Entrepreneurship Education: A Global Consideration From Practice to Policy Around the World

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FOREWORD

The past several decades have seen a steady rise in the prestige and status associated with entrepreneurship, particularly in the fields of technology. Celebrity entrepreneurs such as the late Steve Jobs (Apple), Elon Musk (Tesla), and Jack Ma (Alibaba) have succeeded in capturing the popular imagination with their larger than life personalities and their innovative products and services. As a result, many ambitious graduates today aspire to emulate their hero-entrepreneurs by starting their own businesses. At the same time, policymakers from all over the world look to transform their economies by seeking to replicate the magic of entrepreneurial hubs such as Silicon Valley.

Beyond the celebrity limelight associated with technology companies, entrepreneurship has always played a critical role in the global economy. By way of example, in the United States, small, often owner-managed firms with fewer than 500 employees, make up the overwhelming majority (about 99 percent) of all businesses. They account for almost 50 percent of both non-farm GDP and private-sector employment. Perhaps more importantly, in the period 1993-2013, small businesses were responsible for 63 percent of net new jobs created.

Given the importance of entrepreneurship to economic growth and employment, it is not surprising that the recently adopted United Nations Sustainable Development Goals incorporate the promotion of entrepreneurship as a target under both education (4.4) and economic growth (8.3). This report is therefore both relevant and timely as it explores ways in which entrepreneurship education can be embedded within our education systems starting with primary school. The authors and contributors to the report take an expansive view of entrepreneurship education as the "practice of creating, finding and acting on opportunities to create value" that can apply equally to other realms outside of business. By doing so, they also emphasize the importance of instilling in young people the entrepreneurial mindset and corollary life skills that can be

useful in a wide variety of circumstances and contexts. Finally, by presenting twelve 'best-practice' case studies from the United States, China, Finland, and Qatar, the authors and contributors present compelling examples of how policymakers and practitioners can implement effective approaches to entrepreneurship education.

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EXECUTIVE SUMMARY

Entrepreneurship, traditionally defined as starting a new business, is increasingly recognized and touted as a way to drive the development and sustainability of economies around the world. Previous and ongoing research has advanced entrepreneurship education as essential for influencing attitudes, aspirations and intentions of individuals striving to launch new ventures. This report broadens the definition and impact of entrepreneurship education. We do not limit our definition of entrepreneurship to starting a business but rather use starting a business as a vehicle to develop an entrepreneurial mindset while also developing a robust set of twenty first century life skills that can be used to start and grow new ventures of all kinds. As a result, we define entrepreneurship education as a method whereby students (of all types) practice creating, finding, and acting on opportunities of creating value (Neck, Brush & Greene, 2014; Financial Times Lexicon, 2013).

Over the past three decades, entrepreneurship education has grown dramatically, from 600 colleges and universities offering courses in 1986 to more than 5,000 courses at 2,600 schools today. In spite of this growth, insufficient attention has been given to the importance of policies and programs, and minimal guidance has been offered on how to support this type of education and on what policies are needed.This report is intended to help fill that gap through its three principal objectives.

- Showcase best and forward-looking practices and new ideas in entrepreneurship education
- Provide recommendations and implications to inform practitioners and policy makers
- Identify provocative questions that will drive further research

The report draws from four countries, with varied approaches to entrepreneurship education, within which to compare best practices – United States, China, Finland, and Qatar. The United States has had the longest history in teaching entrepreneurship. China represents an emerging powerhouse of education and commerce. Finland has long been known for its innovation in education at all levels. And Qatar represents a region dominated by the oil industry yet looking to entrepreneurship to diversify its economic activity. Each country developed three short exemplar cases, one for each segment of education: K-12/Secondary, College/University, and Vocational/Training programs.

Generally, entrepreneurship education consists of a nested set of activities (curriculum, co-curricular activities, and research efforts), and decisions regarding such activities include everything from learning objectives, topics, selection of materials, pedagogy, learner type and delivery mechanisms. Research regarding the effectiveness of entrepreneurship education has grown over time and expanded beyond measuring new business formation to assessing the increase in positive perceptions of entrepreneurship and intentionality towards being entrepreneurial. Emerging findings suggest that there is indeed a positive relationship between entrepreneurship education and entrepreneurial behaviors, yet the research is inconclusive and more work is needed.

The analysis of the twelve cases reveals an array of best practices and related implications for practice, policy, and research. Critical themes include: multiplicity of objectives, variety of curricular content, role of faculty, diversity of learners, importance of place, methods of leveraging resources, and pedagogicinnovations. The report discusses these themes through specific case examples and concludes with a series of recommendations for policy makers, practitioners and academic researchers.

