]

Mother[Code = 2]

Sibling[Code = 3]

Other family member[Code = 4]

Friend[Code = 5]

Other (please specify)[Code = 6] [TextBox]

None of the above[Code = 7]

Required answers: 1 Allowed answers: 6

Next Page: Sequential