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## Risky business: Experiential learning, information and communications technology, and risk-taking attitudes in entrepreneurship education

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### ABSTRACT

This paper presents two studies examining the effects of technology-supported experiential entrepreneurship education on learners' entrepreneurial intentions and attitudes towards risk. Each study compares students enrolled in three distinct self-selected college entrepreneurship courses that, to different degrees, integrate information and communications technology (ICT) and interactions with entrepreneurs in a business incubator. Study 1 investigates students' pre-existing attitudes towards entrepreneurship and ICT through a survey distributed at the beginning of the semester. Study 2 explores students' perceptions towards entrepreneurship, risk taking, ICT, and the incubator after the course and retrospectively through a second survey. Responses revealed that students' perceptions were sensitive to their initial entrepreneurial intentions and their interactions with incubator entrepreneurs, but only risk tolerance increased significantly across all courses. A predictive model of student attitudes reveals that perceptions of ICT usefulness moderated the relationship between entrepreneurial attitudes and risk. This work helps bridge entrepreneurship education and education technology by constructing and empirically testing a model relating entrepreneurial characteristics and ICT attitudes. It contributes a mechanism to pedagogy theory that educators can use to improve learning outcomes, and presents educators with experiential strategies that impact student attitudes towards taking risks in business start-ups - an elusive goal of entrepreneurship education.

### 1. Introduction

Entrepreneurs today operate in a highly technological environment. Even those with “low-tech” companies must be able to use computing technologies to perform common business tasks cost-effectively and competitively, including advertising (e.g., maintain a web and social media presence) and accounting (e.g., maintain a digital ledger with invoice, payroll, and tax accounting). To perform such activities diligently, entrepreneurs must be comfortable using tools for computing, online communication and distributed collaboration (van Laar, van Deursen, van Dijk, & de Haan, 2017).

At the same time, researchers continue to question how best to teach entrepreneurship, with many recommending experiential learning as a meaningful approach (Kolb, 1984; Krueger, 2007; NIRAS, 2008, p. 220). Experiential learning emphasizes learning as occurring through the transformation of experience into knowledge, giving students the opportunity to learn by “doing.” In the

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context of entrepreneurship education, experiential learning includes a broad range of experiences for students, such as (in order of increasing proximity to real-world experiences) computer simulations to practice entrepreneurial activities, launching student businesses, and working with real entrepreneurs to assist in their business ventures (Cooper, Bottomley, and Gordon 2004; Daly, 2001).

Entrepreneurial intention has been commonly used among researchers to assess the effectiveness of entrepreneurship education (Duval-Couetil, 2013; Rideout & Gray, 2013). However, its use as an evaluative measure is complicated by the fact that entrepreneurship education encompasses a wide variety of pedagogical methods, tools, experiences, and objectives (Nabi, Liñán, Fayolle, Krueger, & Walmsley, 2017; Pittaway & Edwards, 2012). Additionally, studies using entrepreneurial intention as an evaluative measure have suffered from inconsistent results (Hytti, Stenholm, Heinonen, and Seikkula-Leino 2010; Oosterbeek, van Praag, and Ijsselstein 2010). Consequently, entrepreneurship education is beginning to focus less on raising entrepreneurial intention and more on raising nascent entrepreneurs' chances of success by teaching the different tools students should master and the risks they should prepare for prior to undertaking an entrepreneurial venture (Neck, Neck, & Murray, 2017). Although entrepreneurial success cannot be guaranteed, exposing students to real world activities, experiences, and tools may better prepare them to appreciate the risks of entrepreneurship and their management.

In this research, we investigate the relationship between the three aforementioned concepts: technological proficiency, entrepreneurship education, and entrepreneurial intention. These three concepts have been studied separately in the literature but not in unison. Specifically, we aim to determine if technology in experiential pedagogy improves the effectiveness of entrepreneurship education, measured as improving student attitude towards the risk of launching a new venture. If so, entrepreneurship educators may be able to similarly improve student attitudes by tailoring their courses with the purposeful introduction of technology.

The study develops a model of entrepreneurial intention, perceived risk of entrepreneurship, perceived utility of experiential activities in startup environments, and perceived utility of ICT among university students. We then use this model in two studies conducted at a northeastern polytechnic university which explore students' existing attitudes at the beginning of their respective entrepreneurship courses (labeled Study 1) and their perception after exposure to their courses (labeled Study 2). The three entrepreneurship courses included in this research exposed students in varying degrees to experiential learning and technologies for collaboration, communication, and data visualization. Study 1 investigated students' pre-existing attitudes towards entrepreneurship, providing insights into students' self-selection into the different entrepreneurship courses. Study 2 investigated students' perceptions towards entrepreneurship after exposure to these experiential, technology-supported courses. Together, the results of these studies shed light on the relationships between entrepreneurship education, entrepreneurial intention, risk taking propensity, and exposure to the ICT tools and experiences of the entrepreneur. The remainder of this paper is organized as follows. We first discuss the literature informing the research and conceptual framework. This is followed by the research hypotheses, methodology, and results of the data analysis. Implications of the results and limitations of the studies conclude this paper.

## 2. Conceptual framework

### 2.1. Entrepreneurship education

Witnessing the growth of entrepreneurship education (Katz, 2003, 2008), researchers and educators have struggled to establish its legitimacy as a discipline, with researchers questioning whether entrepreneurship can be taught in classrooms and what its core competencies should be (Anding, 2005). Some researchers have focused on classifying the different pedagogical approaches to teaching entrepreneurship (Fiet, 2001; Rasmussen & Sørheim, 2006). Neck and Greene (2011) provide a summary of these research efforts, classifying entrepreneurship pedagogies as (1) process-based, (2) cognitive and method-based, or (3) focused on the entrepreneur as the subject of study.

The underlying assumption brought forward by Neck and Greene is that “entrepreneurship is complex and chaotic” and, therefore, its teaching can rarely be linear and process-based. Understanding this complexity means understanding the roles of entrepreneurs (the third pedagogy class) (Gartner, 1988) or their decision making processes (the second pedagogy class) (Krueger, 2007; Mitchell, Busenitz, Lant, and McDougall 2002; Mitchell, Smith, Seawright, and Morse 2000). Neck and Greene appear to undervalue process-based pedagogy because it assumes that entrepreneurship education can be taught with a focus on the input and output processes (the business planning process, as an example). Alternatively, they propose the method-based experiential approach focused on value creation generated by teaching tools and techniques necessary for productive entrepreneurial action. This model teaches doing-and-then-learning, emphasizes reflective learning, and stimulates practice under uncertainty. The three entrepreneurship courses included in the two studies presented in this paper support the method-based model's use of tools and techniques, including ICT.

#### 2.1.1. Experiential entrepreneurship courses

To varying degrees, entrepreneurship courses taught at the northeastern polytechnic university expose students to experiential learning through involvement with start-ups in the Enterprise Development Center (EDC) new venture incubator located on the campus. These companies develop technology-intensive products primarily for biomedical, pharmaceutical, telecommunications, and energy markets. As of 2016, the EDC has over ninety companies with \$100 MM in annual revenues, \$136 MM in 3rd party investments, and over 700 jobs altogether. The entrepreneurial ecosystem of the EDC also includes investor roundtables, meet-and-greet activities, and workshops from local service providers and faculty on topics including accounting, finance and intellectual property protection, most of which are open to the students enrolled in entrepreneurship courses.

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