- **Develop Teachers:** Establish program standards, training programs and assessment tools that encourage teachers to acquire and employ skills and behaviors that enable them to function as facilitators and guides to learning, rather than as traditional classroom instructors.
- **Expand Ranks of Learners:** Make entrepreneurshp education compulsory for all learners in primary, secondary and perhaps even tertiary levels, because of its effectiveness at instilling "twenty first century" skills, in addition to venture creation skills.
- **Facilitate Sharing of Content and Pedagogy:** Create a clearinghouse of leading-edge curricula and pedagogic methodologies. Much good work has been done in this field over the past decade,

and many institutions are willing to share their curricula and teaching methodologies.

• **Overhaul Pedagogy and Place:** Revamp instructional standards and classroom paradigms to promote team-based, action-oriented learning in spaces designed to enhance collaboration and creativity that includes real world interactions with entrepreneurship practitioners and with target markets for new products and services.

• **Expand Access to Resources:** Increase funding for entrepreneurship education and develop and promote innovative mechanisms to leverage partnerships with corporations, NGOs, global institutions, and foundations, as well as with individuals.

Recommended research trajectories to advance entrepreneurship education:

1) We need to define and assess an array of learning outcomes to better understand the impact of entrepreneurship education. This requires creating and experimenting with various metrics beyond starting a new venture and also includes a consideration of different types of entrepreneurial learners and assessing impacts across multiple institutions and countries.

2) Though we recommend compulsory entrepreneurship education at the primary/secondary level, we strongly urge researchers to not only look across schools where this is taking place but to research stakeholders within the ecosystem. Primary and secondary teachers, as well as parents and administrators, need to have a better understanding of what entrepreneurship is and can be in their education systems.

3) Great examples and best practices abound, as evidenced in this report. The larger issue to address now is scalability of programming. Entrepreneurship education requires a hands-on, active, and experiential approach. These approaches are hard to scale when large numbers of students are involved. How might we scale innovative educational programs? When and how might technology be helpful? What is the effect of technology clusters on entrepreneurship education and entrepreneurship ecosystems?

#1
INTRODUCTION:
PURPOSE OF PROJECT

#1 INTRODUCTION: PURPOSE OF PROJECT

Increasingly, entrepreneurship, with an emphasis on entrepreneurship education, is proposed, recognized, and touted as a way to drive development and sustainability of economies around the world (Neck, Greene, & Brush, 2015; Audretsch, Grilo, & Thurik, 2011). More than ever, the people and countries of the world in some ways seem closer together yet in other ways further apart. Technology provides more means of communicating that connect us, often instantly and consistently. At the same time, individual and societal differences, including access to all types of opportunities and resources, divide us. However, a universal wish for families and communities to be secure and healthy does drive us to look at economic pathways for sustainability that align with our somewhat shared, while somewhat unique, value structures. Entrepreneurship education is a solution to economic growth and progress.

Entrepreneurship education has grown dramatically over the past three decades. In 1986, there were approximately 600 colleges and universities offering entrepreneurship courses around the world. Today, the Kauffman Foundation estimates that there are more than 5,000 courses offered at 2,600 schools (Kauffman, 2008). Global organizations focused on entrepreneurship research and education have grown in popularity and impact. Membership in the Entrepreneurship Division of the Academy of Management now tops 3,000 faculty members world-wide. The International Council on Small Business (ICSB) has 16 country affiliates and members from 70 countries. The U.S. affiliate, the United States Association for Small Business & Entrepreneurship, has 1000 members and a growing number are from outside the United States.

Not only has the number of courses and organizations exploded across the globe, but also several countries are publicly supporting entrepreneurship education. Entrepreneurship as a course was

introduced in China in 2002 as an educational innovation to expand placement opportunities for graduates (Zhou & Xu, 2012), while more recently, China's premier, Li Kequiang, has promised unprecedented support for entrepreneurship education (Bastin, 2014). The Malaysian government launched the Higher Education Entrepreneurship Development Policy in 2010. Similarly, Banco de Chile is funding a five year program to train Chilean educators in pedagogy and practices for teaching entrepreneurship. In the United States, Babson's Symposium for Entrepreneurship Educators indirectly touches more than 7000 students per year by training faculty from all over the world.

Despite this enormous growth in entrepreneurship training, education, courses and organizations, there has been less focus on the importance of policies and programs that support this entrepreneurship imperative. The Global Entrepreneurship Monitor (GEM, 2014), a 75 country study of nascent entrepreneurs, shows that entrepreneurship education influences the attitudes, aspirations, and intentions of individuals starting new ventures. The GEM report also states that if a country wants to develop an entrepreneurial culture, it needs to proactively develop relevant programs and policies to support entrepreneurship education (Singer, Amoros, & Moska, 2015). However, little guidance has been offered on how to support entrepreneurship education and what policies are needed to support and enable entrepreneurship.

For this report, we considered what entrepreneurship education means in each country with a goal of defining entrepreneurship education and sharing best practices. Building on the authors' extensive experience and expertise in all aspects of entrepreneurship education, we start with a brief consideration of entrepreneurship education in general and then move to a discussion of global entrepreneurship education. We propose a new research framework that is applied across four countries.

