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Entrepreneurship Education: Correspondence Between Practices of Nascent Entrepreneurs and Textbook Prescriptions for Success

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Entrepreneurship courses are vital components of a business school curriculum. Although existing studies examine teaching pedagogy, very few explore the content of entrepreneurship courses. We compare start-up activities of nascent entrepreneurs in the Panel Study of Entrepreneurial Dynamics (PSED) dataset to data collected from a sample of entrepreneurship textbooks. Our findings indicate that while there is some overlap in start-up activities practiced by nascent entrepreneurs and those covered in textbooks, there are several differences as well. Implications for teaching are discussed.

The launch of a new organization is generally agreed to be the core of entrepreneurship (Gartner, 1985; Low & Abramson, 1997; Katz & Gartner, 1988; Aldrich, 1999; Delmar & Shane, 2004). Encouragement and facilitation of start-up new ventures is a major public policy concern because of their impact on economic growth, particularly job creation (Reynolds, Camp, Bygrave, Autio, & Hay, 2001). The evidence of new firms' economic contributions, coupled with increased interest in entrepreneurship by students and an emphasis on entrepreneurship by the Association to Advance Collegiate Schools of Business (AACSB), has spurred colleges and universities to expand curricula in this area (Porter & McKibben, 1988; Bechard & Gregoire, 2005). Approximately 2,200 courses are offered at 1,600 colleges and universities nationwide, more than 200 colleges and universities have majors and concentrations in entrepreneurship, and at least 20 business schools require that all graduates of their institutions take entrepreneurship classes as part of the curriculum (Katz, 2003). Virtually all schools with an AACSB-accredited MBA or 4-year degree and nearly all nationally ranked schools are teaching entrepreneurship (Katz, 2003).

Entrepreneurship course material is intended to encourage and stimulate the creation of new ventures (Vesper & Gartner, 1997; Leitch & Harrison, 1999; Peterman & Kennedy, 2003). However, there is little evidence to indicate whether we are actually teaching the skills most important to future entrepreneurs. In other words, if we believe that entrepreneurship education is important, are we teaching our students the necessary activities that enhance the probability of start-up?

Our question is grounded in the notion of relevance. Relevance is used in many academic disciplines including cognitive science, logic, artificial intelligence, communication, and in cognitive psy-

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chology (Sperber & Wilson, 1996). The principle of relevance is based on the fact that we "intend in general to give or add information about what is a matter of standing or current interest or concern" (Wilson, 1999: 719). At the individual level, relevance is a property of inputs to cognitive processes that is analyzed in terms of cognitive and processing effort. The greater the cognitive effects, the greater the relevance of the input. Human attention and processing resources are allocated to information that seems relevant (Sperber & Wilson, 1996). Relevance is contextually based and is shaped by our experience and background (Wilson & Sperber, 2003). Relevance of inputs by a communicator is a precursor to acceptance of social realities, or information about a topic that shapes perceptions about its value, ultimately leading to perceptions of legitimacy (Suchman, 1995).

At a broader level, relevance is important to entrepreneurship pedagogy because it influences the perceived legitimacy of courses and programs among stakeholders, including students, administrators, and parents. Legitimacy, or the strength of institutional endorsement and social acceptance, represents the belief that organizational policies or exchanges, in this case entrepreneurship education, are designed in a desirable manner within the socially constructed system of appropriate norms and values (Suchman, 1995). Educational institutions create and spread knowledge about the competencies that are needed to be entrepreneurial (Aldrich, 1999). The more course content corresponds to the reality of behaviors leading to the probability of start-up, the more likely that entrepreneurship courses will be perceived as relevant and thereby more legitimate by students and other stakeholders.

Currently, there is growing interest in the nature, content, and relevance of entrepreneurship education (Leitch & Harrison, 1999). A recent *Academy of Management Learning & Education* special issue argues that entrepreneurship education needs to reflect the real-world environment (Greene, Katz, & Johannison, 2004), even it that means challenging traditional educational hallmarks, such as a focus on the business plan (Honig, 2004). Previous work on entrepreneurship education echoes this theme. In terms of teaching pedagogy, broad exposure to entrepreneurial practice is advocated as a way to narrow "the academia vs. business incongruence" (Kuratko, 2005: 586) and to shift the emphasis from educating "about" entrepreneurship to educating "for" it (Kirby, 2004). Recently, experiential learning has been highlighted as a method for engaging students more actively in the learning process. Using tools such as student business start-ups, "live" cases, or simulations, students gain exposure to the many issues surrounding new venture start-up (Carland & Carland, 2001). However, despite the increased emphasis on experiential learning, most entrepreneurship courses are structured around a series of new venture development challenges including opportunity identification and feasibility analysis; new venture planning, financing and operating; new market development and expansion strategies; and institutionalizing innovation (Solomon, Duffy, & Tarabishy, 2002).

While current scholarship recognizes the shortcomings of entrepreneurship education as it is currently practiced, to date little research has adopted a content perspective and systematically compared what we are teaching in the classroom to what entrepreneurs are doing when they start a new venture. That is our purpose here: We examine the relationship between teaching and practice. At a more general level we are asking the question, "Are our current entrepreneurship educational practices relevant to what actual entrepreneurs are practicing?" We examine this broader question by specifically exploring whether the start-up activities that we teach correspond to those activities that enhance the probability of start-up. Our underlying premise is that if teaching and practice differ significantly, then as educators, we need to revise our pedagogy to better prepare students for the reality of starting a new venture.

BACKGROUND AND LITERATURE REVIEW

Entrepreneurial Start-Up Activities

There is little agreement on theoretical perspectives of entrepreneurial start-up, although the creation of an organization (organizational emergence) is agreed to be a central activity in the field of entrepreneurship (Katz & Gartner, 1988; Aldrich, 1999; Shane & Delmar, 2004). Recent entrepreneurship research tends to coalesce on the conceptualization of organizational emergence as a process made up of multiple start-up activities (Gartner et al., 2004a: 285). Individuals who initiate organizing activates intended to culminate in a viable business start-up are referred to as *nascent* (or emerging) entrepreneurs (Aldrich, 1999). The organizing activities in which nascent entrepreneurs are engaged involve setting up routines and structures that are goal directed and establishing boundaries and systems of activities (Aldrich, 1999).

