

INSIGHT

Understanding the Impact of Entrepreneurship Education



University courses in entrepreneurship increase awareness of entrepreneurial skills and the general quality of entrepreneurial endeavors. Photo credit: Stanford News Service.

Research shows university entrepreneurship programs positively impact startup performance but may not increase overall entrepreneurship rates.

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Introduction

How effective are university entrepreneurship programs at increasing participation in startups and entrepreneurial activities among students and alumni? Such programs have proliferated in higher education institutions, but relatively little is known about their impacts. Using a unique survey of Stanford University alumni, the Shorenstein Asia-Pacific Research Center investigated the effects of two flagship Stanford entrepreneurship programs on participants' entrepreneurial activities and their success.

Better understanding of the efficacy of entrepreneurial training has important implications not only for informing educational choices, but also in developing in-house talent at firms looking to drive competitive innovation. If entrepreneurship can be taught, then firms may not need to rely on risky acquisitions to expand their pool of potential entrepreneurial workers.

Analysis

A core question in strategy is how entrepreneurship training programs affect human capital. Research shows that most individuals have a high ability to learn many kinds of skills if provided with the right instructional style and content (for example, Boaler, 2013; Sisk et al. 2018). If this is true of entrepreneurial skills, then universities could serve as important vectors for training and development.

Given this potential, entrepreneurship courses have proliferated on college campuses and in business settings in recent decades. However, high-quality research into the effectiveness of university-run entrepreneurship initiatives is significantly lacking (Vesper and Gartner 1997).

Current literature on entrepreneurship initiatives in higher education is frequently limited by a narrow focus on students' entrepreneurial orientation, which often overlooks their real-world startup careers after graduation. Existing research has also not clearly articulated or accounted for mechanisms, such as personal preference for risk, ambiguity, ambition, independence, power, and prestige. Such factors may well influence the variation in efficacy across entrepreneurship initiatives.

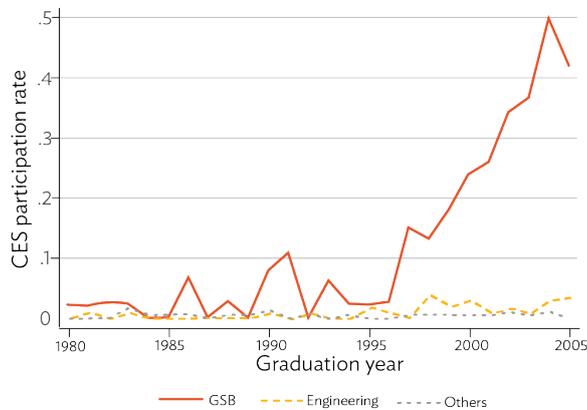
To account for these mechanisms and address the data gaps in the effects of campus entrepreneurship training, we developed the Stanford Innovation Survey. Covering all living Stanford alumni who graduated between the 1930s and 2010s, we conducted the survey over a well-defined population of comparable individuals in multiple industries and disciplines and polled all alumni who could have founded a firm. We collected information about participants' entrepreneurship status, whether one has invested in startups as an angel investor or venture capitalist, and about each firm's performance measures.

Crucially, the survey allows us to determine the degree to which respondents participated in either of Stanford University's two major entrepreneurial programs: the Center for Entrepreneurial Studies at the Business School and the Stanford Technology Venture Program at the Engineering School while students. As is common at many university campuses, both programs were established in the mid-1990s to expand and formalize support for entrepreneurial endeavors. The Center for Entrepreneurial Studies offers a variety of courses and experiential learning that touch upon all aspects of entrepreneurship. The courses cover topics ranging from management, finance, technology, law, education, and design. The Stanford Technology Venture Program is designed to educate engineering students and emphasizes the entrepreneurial mindset, leadership, and problem-solving over outright company formation.

Figure 1 below illustrates the participation rate in the first program by cohort among three different groups: those who graduated from the Business School, Engineering School, and the other schools. This program was introduced in the 1996–1997 academic year and, as expected, participation jumps with the 1997 graduating cohorts. The fact that participation is not zero among the earlier cohorts implies that those who graduated earlier could participate in the program not just when they were students. What is noteworthy is that participation among students from other schools remains very low. This property of the program lends itself as a good design to compare the effect of program participation

using a difference-in-differences framework, which compares alumni who attended the Business School before and after program introduction relative to alumni in other schools that did not introduce entrepreneurship programs.