The four countries are represented in this report not simply to analyze the global state of entrepreneurship education but also to have a global view of entrepreneurship across very different countries. The United States has had the longest history in teaching entrepreneurship. China represents an emerging powerhouse of education and commerce. Finland has long been known for its innovation in education at all levels. Qatar represents a region dominated by the oil industry yet looking to entrepreneurship as a way to diversify its economic activity. These countries are at very different stages in their entrepreneurial journeys, according to the GEDI rankings, which look at attitudes, resources, and infrastructure: US one, Finland 14, Qatar 24, and China 61 (GEDI, 2015).[1] Each country partner provides three cases illustrating best practices to represent the state of entrepreneurship education in their

country: a case each for primary/secondary and college/university and one for vocational training. We then discuss the themes and lessons learned across all the cases and present implications and recommendations for policy, practice, and research.

WE DEFINE ENTREPRENEURSHIP EDUCATION AS A METHOD WHEREBY STUDENTS (OF ALL TYPES) PRACTICE CREATING, FINDING, AND ACTING ON OPPORTUNITIES OF CREATING VALUE

I- WHAT IS ENTREPRENEURSHIP EDUCATION?

Several historical surveys have been conducted to review the states of the art of entrepreneurship education (Dainow, 1986; Katz, 2007; Gorman, Hanlon & King, 2007). While most of these studies were not explicit on the definition of entrepreneurship education, one paper states that "educational orientation, teaching strategies, learning styles, curricula design and entrepreneurship structures" (Gorman et al, 2007 p. 26) are the most relevant aspects. Other authors present a framework of educative orientations consisting of "conformist, adaptive, transformative" and process approaches (Béchard & Toulouse, 1991). More recently, entrepreneurship education is advanced as a mainstay of any entrepreneurship ecosystem (Isenberg, 2010; GEM, 2014; WEF, 2013; Fetters et al, 2010; Neck et al, 2004; Brush, 2014). For our purposes, we define entrepreneurship education as a method whereby students (of all types) practice creating, finding, and acting on opportunities of creating value (Neck, Brush & Greene, 2014; Financial Times Lexicon, 2013).

Entrepreneurship education within a school generally consists of a nested set of activities, including curriculum, co-curricular activities, and research efforts (Brush, 2014, based on Albert et al, 2004 and Kuratko, 2005). Importantly, the decisions around entrepreneurship education include everything from learning objectives, topics covered, selection of materials (including cases, exercises, and concepts), pedagogy, and delivery mechanisms (Brush, 2014, p. 30). Each of these decisions should flow from a school's intentionally selected definition of entrepreneurship, along with the role of theory and the degree of integration across classes, programs, etc. (Neck, Greene, & Brush, 2014).

Entrepreneurship education also varies across audiences. For instance,

programs focused on youth (primary and secondary school) may focus on the desirability and feasibility of business start-ups in order to influence the students' intentions (Peterman & Kennedy, 2003). At the college or university level, the program may focus more on skills and competencies associated with developing venture ideas, pathways into entrepreneurship, market testing, and building a business model. In the community college and local training area, curricula might focus on ways to launch a small firm, become self-employed, or to buy a franchise.

"A GROWING CRITIQUE OF ENTREPRENEURSHIP EDUCATION IS THAT IT NEEDS TO GIVE MORE ATTENTION TO THE DEVELOPMENT OF ENTREPRENEURIAL ATTITUDES, ASPIRATIONS, AND ACTIVITIES"

Audience might also be defined by the type of business being pursued. In the U.S., entrepreneurship education, particularly that offered through academic institutions, is often viewed as targeted toward the development of fast growth, technology-based businesses, while in Europe, entrepreneurship education is often more connected to the SME community (Small and Medium Sized Enterprises). In China, the focus is usually on a more general "start-up" approach (Zhou & Xu, 2012), and in Qatar it is on diversification into non-oil-related businesses. Across countries, there are different emphases, depending on the context and, in some cases, industrial policy. For instance, New Zealand and Ireland have supported the creative industries, while Israel has supported internet and other electronic technologies. Overall, "a growing critique of entrepreneurship education is that it needs to give more attention to the development of entrepreneurial attitudes, aspirations, and activities" (Regele & Neck, 2012, p. 25) or what has been referred to as the entrepreneurial mindset.