Perspectives on organizing activities that influ-

ence the probability of start-up have a variety of theoretical roots (Shane & Delmar, 2004). Early work described the process as a change model, whereby entrepreneurs accumulate external resources and technology necessary to transform their ideas into a reality by creating a new business unit (Van de Ven, Angle, & Poole, 1989). More recent theoretical perspectives include institutional theory that argues new ventures can survive by achieving legitimacy through the organizing process (Zimmerman & Zeitz, 2002); the resource-based view which posits that development of unique resources can lead to opportunity exploitation (Choi & Shepherd, 2004); and evolutionary theory that argues external stakeholder relationships help ventures to overcome their liability of newness (Stinchcombe, 1965; Aldrich, 1999).

Concurrent with emergence of theories explaining new venture start-ups, researchers conducted studies examining start-up processes. Reynolds and Miller (1992) examined a sample of nascent entrepreneurs and found that start-up activities did not have a logical progression. Following this research, Gatewood, Shaver, and Gartner, (1995) explored whether cognitive factors as well as entrepreneurial activities led to the formation of a business. They found that activities involving setting up business operations, such as purchasing raw materials and supplies, hiring and training employees, producing, distributing, and marketing a product or service were significantly correlated with the creation of a new firm. Carter, Gartner, and Reynolds, (1996) identified a random sample of adults who were in the process of starting a venture. They examined specific start-up activities, such as personal commitment, financial support, hiring, and activities which developed the structure of the business. They found that the number of activities undertaken, and focusing on activities which made the business more tangible to others (e.g., looking for facilities and equipment, forming a legal entity) versus less tangible activities (e.g., acquiring a D&B credit listing) increased the likelihood of survival.

While these early studies showed that the activities of nascent entrepreneurs who started a business were different from those of nascent entrepreneurs who did not, they suffered from problems of retrospective bias, lack of generalizability, and small sample size. These data collection issues were part of the impetus for the creation of the Panel Study of Entrepreneurial Dynamics (PSED) dataset(s) (see Gartner, Shaver, Carter, & Reynolds, 2004b), which specifically examines the start-up activities of nascent entrepreneurs (see Appendix A for a complete list of start-up activities in the PSED dataset). Building off of PSED data that were either collected in the United States or internationally, a number of more recent studies examine the connection between start-up activities and the probability of start-up.

Shane and Delmar (2004) examined groups of planning, legitimacy, and market activities and their effect on the probability of starting a new venture of 223 Swedish new ventures. They found that planning and legitimacy were significantly correlated with the probability of starting a new venture but that market activities had no effect. Two additional studies examined the timing of business plans and found that new ventures that wrote business plans before talking to customers and or before beginning marketing or promotion had a lower rate of termination than other firms (Delmar & Shane, 2003; Shane & Delmar, 2004). An additional study showed that those firms engaging in legitimizing activities were less likely to disband (Delmar & Shane, 2004). Table 1 presents an overview of the research using start-up activities and their impact on the probability of new venture start-up.

In summary, there are a number of studies on various aspects of start-up activities. The focus of these studies ranges from initial descriptive work on identifying activities, to more sophisticated work that links specific activities, such as legitimacy and planning to the probability of start-up. From these studies we can conclude that the activities in which entrepreneurs engage during the start-up process are an important area of inquiry in the field of entrepreneurship. However, less clear is whether the activities that lead to the probability of starting a new venture correspond to the content of course work in entrepreneurship classes. This led us to wonder about the relevance of what we are teaching in the classroom, and more specifically, if start-up activities are adequately reflected in entrepreneurship course content and delivery. From this we raise two research questions:

Research Question 1: Are we teaching the same start-up activities that nascent entrepreneurs practice?

Research Question 2: Are we teaching the start-up activities that enhance the probability that nascent entrepreneurs will start a new venture?

TABLE 1
Entrepreneureal Activities and the Probability of Start-up: Evidence From Prior Research

Activities	Significantly Linked to the Probability of Start-Up
Gatewood et al., 1995	
Start-up activities	
Purchase supplies	**Yes**
Hire employees	**Yes**
Produce product/service	**Yes**
Distribute product/service	**Yes**
Market product/service	**Yes**
Install and adjust	No
Train customers	No
Secure a location	No
Lease equipment	No
Carter et al., 1996[a]	
Start-up activities	
Bought facilities	**Yes**
Got financial support	**Yes**
Developed models or prototypes	**Yes**
Hired employees	**Yes**
Devoted full time	**Yes**
Asked for funding	**Yes**
Looked for facilities/equipment	**Yes**
Applied license/patent	No
Saved money to invest	No
Prepared plan	No
Invested own money	No
Organized start-up team	No
Rented facilities/equipment	No
Start-up indicators	
Sales	**Yes**
Positive cash flow	**Yes**
Unemployment insurance	**Yes**
FICA	**Yes**
Filed federal tax	**Yes**
D&B listing	No
Shane and Delmar, 2002	
Planning activities	**Yes**
Writing a business plan	
Estimating financial forecasts	
Search for information	
Legitimacy activities	**Yes**
Registered with legal authorities	
Market activities	No
Established relationship with customers	
Initiated marketing or promotional activities	

[a] Respondents were asked the status of their business: operating, still trying, or disbanded.

METHODOLOGY

Sample and Sources of Data

We used two sources of data for this project: data from entrepreneurship textbooks currently used in the institutions of higher education in the USA and data on nascent entrepreneur practices from the Panel Study of Entrepreneurial Dynamics (PSED) Data Set. Each data source is explained below.