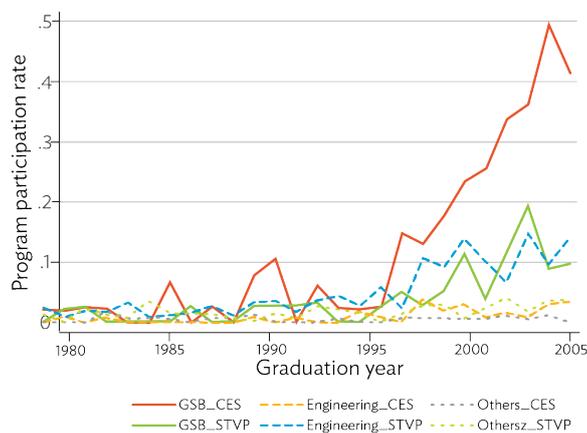
Figure 1: Center for Entrepreneurial Studies Participation Rate by Graduation Year



CES = Center for Entrepreneurial Studies, GSB = Graduate School of Business.

Figure 2 overlays the participation rate in the Stanford Technology Venture Program. Participation jumps for the Engineering School students starting with the 1998 cohort. However, the increase in participation is substantially smaller in magnitude compared to the Center for Entrepreneurial Studies participation among Business School students.

Figure 2: Center for Entrepreneurial Studies and Stanford Technology Venture Program Participation Rate



CES = Center for Entrepreneurial Studies, GSB = Graduate School of Business, STVP = Stanford Technology Venture Program.

Using the introduction of each school's program as an instrument for program participation, we find that the Business School's Center for Entrepreneurial Studies program has a negative to zero impact on entrepreneurship rates. However, the Business School initiative decreases startup failure and increases firm revenue. We also find that participation in the Engineering School's Stanford Technology Venture Program has no significant impact on entrepreneurship rates, but that it tends to decrease the time of

starting a company. Exterior factors, such as prior exposure to entrepreneurship and an entrepreneurial lifestyle via family or friends, also appear to affect eventual rates of entrepreneurship through both programs.

Overall, exposure to a university entrepreneurship program likely makes individuals aware of their entrepreneurial ability and better equips students with the instruments for succeeding as entrepreneurs. This supports the study's hypothesis that entrepreneurship education helps students to learn about their entrepreneurial capability and equips them with additional tools needed to succeed as entrepreneurs regardless of prior exposure. But the study could not prove that teaching entrepreneurship skills directly increases the number of individuals participating in entrepreneurial ventures.

The findings also suggest that it is important to account for variations in the structure, content, and focus of entrepreneurship training programs in evaluating their effectiveness.

Implications

The results of the research suggest that general entrepreneurship education that targets a broader spectrum of startups—rather than one that solely focuses on technology startups—may be more effective in reducing participants' uncertainty in their entrepreneurial ability and improving startup performance. But in and of themselves, university entrepreneurship programs may not necessarily increase the likelihood that a participant will set up a business.

While this research focuses on academic institutions in the United States, future investigations should also explore the effects of entrepreneurship education in different institutional and work environments. Prior studies have noted the positive effects of social norms and legitimacy toward entrepreneurship on rates of firm formation, but further research in this area is also needed to confirm its validity (Tolbert and Sine, 2010; Eberhart, Eesley, and Eisenhardt, 2017).

Optimal university-based interventions vary with the institutional context and the structure, content, and student cohorts participating. Our prior research (Lee and Eesley, 2018) finds similar evidence that entrepreneurship education does little to address differences in entrepreneurship rates of alumni by ethnicity or national background.

Overall, the traditional forms of entrepreneurship education that are currently in use need additional scrutiny and revision if they are to promote entrepreneurship more effectively and address imbalances in access to entrepreneurial opportunities by race, gender, first-generation status, income level, or other characteristics.

The complete study is published in the April 2021 issue of Strategic Management Journal.

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Yong Suk Lee's current research at Stanford's Shorenstein Asia-Pacific Research Center focuses on how new digital technologies, such as robotics and artificial intelligence, affect labor, education, entrepreneurship, and productivity. He holds a PhD in Economics from Brown University and a Master of Public Policy from Duke University.



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Charles Eesley studies the role of the institutional and university environment in high-growth, technology entrepreneurship. His research focuses on rethinking how the educational and policy environment shapes the economic and entrepreneurial impact of university

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