Although research regarding the effectiveness of entrepreneurship education has grown over time (Gartner & Vesper, 1994; Henry, Hill, & Leitch, 2005; Dickson, Solomon, & Weaver, 2008), there are questions about the overall impact in the actual increase in the number of businesses (Weaver, Dickson, & Solomon, 2006; Honig, 2004; Sarasvathy, 2001). Yet this narrow outcome of new business formation in entrepreneurship education has come under recent scrutiny (Vanevenhoven & Liguori, 2013). As a result, impact is now being

measured by the relative increase in positive perceptions of entrepreneurship and even an intentionality toward being entrepreneurial. The actual relationship between those intentions and actual entrepreneurial behaviors remains an active area of study, but emerging findings suggest that there is indeed a positive relationship between entrepreneurship education and entrepreneurial behaviors (Rauch & Hulsink, 2015; Singer, Amoros & Moska, 2015).

As entrepreneurship education has advanced, so has our understanding of what is required to learn and practice entrepreneurship. Today greater attention is placed on cultivating the entrepreneurial mindset of students, and such a mindset is the precursor to both behavior and action. Ground-breaking research (Sarasvathy, 2008) has empirically supported that entrepreneurs do think in a particular way that distinguishes them from managers. However, this is in stark contrast to trait theorists (Fisher & Koch, 2008; Miner, 1996; McClelland, 1965), who believe entrepreneurs possess certain innate personality characteristics. The entrepreneurial mindset is learnable and teachable; innate traits are not.

The entrepreneurial thinking patterns discovered and supported by ongoing research (Sarasvathy, 2008; Neck & Greene, 2011; Noyes & Brush, 2012; Greenberg et al., 2011) are fundamentally changing how we approach entrepreneurship education. The starting point is no longer the idea, the opportunity, or the business plan; rather, it's now about developing a mindset of acting, doing and creating.

"IF A COUNTRY WANTS TO BE MORE PROACTIVE IN DEVELOPING AN ENTREPRENEURIAL CULTURE, IT IS RELEVANT TO IMPLEMENT CONSISTENT POLICIES AND PROGRAMS ON RESTRUCTURING THE CAPABILITY OF [THE] (SIC) EDUCATION SYSTEM TOWARD PROVIDING ENTREPRENEURIAL COMPETENCES AS A KIND OF TRANSVERSAL SKILLS FOR EVERYONE"

II- GLOBAL ENTREPRENEURSHIP EDUCATION

The importance of entrepreneurship education as part of the global sphere became exceptionally clear in 1998 when the UNESCO World Conference advocated for the development of entrepreneurial skills

through higher education (Zhou & Xu, 2012). More recently, reports such as the Global Entrepreneurship Monitor position entrepreneurship education as a necessary factor in the advancement of innovation and entrepreneurship (GEM, 2015). According to the latest GEM authors, "In building an entrepreneurial culture, education and media play crucial roles, particularly regarding the education of very young people (on primary and secondary levels)....If a country wants to be more proactive in developing an entrepreneurial culture, it is relevant to implement consistent policies and programs on restructuring the capability of [the] (sic) education system toward providing entrepreneurial competences as a kind of transversal skills for everyone" (Singer, Amoros, & Moska, 2015, p. 31).

A global consideration of entrepreneurship education is needed to recognize the impact of culture, acknowledging that values arising from the nation and region resonate down to the level of the organization (George & Zahra, 2002; Hofstede, 1980). These values and, subsequently, social institutions, impact perception, intentions, and entrepreneurial action, and therefore must be aligned with entrepreneurship education and related economic policies.

In 2010, the GEM project produced a separate report, A Global Perspective on Entrepreneurship Education and Training, which examined entrepreneurship education practices in 38 countries. This report focused on individual outcomes, conceptualized as "entrepreneurial awareness, attitudes, intentions, and activity" (Martínez, Levie, Kelley, Sæmundsson, & Schøtt, 2010. p. 5). The report concluded that while entrepreneurship education and training programs grew around the world, few comparisons exist regarding who is likely to receive training and whether it makes any difference. In fact, the GEM National Expert Surveys reveal a fairly consistent level of dissatisfaction with the adequacy of entrepreneurship education, particularly in primary and secondary levels (Martinez et al., 2010). The question of who provides the training was also part of the study, with experts from Finland, Germany, Ireland, the Republic of Korea, Spain, and the United States agreeing that entrepreneurship education outside the formal educational system is adequate, while others were less likely to agree.

In sum, regarding the state of global entrepreneurship education based on the 38 countries in the GEM report concludes that:

- In most countries, more than half of the trained population engaged voluntarily.
- Most (approximately 80 percent) of those who received start-up

training did so as a part of their formal education.

• Training at school is generally more prevalent than training at the tertiary level.

• Approximately 60 percent of those receiving training received it through informal means, either exclusively or in addition to their formal training.

• The most frequent source of informal training in most of the countries is self-study (Martinez et al., 2010, p. 5).