Data on Entrepreneurship Textbooks

To better understand which textbooks entrepreneur instructors are using to teach new venture launch, we first sent out a query to the Academy of Management Entrepreneurship Division listserv asking for information about preferred texts used in entrepreneurship courses. We received 20 detailed responses from our colleagues, identifying more than 26 different textbooks, with 6 being referenced more than three times. To insure the representativeness of our brief survey, we then contacted each school on a publicly available list of 100 top U.S. entrepreneurship programs (see www.entrepreneur.com/topcolleges/html) and requested a copy of their entrepreneurship syllabi. Over a 2-month period, we collected 58 syllabi from 35 schools (35% response rate). Upon close examination of the syllabi we found that most courses used at least one entrepreneurship textbook as a course anchor.

We then contacted all the major academic textbook publishers and asked them to send us copies of their top-selling entrepreneurship textbooks. We received 24 textbooks from 13 different textbook publishers. We compared the list of textbooks received from publishers to the list of texts used most widely in courses and found that there was strong correspondence. Since our study is focused on start-up activities, we selected textbooks that discuss new venture start-up. To identify the specific books to use in the study, the three coauthors developed a list of content criteria and independently applied it to each book, coming up with an overall recommendation about whether to include the textbook in the study. In the first textbook examination round, the three authors unanimously agreed to include 12 textbooks in the study, and to exclude 9 textbooks, with an interrater agreement of 92.4%. In the second round, we reexamined the three remaining textbooks and through consensus decided to retain two. Through this process, 10 textbooks were eliminated, leaving us with 14 texts that in some way discussed firm start-up.

Once the textbooks had been selected for inclusion in the study, we employed two research assistants to help us identify if the start-up activities that are listed in the PSED dataset were covered in the textbook. To do this, the research assistants were given a table of activities and then, working independently, systematically went through each textbook and noted the chapter and page numbers where the activity was discussed. To ensure that

the activities were covered in a substantial way in the books, activities that were casually mentioned but did not have a paragraph or more of textbook space devoted to them, were deemed to be *not* covered by the book. We compared the tables created by the two research assistants and found very

TABLE 2
Entrepreneurship Textbooks and Textbook Objectives

Textbook	Author	Publisher	Textbook Objectives
Growing & Managing an Entrepreneurial Business,1999[a]	Allen, K. R.	Houghton Mifflin and Company	The key issues in this book revolve around the customer, the product/service, the process, the organization and leadership (p. xx).
Launching New Ventures: An Entrepreneurial Approach, 3rd, 2003[b]	Allen, K. R.	Houghton Mifflin and Company	***Launching New Ventures*** is organized around the process of creating new ventures, from recognition of an opportunity to launch of the business (p. xv).
Entrepreneurship: A Process Perspective, 2005[a]	Baron, R. A., & Shane, S. A.	Thompson; South-Western	Our guiding principle when writing this book is that entrepreneurship is a process which unfolds through several distinct phases (p. ix).
The Guru Guide to Entrepreneurship, 2001	Boyett, J. H., & Boyett, J. T.	John Wiley and Sons	***The Guru Guide to Entrepreneurship*** is a clear, concise, and informative guide to the wisdom of some of the world's most successful entrepreneurs (p. ix).
The Portable MBA in Entrepreneurship, 3rd 2004	Bygrave, W. D., & Zacharakis, A. (Eds.)	John Wiley and Sons	The book is for would-be entrepreneurs, people who have started small firms and others who want to improve their entrepreneurial skills—indeed anyone who wants to get involved in the birth and growth of an enterprise (p. viii).
Entrepreneurship In Action, 2nd, 2003	Coulter, M.	Prentice Hall	***Entrepreneurship is Action!*** conveys the exciting realities of entrepreneurship (p. xvii).
Entrepreneurship: Strategies & Resources, 3rd, 2003[a]	Dollinger, M. J.	Prentice Hall	***Entrepreneurship: Strategies & Resources*** is organized into three major areas: theories and themes; the environment for entrepreneurship, and the formulation and implementation of entrepreneurial strategy (pp. xix–xxi).
How To Really Start Your Own Business, 2003	Gumpert, D. E.	Lauson Publishing Co.	***How to Really Start Your Own Business*** provides extensive worksheets and lessons so readers can evaluate their own business ideas and plans (p. ix).
Entrepreneurship, 6th, 2005	Hisrich, R. D., Peters, M. P., & Shepherd, D. A.	McGraw-Hill; Irwin	To provide an understanding of the person and process of creating and growing a new venture (p. xix).
Entrepreneurship: Theory, Process and Practice, 6th, 2004[a]	Kuratko, D. F., & Hodgetts, R. M.	Thompson; Southwestern	To structure and illustrate the discipline of entrepreneurship in a manner that is as unique and creative an entrepreneurship itself (p. xiii).
Entrepreneurial Intensity: Sustainable Advantages for Individuals, Organizations, and Societies, 1998	Morris, M. H.	Quorum Books	Entrepreneurship occurs in varying degrees and amounts and environments can be created in ways that heighten entrepreneurial intensity at all three levels (p. xvii).
The Entrepreneurial Venture, 2nd, 1999	Sahlman, W. A., Stevenson, H. H., Roberts, M. J., & Bhide, A. V. (Eds.)	Harvard Business School Press	The readings assembled here attempt to cover the spectrum of the entrepreneurial experience, from idea generation to harvest (p. 3).

(*table continues*)

TABLE 2
(Continued)

Textbook	Author	Publisher	Textbook Objectives
Essentials of Entrepreneurship: What it takes to Create Successful Enterprises, 2003	TiE: The Indus Entrepreneurs	John Wiley and Sons	The book starts with a perspective on entrepreneurship discussing the attributes of a region or a nation, which foster the spirit of risk taking and economic value creation, and the characteristics of successful entrepreneurs (p. ix).
***New Venture Creation*: Entrepreneurship for the 21st Century,** 6th, 2004[b]	Timmons, J. A., & Spinelli, S. S.	McGraw-Hill; Irwin	***New Venture Creation*** is about the actual process of getting a new venture started, growing the venture, successfully harvesting it (p. xi).