"TRAINING IS MOST EFFECTIVE IN CONTEXTS WITH FAVORABLE INSTITUTIONAL ENVIRONMENTS, WHERE THE TRAINING-INDUCED POSITIVE SKILLS, PERCEPTIONS, AND INTENTIONS CAN BE TRANSLATED INTO ACTION"

The GEM special report also provided an overview of who is likely to participate in entrepreneurship education and training, recognizing an increased likelihood for those who are younger, wealthier, better-educated, and male (Martinez et al., 2010). And does it make a difference? The report concludes, "Training is most effective in contexts with favorable institutional environments, where the training-induced positive skills, perceptions, and intentions can be translated into action" (Martinez et al., 2010. p. 6). GEM also illustrates the great variation in training approaches across countries, regardless of the state of economic development. The exception is on the impact of the training, which does vary by the level of economic development. Entrepreneurial training seems to be most impactful on early-stage activities conducted in countries with institutional contexts favorable to entrepreneurship in general (Martinez et al., 2010. p. 6). And finally, the 2014 GEM expert survey shows that most countries around the world are less satisfied with their approach to entrepreneurship education at the primary and secondary levels than at the post-secondary level (Singer, Amoros, & Moska, 2015).

#2
FRAMEWORK

#2 FRAMEWORK

This report is intended to showcase best and forward-looking practices in entrepreneurship education programs using a comparative case study methodology. We had three primary objectives:

- Present the state of the art regarding current practice of entrepreneurship education and highlight best practices and new ideas,
- Provide recommendations and implications on which policy makers can act and experiment, and
- Identify provocative questions that will drive the next round of research.

With assistance from the Qatar Foundation, we identified four countries within which to compare best practices: China, United States, Finland, and Qatar. These countries were selected because they are varied in their approaches to entrepreneurship education and have outstanding examples of best practices. The Babson team first conducted a literature review, examining a combination of academic, practitioner, and policy articles and reports regarding entrepreneurship education. Following this review, a draft framework was developed and discussed with the other project partners. After those discussions, the framework was revised and used as the basis to organize the exemplar cases from each country. The overarching framework included the country context, entrepreneurial environment, current state of entrepreneurship education, in situ innovations, and any existing policy related to entrepreneurship education.

Each of the four participating countries then coordinated with the Babson team and the WISE project managers to plot the desired number of cases per country, one each to represent

- K-12/Secondary
- College/University (Undergraduate and Graduate)
- Vocational/Training Programs (programs for adults and working professionals, non-degree, or external incubators)

Case research included a combination of interviews with entrepreneurship program leaders and materials published by the program institutions.

The framework for the cases was designed as a set of straight-forward questions from which comparisons could be drawn:

- Where is entrepreneurship education being taught and by whom?
- Who are the learners?
- What are they being taught? Ties to theory?
- How are they being taught?
- Why is entrepreneurship being taught? What are the learning outcomes?
- How is impact being measured and evaluated? What is being measured?
- How is the program/curriculum/course being funded and supported?
- What kinds of businesses are being started?
- What is the extent of reach and scalability?

We decided to start with the question of "what" is entrepreneurship education in each country to capture any type of definition and, in many ways, this captures the "why" as well: what is the motivation behind any approach to entrepreneurship education? We were also interested to identify any common themes across "what" we teach, while considering the "how" we teach of equal importance. The "where" allows us to consider other aspects of the program, watching for programmatic innovations. While we somewhat defined "who is the audience" by selecting programmatic categories of primary/secondary, college/university, and vocation, it was helpful to learn more about who is inside each of those categories. And finally, practices for measuring impact were a vital part of the review (Figure 1).

In most discussions of entrepreneurship education, especially in the published academic literature, the emphasis is on the college/university audience, largely because they are available as a research sample. However, some reference is often made to the fact that entrepreneurship education should, or even needs, to start earlier, for reasons that are clear:

- Through early childhood development, you can predispose children for success.
- Youth unemployment is rising across the globe.
- The number in the millennial generation has surpassed the baby boomer generation.

• Though entrepreneurship education is not the silver bullet, it can be a platform for economic recovery, vitality, and long-term sustainability.

As mentioned, university-based entrepreneurship education is the most often studied source, while recognizing that university students, especially business students, are not necessarily the most likely to start a business. Therefore, we do recognize the need for and existence of what we've categorized as "vocational" training for the practitioner.

Our cases were guided by these user categories and framework questions and each team served as a peer reviewer for the other cases. Subsequently, these cases have led us to propose what we think are a unique set of implications for practitioners and policy makers.