[a] These texts were mentioned at least 3 times in our on-line survey.
[b] These texts were mentioned 4 or more times in our on-line survey.

high interrater reliability (81% agreement; Cohen's kappa coefficient 61.4%), thereby providing us with confidence in our findings. Table 2 presents a list of textbooks, their authors and publishers, and the objectives of the book, if stated.

Using the textbook data as a proxy for what is taught in the classroom, we compared it to the activities reported by nascent entrepreneurs in the PSED dataset (see Hess, 1987 for a similar empirical approach in his assessment of the relevance of small business courses to management needs).

Data on Nascent Entrepreneurs

The data utilized for the current investigation were drawn from the National Panel Study of Entrepreneurial Dynamics (PSED). The PSED is designed to investigate the earliest stage of the organizational life cycle. PSED looks at the process of new business creation, or "the number and characteristics of nascent entrepreneurs who attempt to start businesses and the likelihood that such attempts will result in the formation of new businesses" (Gartner, Shaver, Carter, & Reynolds, 2004: ix). Nascent entrepreneurs were defined as individuals involved in attempting to start a new business within the past 12 months on their own (i.e., autonomous start-ups) as opposed to those doing so with sponsorship from existing firms, who had not achieved a positive cash flow for more than 3 months. As part of a national survey, a total of 64,622 individuals in the United States were contacted through random digit dialing by a marketing research firm. During these telephone interviews, two questions were used to identify those individuals who were in the process of starting a new venture: (1) "Are you alone or with others, now trying to start a business?" and (2) "Are you alone, or with others, now trying to start a new venture for your employer?" Respondents who answered yes to either question were then asked two additional questions that determined whether they were actively involved in the start-up process and whether they would share in the ownership of the new venture. Positive answers to both questions qualified an individual as a nascent entrepreneur to be requested to participate in the national panel study. Qualifying individuals were offered a monetary inducement ($25) for their participation.

The PSED data were collected through a series of four waves of telephone interviews conducted at approximately 1-year intervals by researchers at the University of Wisconsin between 1998 and 2003. In addition, a mail survey was also distributed after each wave of phone interviews, but it is outside of the scope of our study. Given the complexity of the PSED, in 2004 a handbook was published as a guide for researchers using the dataset (Gartner et al., 2004). For researchers who are interested in examining the database, the first four iterations are available on the University of Michigan Web site (http://projects.isr.umich.edu/PSED) along with a codebook for deciphering the variables. Appendix B provides further information on the PSED data collection process including the timing of the data collection waves.

Nascent Entrepreneurs' Sample

Following the classification scheme developed by Shaver, Carter, Gartner, and Reynolds (2001), the sample we used here and for which we report descriptive statistics includes fully autonomous nascent entrepreneurs who at the time of the initial

TABLE 3
Sample Descriptives (N = 715)

Respondent Characteristics	*M*	*SD*	Min.	Max	*n*
Age	38.36	11.27	18	74	709
Full-time work experience	17.01	10.79	0	60	704
	Frequency	**Percent**			
Gender (Male)	455	63.6			
Ethnicity (Caucasian)	478	66.9			
Education					
Taken at least some college classes	521	74.2			
Taken classes or workshops on starting a new business	403	56.4			
Industrial Sector					
Agriculture	29	4.1			
Manufacturing and Construction	94	13.3			
Wholesale, Transportation, and Communication	32	4.5			
Business Services	196	27.7			
Consumer Services and Retail	343	48.5			

interview had been involved in attempting to start a new business within the past 12 months, but had not received a positive cash flow from their new businesses for more than 3 months (N = 715). Data on the start-up status from the three waves of follow-up phone interviews were available for 582 nascent ventures, or 81.53% of the initial sample, for which we report the association of entrepreneurial activities with the achievement of operating status. The approximately 20% attrition rate is comparable to similar longitudinal studies of nascent entrepreneurs in other national contexts (e.g., see, Delmar & Shane, 2003, 2004).

About two thirds of the nascent entrepreneurs in the sample were male, and 66.9% were White. Age ranged between 18 and 74 years, with a mean of 38.36 years. Seventy-four percent had at least some college education, and more than half had taken business classes or workshops on starting a new business. Work experience ranged between 0 and 60 years, with a mean of 17.01 years. The nascent entrepreneurs contemplated entry into five industrial sectors, with the most popular sector being consumer services and retail (48.5% of the nascent entrepreneurial ventures). Slightly over 40% of the nascent businesses had achieved operating status during the time of the study, and the remaining 60% were continuing the organizing effort or had been disbanded. Table 3 shows descriptive statistics for the sample.

Measures

Start-Up Activities

Based on previous empirical work (Gatewood et al., 1995; Carter et al., 1996) the PSED tracks 27 start-up activities (see Appendix A). Out of the 27, twenty-six were measured by a self-reported dichotomous variable indicating whether nascent entrepreneurs had engaged in that particular activity prior to or at the time of the initial and three subsequent phone interviews. One of the activities—new product development—was measured using an ordinal scale, which ranged from "no work done" to "product completed and ready for sale." We kept the original measures (both dichotomous and ordinal scales) as developed by the authors to ensure consistency.

Enhancing the Probability of Start-Up

During the follow-up interviews, nascent entrepreneurs reported their perceptions of the start-up status, using an ordinal scale which included (1) An operating business; (2) Active start-up; (3) Inactive start-up; and (4) No longer being worked by anyone. Following Delmar and Shane (2002), we measured enhancing the probability of start-up as the achievement of an operating status. To this end, we tracked responses from the three waves of follow-up phone interviews, and collapsed the four response categories into two: (1) An operating business; (2) Not yet operating or disbanded (active start-ups, inactive start-ups, and start-ups no longer being worked on by anyone).