Figure 1: Research Framework

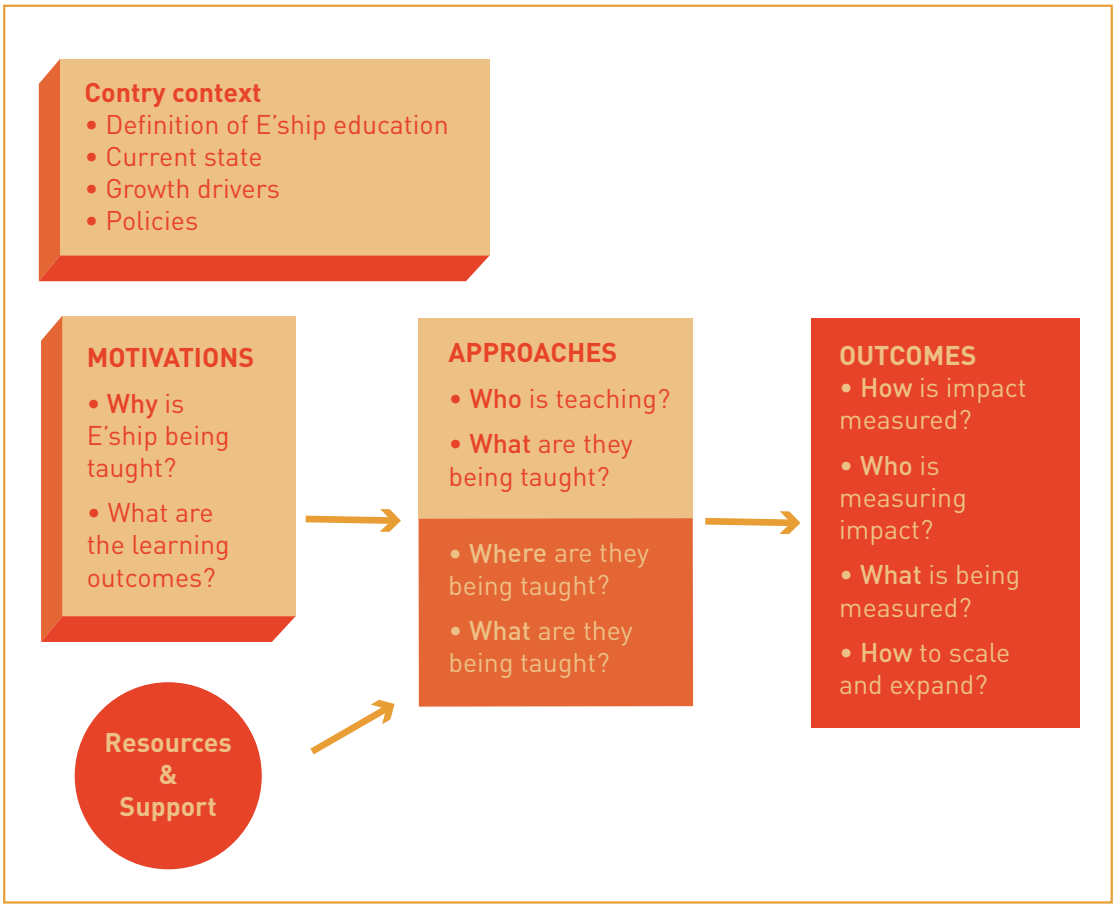


Table 1: Cases by Learner Category

Entrepreneurship Education Program	**Country**
Primary/Secondary	
Me & My City	**Finland**
Hawken School - Entrepreneurial Studies Program	**US**
Entrepreneurship Education by Injaz Qatar	**Qatar**
Maker Space and Extreme Learning Process of Tsinghua University High School	**China**
College/University	
Team Academy, Jyväskylä Finland	**Finland**
Babson College: Foundations in Management and Entrepreneurship (FME)	**US**
Entrepreneurship Education in Qatar University	**Qatar**
Tsinghua x-lab: a University-Based Platform for Creativity, Innovation and Entrepreneurship Education	**China**
Vocational/Training (Adult)	
InnoOmnia and Learning Guilds: Entrepreneurship in Finnish VocationalEducation and Training	**Finland**
Goldman Sachs 10K Small Businesses	**US**
Entrepreneurship Vocational Training by Qatar Development Bank	**Qatar**
China Institute of Entrepreneurship of Muhua Information Technology Company: the Vanguard of On-line Entrepreneurship Education	**China**

#3

ENTREPRENEURSHIP EDUCATION IN CHINA

#3 ENTREPRENEURSHIP EDUCATION IN CHINA

Two forces drive the formation of an entrepreneurial culture throughout China: grassroots innovation and government policy that encourages people to start their own businesses. The importance of entrepreneurship education in fostering entrepreneurial culture has encouraged entrepreneurship to emerge as a business discipline in universities and colleges, vocational schools, and even in some high schools. Entrepreneurship education is expected to provide motivation, knowledge, and skills essential for launching successful ventures, but the content of entrepreneurship education differs by country. The Ministry of Education emphasizes four goals for entrepreneurship education in China:

- expose students to the challenging prospect for employment and raise their entrepreneurship awareness,
- lay a solid foundation of knowledge about entrepreneurship,
- improve college students' entrepreneurial skills and abilities through both classroom learning and other activities, and
- reduce entrepreneurial risks among college students.