Analytical Procedures

To address Research Question 1, we compared the percent of textbooks that cover a specific activity to the percent of nascent entrepreneurs who report engaging in that activity. More specifically, we

ranked the start-up activities in descending order based on the percent of textbooks that cover a particular activity. Following the logic of between-group comparisons based on median splits (Rocha & Stenberg, 2005; Atuahene-Gima & Ko, 2001; Krueger, 1993), we split the array at 50%. Similarly, we ranked in descending order the start-up activities, based on the percent of nascent entrepreneurs who report engaging in the activity, and split the array at 50%. Based on the percentage coverage by books and nascent entrepreneurs, respectively, we then classified the activities into four clusters. Group 1 activities are covered by 50% or more of the textbooks and practiced by 50% or more of the nascent entrepreneurs. Group 2 activities are covered by 50% or more of the textbooks but practiced by less than 50% of the nascent entrepreneurs. Group 3 activities are covered by less than 50% of the textbooks, but practiced by 50% or more of the nascent entrepreneurs. Finally, Group 4 activities are covered by less than 50% of the textbooks and practiced by less than 50% of the nascent entrepreneurs. An analysis of variance (Pillai's Trace $F = 46.000$, $p < .001$) confirmed the internal validity of the two dimensions (percent textbooks covering and activity and percent nascent entrepreneurs engaged in an activity, respectively) and of the 4-cluster solution.

To address Research Question 2, we first determined which entrepreneurial activities are likely to enhance the probability of start-up, that is, which activities are likely to differentiate between those nascent ventures which achieve operating status versus those that have either not achieved operating status or have been disbanded. To this end, we cross-tabulated the counts of nascent entrepreneurs engaging in a specific activity by the counts of nascent entrepreneurs reporting the nascent venture's start-up status (operating business vs. not an operating business) and employed a chi-square test to determine significant differences between the counts. We found that 19 start-up activities were significantly associated with an operating business status and 8 activities were not. For example, 90.16% of the nascent entrepreneurs in operational new ventures had started marketing efforts, compared with 63.31% among nascent entrepreneurs in not-yet operational or disbanded ventures. In contrast, almost all nascent entrepreneurs had engaged in the development of a product or service, and so this activity failed to significantly differentiate between operating and not-operating new ventures. Results are presented in Table 4.

We then compared whether the entrepreneurial activities that are associated with enhancing the probability of start-up are covered by the majority of entrepreneurship textbooks or practiced by the majority of nascent entrepreneurs. Unlike our other methods, this evaluation is qualitative.

RESULTS

Research Question 1:

Are we teaching the same start-up activities that nascent entrepreneurs practice?

This question explored whether nascent entrepreneurs engaged in the same activities as entrepreneurship textbooks prescribe. Results are presented in Table 5 and suggest a sizeable discrepancy between the activities typically presented in entrepreneurship textbooks and the activities practiced by nascent entrepreneurs.

In 7 of the 27 activities we tracked (or 26%) the high prevalence among nascent entrepreneurs corresponds to a high percentage of textbook coverage, and in 9 activities (33%) the high prevalence among nascent entrepreneurs corresponds to a low percentage of textbook coverage. In 4 activities (15%), there is high coverage in textbooks, but low prevalence among nascent entrepreneurs, while in 7 activities (26%), there is high prevalence among nascent entrepreneurs, but low percent of textbook coverage. Our analysis shows significant differences in the proportion of textbooks that covered a particular activity and the proportion of nascent entrepreneurs who reported engaging in this activity. Overall, there appears to be a disconnect in over 40% of the start-up activities. Indeed, while there are two groups of activities where high prevalence among nascent entrepreneurs corresponds to a high percentage of textbook coverage, and low prevalence among nascent entrepreneurs corresponds to a low percentage of textbook coverage (Groups 1 and 4, respectively), there are groups of activities significantly more emphasized by textbooks in comparison to practice (Group 2 activities) and those significantly more emphasized in practice in comparison to the textbooks (Group 3 activities). For example, an important anchor such as *purchased or leased equipment* was reported by 67.1% of the nascent entrepreneurs but was discussed in only 14.29% of the textbooks. In contrast, over two thirds of the textbooks discussed applying for a patent, even though less than a fifth of the nascent entrepreneurs reported engaging in this activity. What is more, textbooks do not appear to cover all activities in which nascent entrepreneurs engage (6/27, or 22% of the start-up activities we tracked were not mentioned in the entrepreneurship textbooks). This suggests that entrepreneur-

TABLE 4
Entrepreneureal Activities That Enhance the Probability of Start-Up: Evidence From the PSED (*N*= 582)

Start-Up Activities	Operational (*n* = 244)		Not-Yet Operational (*n* = 338)		Chi-square (*df* = 1)
	Yes	Percent	Yes	Percent	
Activities associated with operating status					
Filed a tax return for new business	187	76.64%	96	28.40%	**132.751*** **
Monthly revenue exceed monthly expense	190	77.87%	85	25.15%	**128.718*** **
Received income from sales	230	94.26%	171	50.59%	**126.12*** **
Made phone listing for new business	135	55.33%	62	18.34%	**86.132*** **
Hired employees for pay	127	52.05%	59	17.46%	**79.005*** **
Purchased or leased equipment	225	92.21%	203	60.06%	**74.594*** **
Opened bank account for new business	192	78.69%	149	44.08%	**73.786*** **
Paid social security taxes	130	53.28%	69	20.41%	**67.629*** **
Started marketing efforts	220	90.16%	214	63.31%	**53.874*** **
Established credit with suppliers	174	71.31%	141	41.72%	**47.969*** **
Started working full time for new business	165	67.62%	131	38.76%	**47.242*** **
Paid unemployment insurance taxes	91	37.30%	45	13.31%	**45.668*** **
Purchased raw materials	235	96.31%	261	77.22%	**41.018*** **
Salaries included in expenses?	133	54.51%	77	22.78%	**38.661*** **
Listed new business with Dun & Bradstreet	41	16.80%	11	3.25%	**32.852*** **
Prepared financial statements	182	74.59%	173	51.18%	**32.633*** **
Asked for funds	119	48.77%	115	34.02%	**12.621*** **
Invested own money	242	99.18%	318	94.08%	**9.431** **
Arranged for child care	127	52.05%	133	39.35%	**9.247** **
Activities not associated with operating status					
Defined market opportunities/customers, competitors	238	97.54%	318	94.08%	3.971
Organized start-up team	180	73.77%	225	66.57%	3.437
Taken business classes	151	61.89%	183	54.14%	3.331
Prepared business plan	179	73.36%	226	66.86%	2.659
Saved own money	211	86.48%	281	83.14%	1.044
Applied for patent	64	26.23%	99	29.29%	0.646
Thought about business or idea occurred suddenly?	241	98.77%	333	98.52%	0.183
Development of product/service	235	96.31%	329	97.34%	0.057