ENTREPRENEURSHIP EDUCATION IS EXPECTED TO PROVIDE MOTIVATION, KNOWLEDGE, AND SKILLS ESSENTIAL FOR LAUNCHING SUCCESSFUL VENTURES, BUT THE CONTENT OF ENTREPRENEURSHIP EDUCATION DIFFERS BY COUNTRY.

Despite a relatively short history of entrepreneurship education, China has made considerable progress with this new education concept, marked by four stages since its emergence in the late 1990s. The first stage was the Student Entrepreneurship Competition organized by Tsinghua University in 1997, which became known as the birth of entrepreneurship education in China. In the following years, many

universities introduced similar events. The second stage was achieved in 2002, when the Ministry of Education took the lead in selecting nine institutions to participate in the National Entrepreneurship Education Pilot Program (NEEPP), with the stated purpose of exploring a number of entrepreneurship education models. Each of the nine pilot projects had a different focus, from classroom-based models to practice-oriented models to hybrid models. The third stage occurred in 2005 when the Know About Business (KAB) program, developed by the UNESCO Labor organization, was introduced and became available to students in six prestigious universities. As a systematic entrepreneurship education program, KAB helps students gain an overall understanding of how to start an enterprise, promotes the concept of entrepreneurship, and cultivates innovation and entrepreneurship in talented youth. In the fourth stage (2008), The Ministry of Education and the Ministry of Science and Technology jointly initiated pilot programs for innovation and entrepreneurship, such as Entrepreneurship Park and Science Park, in selected universities. In 2012, the Ministry of Education made entrepreneurship compulsory at the tertiary level, one of the first countries to do so, and many colleges now have start-up incubators on campus.

In recent years, the Chinese government issued new policies to boost employment through entrepreneurship, and, since that time, governments at each level have advocated entrepreneurship education. Semi-governmental agencies such as the National Youth League and the National Labor Union have provided training programs on entrepreneurship. Non-government organizations also are giving much attention to entrepreneurship education. Meanwhile, entrepreneurship education has also emerged online in the form of MOOCs, broadening its availability.

Overall, China's entrepreneurship education remains in the early stage, and China still has to refine the concept, set up an insightful and visionary strategic framework at the national level, create an integrated curriculum across disciplines, with an intensified training program for faculty to build a closer link between the academy and the industry, and establish a sound process to evaluate the impact of entrepreneurship education on a regular basis.

I- THE MAKER SPACE OF TSINGHUA UNIVERSITY HIGH SCHOOL: EXTREME LEARNING PROCESS (XLP) FOR ENTREPRENEURSHIP EDUCATION

Where is the program being taught and by whom?

The Maker Innovation Center and the Extreme Learning Process (XLP) are offered at Tsinghua University High School, a 100-year old secondary school affiliated with Tsinghua University. An office at the school dedicated to scientific and technical activities for students set up the Center, a "maker space," in the summer of 2013 and, since that time, "maker" innovation has been spreading on campuses, enabling teachers and students to take part in many challenging activities. This is one of the few entrepreneurship programs at the secondary level in China.

Who are the learners?

The learners are high school students who use the Maker Space on a voluntary basis.

THE EXTREME LEARNING PROCESS (XLP) IS AN INTERDISCIPLINARY LEARNING PLATFORM THAT EMPLOYS A LINKED SERIES OF RESOURCES AND METHODS WHICH ORGANIZE AND SUPPORT LEARNERS FROM VARIOUS DISCIPLINES IN THE DESIGN AND EXECUTION OF GUIDED, COLLABORATIVE LEARNING ACTIVITIES.

What is being taught?

Tsinghua University High School uses the Extreme Learning Process (XLP) to maximize the value that students derive from its Maker Innovation Center. The Center is a large, open space outfitted with gear for designing, prototyping, testing, and fabricating new products. Known as a maker space, (aka "entrepreneur lab" or "innovation center") the Center is designed to create an environment in which entrepreneurialism, education, and innovation can be cultivated and encouraged through hands-on, project-based learning. It is a "sandbox" where students can

experiment with creating new products. Under the guidance of the faculty, students are provided opportunities to collaborate on real-time prototyping, model making, and small-scale creative and manufacturing projects. The Extreme Learning Process (XLP) is an interdisciplinary learning platform that employs a linked series of resources and methods which organize and support learners from various disciplines in the design and execution of guided, collaborative learning activities. It is aimed at learners with widely different backgrounds to encourage and train them to effectively work together in developing solutions to challenging problems that converge in reaching a common goal, such as developing a prototype product or a specific service.
XLP content is based on grade level (Table 2).

Table 2: XLP Content

Grade	XPL
7	Start Intro Course: finish the organization and adaptation of the team
8	Continue Intro Course: understand team roles; study computer language; commit to projects; gain familiarity with technologies such as 3D print and laser dissection.
9	Complete Intro Course: participate in competition to enhance innovation competencies
10 - 11	Participate in four Advanced Research labs: Computer, Geography Information, Robots lab, and Energy Systems.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Maker Space and the Extreme Learning Process (XLP) provide opportunities for students who have an interest in innovation and an ability to extend their academic reach beyond standard classes. The experience enables these students to improve their research capabilities, team work, and knowledge, and some students will have their own projects or products.