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

ship textbooks may not present the scope of activities involved in starting a new venture in its completeness and may overemphasize certain start-up activities at the expense of others. In sum, entrepreneurship textbooks do not appear to be covering the same activities in which nascent entrepreneurs are engaged, which indicates a gap between practice and what is taught to entrepreneurship students in the classroom.

Research Question 2:

Are we teaching the start-up activities that enhance the probability that nascent entrepreneurs will start a new venture?

Our second research question asked whether the nascent activities that are emphasized by entrepreneurship textbooks are more likely to enhance the start-up process. To explore this question, we integrated the results from Table 4 into Table 5. Results suggest 6 out of the 19 activities associated with enhancing the probability of start-up (or less than one third) are discussed in the majority of the entrepreneurship texts. Further, 9/19 (or about half) of the activities associated with enhancing the probability of start-up are mentioned in some of the entrepreneurship texts, while 4/19 (or one fifth) of the activities associated with enhancing the probability of start-up find no mention at all. In relative terms, the majority of entrepreneurship texts cover 11 activities, of which 6 (or 55%) are associated with enhancing the probability of start-up. In contrast, 16 of the start-up activities we tracked are covered in less than 50% of the entrepreneurship texts, but out of these 16 activities, 13 (or over 80%) are significantly associated with enhancing the probability of start-up.

Within groups of activities, half of the activities

TABLE 5
Start-Up Activities: Theory and Practice

Activity	Percent Books That Cover: (n = 14)	Percent Nascent Entrepreneurs That Report: (n = 715)	Activity Associated With Operating Status:[a]
Covered by more than 50% of the textbooks, practiced by more than 50% of the nascent entrepreneurs			
Defined market opportunities/ customers, competitors	100	92.7	NO
Prepared business plan	92.86	70.8	NO
Prepared financial statements	85.71	56.6	**YES**
Organized start-up team	78.57	65.5	NO
Started marketing efforts	78.57	70.2	**YES**
Saved own money	64.29	82.8	NO
Invested own money	64.29	94.3	**YES**
Covered by more than 50% of the textbooks, practiced by less than 50% of the nascent entrepreneurs			
Asked for funds	100	35	**YES**
Applied for patent	71.43	17.3	NO
Hired employees for pay	64.29	28.3	**YES**
Started working full time for new business	50	46.4	**YES**
Covered by less than 50% of the textbooks, practiced by more than 50% of the nascent entrepreneurs			
Development of product/service	35.71	99.7	NO
Received income from sales	21.43	61.4	**YES**
Purchased raw materials	14.29	81.8	**YES**
Purchased or leased equipment	14.29	67.1	**YES**
Thought about business or idea occurred suddenly?	14.29	98.8	NO
Opened bank account for new business	7.14	52.9	**YES**
Taken business classes	0	56.4	NO
Covered by less than 50% of the textbooks, practiced by less than 50% of the nascent entrepreneurs			
Filed a tax return for new business	21.43	40.8	**YES**
Salaries included in expenses?	21.43	30.1	**YES**
Paid unemployment insurance taxes	21.43	19.9	**YES**
Paid social security taxes	14.29	28.1	**YES**
Established credit with suppliers	7.14	47.6	**YES**
Monthly revenue exceed monthly expense	0	40	**YES**
Arranged for child care	0	42.7	**YES**
Made phone listing for new business	0	28.5	**YES**
Listed new business with Dun & Bradstreet	0	7.4	**YES**

Pillai's Trace test of significance for the four-cluster solution: $F = 46.000$, $p < .001$
[a] based on Chi-Square test results presented in Table 4.

in Group 1 (emphasized by both the entrepreneurship textbooks and nascent entrepreneurs), are significantly associated with enhancing the probability of start-up. Three quarters of the activities in Group 2 (emphasized by textbooks, but deemphasized by nascent entrepreneurs), are significantly associated with enhancing the probability of start-up. Among activities in Group 3, (emphasized by nascent entrepreneurs, but relatively deemphasized by texts) over half are significantly associated with enhancing the probability of start-up. Finally, and important, is that *all* the activities in Group 4 (deemphasized by both textbooks and nascent entrepreneurs) are significantly associated with

enhancing the probability of start-up. In sum, entrepreneurship texts do not emphasize enough of the activities that enhance the probability of starting a new venture.

DISCUSSION

We have examined the relevance of entrepreneurship education by examining two research questions that explore the content of what we are teaching in entrepreneurship classrooms as compared to the start-up practices of nascent entrepreneurs. We used textbooks as a proxy for course content after finding syllabi for the top schools teaching entrepreneurship anchored their courses with a text. Our findings suggest that what is emphasized in the traditional entrepreneurship texts, and hence in many of our classrooms, is in many cases different from the start-up reality faced by nascent entrepreneurs. This suggests that as educators in entrepreneurship, we need to carefully think about the content of our courses in terms of *what* we are emphasizing, in an effort to make our courses relevant to future entrepreneurs.

With respect to what we are teaching, our findings indicate that there is incongruence between what is emphasized in textbooks and the activities practiced by nascent entrepreneurs. This implies that as educators who want to make our courses more relevant to real-world experiences, we should include those activity categories that are currently not emphasized in the textbooks but are vital to practicing entrepreneurs. In particular, an emphasis on "actions" rather than "research and plan writing" would be appropriate (Timmons & Spinelli, 2004). While textbooks often have chapters on contracting with suppliers, supply chain analysis or other aspects of operations, the *setting up* of these operations is not well addressed. Operational activities such as how to arrange initial purchase of raw materials or equipment, or how to establish credit with suppliers were important to entrepreneurs but were not emphasized in texts. Further, boundary-building activities such as registering a business with authorities or signing up to pay taxes are critically important for establishing legitimacy and enhancing the probability of successful firm emergence, but were deemphasized by both nascent entrepreneurs and entrepreneurship texts. In sum, while instructors may be supplementing text content with case analyses or experiential exercises, there is a strong suggestion that initial start-up activities are underemphasized in course content.

More difficult to interpret are the findings regarding business planning. Test results show that nascent entrepreneurs generally did not emphasize business planning as much as textbooks do, and, more important, that business planning did not appear to be a good start-up predictor (see Table 5). Empirical evidence from the Swedish PSED dataset, on the other hand, emphasizes the importance of planning (Delmar & Shane, 2003, 2004; Shane & Delmar, 2004).[1] In addition, Lange et al. (2005) find that business owners that wrote business plans were more likely to have raised more capital, but find no correlation between writing a business plan and future revenues. This implies that there are different types of planning that might be used for different purposes, such as to achieve external legitimacy or to communicate the strategic direction of the business internally (Stone & Brush, 1996).

Recent work on entrepreneurship pedagogy (Honig, 2004) suggests that it is not planning that is at issue in entrepreneurship classes, but instead the way in which planning is approached. While in no way suggesting that the critical thinking process, which is typically the rationale behind the writing of a business plan assignment, is unimportant, Honig (2004) calls for an end to the emphasis on the linear notion of writing a business plan. He argues that the business plan, as is currently used in entrepreneurship courses, does not encourage would-be entrepreneurs to engage in the complex, nonlinear thinking patterns that are needed during start-up. He suggests that nonlinear teaching approaches, such as simulations, are better preparation for future entrepreneurs.

Recognizing the shortcomings of exclusively using textbooks in entrepreneurship courses, we suggest that while entrepreneurship instructors may want to use a text to present basic theoretical principles, they should consider augmenting the text with as many hands-on practical experiences as possible (Leitch & Harrison, 1999; Fiet, 2000). This would allow instructors to cover important theoretical concepts and to help students improve divergent thinking processes that can assist in discovering alternative solutions (Honig, 2004). Similarly, as DeTienne and Chandler (2004) suggest, encouragement of idea generation is a natural step in helping entrepreneurs to identify more opportunities. These might include improvisation, drawing, doing col-

[1] The divergent findings between our study and the Swedish PSED studies (Delmar & Shane, 2003, 2004) may be the result of different institutional contexts (e.g., the Swedish economy is more highly regulated making planning more important), or the sampling schema (the Swedish study only included entrepreneurial initiatives commenced within the first 9 months of 1998 and followed them over the subsequent 30 months as compared with the U.S study which followed firms for up to 4 years).

lages, and other means to invoke creative alternative approaches to early venture creation. In addition, simulations can be useful to creating nonlinear thinking skills, such as making use of multiple sources of information and the assembly of diverse information into a cogent, meaningful whole upon which decisions can be based (Honig, 2004).

IMPLICATIONS AND CONCLUSION

In this study we examined whether our current entrepreneurship educational practices are relevant to what actual entrepreneurs are practicing. We did this by examining the differences between what is emphasized in entrepreneurship textbooks and the activities in which nascent entrepreneurs are engaged. Our study is grounded in theoretical perspectives on organizing in nascent organizations (Katz & Gartner, 1988; Aldrich, 1999; Shane & Delmar, 2004), as well as in notions of relevance (Sperber & Wilson, 1996; Wilson & Sperber, 2003). While we found a number of areas of convergence; we were disturbed to also find that there are a number of activities that are not adequately discussed in textbooks, and as important, there are activities that enhance the probability of start-up that are not discussed by textbooks or practiced by nascent entrepreneurs. This suggests that as entrepreneurship educators, we face a challenge as we try to make our courses more relevant with respect to actual practice.

While our findings clearly indicate a lack of correspondence between teaching and practice, our work is not without limitations. In this study we used textbooks as a proxy for what is being taught in the classroom. In fairness, textbooks are typically used as guides, and talented instructors augment them with their own experiences and examples. In addition, the textbooks used in our study typically were not limited in content to only start-up activities, but instead contained information on many topics relevant to those interested in starting a new venture. This suggests that the decision made by the textbook editors to include multiple entrepreneurship topics in a single text, may have led to some activities receiving greater or lesser textbook coverage.

While there is precedent for using textbooks as a proxy for what is being taught in the classroom (Hess, 1987), we could have adopted alternative methodologies to examine our research questions. For example, instead of textbooks, we could have surveyed or conducted in-depth interviews with entrepreneurship educators. While this would have eliminated the potential for textbook-based bias in our inquiry, each alternative method of inquiry has its own well-documented limitations (e.g., low response rate and the accuracy and completeness of responses for surveys and problems with bias due to interviewer effects coupled with a propensity for interviewees to provide socially desirable answers during interviews (Judd, Smith, & Kidder, 1991).

Finally, while the start-up activities listed in the PSED dataset are drawn from previous scholarship on nascent entrepreneurs (Reynolds & Miller 1992; Gatewood, Shaver, & Gartner, 1995; Carter, Gartner, & Reynolds 1996), the distinction between an activity and a skill that is necessary at a particular stage of development may not be clear. This lack of clarity may limit textbook coverage of a particular activity. Future research on entrepreneurship teaching and scholarship could focus on when particular activities are conducted in an effort to distinguish between all start-up activities and those activities that are more likely during particular start-up stages.

Some scholars make the distinction that steps to start-up are not the same for small firms and entrepreneurial new ventures. In addition, most textbooks do not distinguish between being targeted to entrepreneurial firms or small businesses. Here, we follow Kirchhoff (1994), who suggests small/new firms may exhibit different degrees of entrepreneurial behavior. Kirchhoff (1994) anchors his perspective in Schumpeter (1935) and argues that high goals for innovation and growth may lead to "glamorous" firms, while those with low innovation and growth may be part of the "economic core." We don't believe there is a clear-cut dichotomy between these two types of firms at the nascent stage. Therefore activities leading to start-up may not necessarily be differentiated by the distinction between "small" and "entrepreneurial."

Our study highlights, however, that as educators, we need to consider the relevance of our curriculum in terms of *what* is taught in our classrooms. The importance of new ventures is well established in our economy, as is the need to teach classes that permit students to learn about new ventures, small firm management, entrepreneurial competences, and growth strategies. Given the proliferation of classes, it appears that entrepreneurship is "legitimated" as a course of study (Vesper & Gartner, 1997; Katz, 2003). However, the gap we find between start-up practices of nascent entrepreneurs and those prescribed by entrepreneurship texts suggests that to maintain legitimacy and enhance the relevance of our curriculum, we need to improve on our course content to better meet our constituents' needs. Therefore, we suggest a renewed focus on the content of entrepreneurship education.

APPENDIX A
PSED DATA SET: START-UP ACTIVITIES

1	Defined market opportunities/customers, competitors
2	Asked for funds
3	Prepared business plan
4	Prepared financial statements
5	Organized start-up team
6	Started marketing efforts
7	Applied for patent
8	Saved own money
9	Invested own money
10	Hired employees for pay
11	Started working full time for new business
12	Stage of development of product/service
13	Filed a tax return for new business
14	Received income from sales
15	Salaries included in expenses?
16	Paid unemployment insurance taxes
17	Purchased raw materials
18	Purchased or leased equipment
19	Paid social security taxes
20	Thought about business or idea occurred suddenly?
21	Established credit with suppliers
22	Opened bank account for new business
23	Taken classes or workshops on starting a business
24	Monthly revenue exceeds monthly expense
25	Arranged for child care
26	Made phone listing for new business
27	Listed new business with Dun & Bradstreet
START-UP STATUS:	Describe the current state of the business (operating, active start-up, inactive start-up, no longer being worked on by anyone).

APPENDIX B
STRUCTURE AND METHODOLOGY OF THE PSED DATA SET

The Panel Study of Entrepreneurial Dynamics (PSED) is designed to investigate the earliest stage of the organizational life-cycle. PSED looks at the process of new business creation, or "the number and characteristics of nascent entrepreneurs who attempt to start businesses and the likelihood that such attempts will result in the formation of new businesses" (Gartner, Shaver, Carter, & Reynolds, 2004a: ix). For consistency with other research based on the Panel Study of Entrepreneurship Dynamics, we followed the classification scheme developed by Shaver, Carter, Gartner, and Reynolds (2001), which defines a nascent entrepreneur as someone who has not received a positive cash flow from the new business for more than 3 months. This decision rule was established in order to differentiate new businesses "in the process of emergence" from already established new businesses.

PSED consists of one initial and three follow-up phone surveys, which track a nationally representative sample of nascent entrepreneurs over the course of 5 years (a mail survey is another component of the dataset, but it is outside of the scope of our study). The idea was to track the number and characteristics of individuals who attempt to start up a business, as well as the characteristics and outcomes of the entrepreneurial start-up process. The dataset combines respondents' answers to survey questions from the four interview waves of the study. Thus, for each respondent the dataset contains information whether a specific start-up activity was undertaken over the course of the study, and if yes, in what month and year it was undertaken. For example, at the time of the initial data collection (Wave 1 of the phone interviews), a respondent may have reported not completing a business plan, but may subsequently report that a business plan has been completed (at the time of Waves 2, 3, or 4). We would count that a business plan has been completed regardless of the timing of this start-up activity.

The PSED study identifies individuals who reported that they were trying to start a new business within the 12 months preceding the initial wave of the study (Wave 1 of the phone survey), which took place in 1998–1999. The question that asked about the perceived outcome of the entrepreneurial initiative (whether the nascent entrepreneur believed the new business was already operating, an active start-up, an inactive start-up, or no longer being worked on by anyone) was asked in the follow-up waves of data collection (e.g., in Waves 2, 3, and 4 of the phone survey), which took place, as follows: Wave 2 (1999–2001), Wave 3 (2001–2003), and Wave 4 (2003). If a nascent entrepreneur reported that the new business was already operating or that it was no longer being worked by anyone, that case was not tracked from that point on. If, however, a nascent entrepreneur reported that the business was still a start-up (active or inactive), the case was tracked in subsequent data collection waves. Thus, for each initially identified nascent entrepreneur, the dataset contains information on the outcome of the start-up process over the course of 5 years (1998–2003).

Given the widespread interest in the PSED dataset, a number of volumes specifically devoted to nascent entrepreneurs have been published. Gartner, Shaver, Carter, and Reynolds (2004) edited a book entitled *The Handbook of Entrepreneurial Dynamics: The Process of Organization Creation,* which details the PSED data collection process while a recent book in the *Foundations and Trends in Entrepreneurship* series entitled *Nascent Entrepreneurs* by Davidsson (2006) has an extensive review of over 75 papers on nascent entrepreneurship, many of them using PSED data.

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