How are they being taught?

The Extreme Learning Process (XLP) creates a realistic social context by providing participants with a common coordination mechanism shared across all collective learning environments. The coordination

mechanism includes market exchange, conflict resolution, patent office, and media publishing channels. This coordination mechanism motivates participants to govern their collaborating and competing teams, to plan and coordinate the application of resources, and to demonstrate their individual creativity in a highly networked digital society.

XLP shifts the governance model of educational services from the model of centralized administration to distributed crowd participation. It is at once a "gamified" training ground for developing a range of professional skills, a crowd-learning operating system, and a large-group intervention.

Roles and Tasks

There are two XLP participant roles: challenge designer and challenge taker (also referred to as "mission executors"). There is no implied hierarchy between challenge takers and challenge designers. For instance, challenge takers can include executive MBA students who take up challenges that were set to them by high school students. Regularly, the challenge designer team also includes temporary "hackers-in-residence" who enrich the team with their expertise, be it artistic, cultural, physical, spiritual, technical, or other.

Before the intervention, the challenge designers set up the workflow (a set of behavioral protocols and sequenced activities). In effect, they design a micro-society that is built around the social forces of architecture, law, the market, and norms. The challenge designers develop the tasks (or "challenges") for the teams against the backdrop of a coherent story line which draws on real situations, addresses genuine needs, and is told with an authentic voice. During the intervention, the challenge designers constantly collect feedback in the form of operational data. To the extent that the feedback is analyzed and acted upon in real time, the challenge designers can modify aspects of the workflow during the intervention. Otherwise, the challenge designers refine the workflow afterwards to inform future interventions. Throughout the process, the challenge designers communicate with each other through a web-based project management and collaboration tool (e.g. Teambition).

The 4 stages

The challenge takers carry out the tasks defined in the workflow, typically moving through four stages that embody the global eco-rhythm of an XLP event, each stage constituting an essential step in a psychological journey. In the first stage, participants start off in a winning mood and experience early success to boost motivation and increase self-confidence. In stage two, nicknamed "fail early, fail safe," overly-high expectations cause team members to experience some frustration and realize that

they need to step up their learning and break across boundaries. Stage three emphasizes convergence as each team discovers that they have completed just a portion of the tasks and that it takes collaboration across teams to finish the job completely. Stage four is about demonstration: team members present their stories, deliverables, and outcomes based on the XLP experience and extended into a personal enterprise plan.

The 4 forces

The XLP workflow is defined as a set of formal protocols or eco-rhythms along the axes of four forces that enable, encourage, and constrain participants' behavior during the event. These forces are architecture, law, the market, and norms. Each force is represented by its own social transaction in XLP – respectively, the offering of new technology, suing, trading, and applying for patents. The force of architecture refers to the pre-given elements of the environment in the widest possible sense, including the spatial-material environment, the technological environment (including natural and artificial "languages"), and the organizational environment (e.g. interaction mechanisms). The force of law regulates how participants deal with any infringements they observe. In XLP, this force takes the shape of a court with procedures for arbitration and sanctioning violations of the rules of the game. A currency is introduced to make the force of the market more tangible, with specifications for the practices of buying and selling goods and services in the marketplace. Finally, the force of norms refers to explicit and implicit ways of instilling of what is good and bad in a particular XLP through the media or other communications. The dynamic interaction between the forces defines the given culture of a particular XLP.

How is impact being measured and developed? What is being measured?

Teachers record the students' performance on their team work through their problem-solving and innovation skills. Some students enter national competitions and gain medals and prizes.

How is the program/curriculum being funded?

The program and curriculum are funded primarily by the special fund for High School together with social organizations, such as the Lego Children's Fund.

What types of businesses are being started or scaled?

The principal goal of entrepreneurship education at the high school level is to enhance students' innovation abilities and knowledge. Some students have, however, developed products and solutions.

What is the extent of reach and scalability?

The Maker Space will bring all students new ideas and innovative ways to think and believe that "We have changed the world. We are changing the world. We will change the world!"

II- TSINGHUA X-LAB: A UNIVERSITY-BASED PLATFORM FOR CREATIVITY, INNOVATION AND ENTREPRENEURSHIP EDUCATION

Where is the program being taught and by whom?

Tsinghua University, established in 1911, has developed into a comprehensive research university with 19 schools and 55 departments. Several entities at the university support entrepreneurial activities, but they have traditionally operated independently with minimal coordination or resource integration. Tsinghua University School of Economics and Management (Tsinghua SEM) launched a strategy of "integration within the University," and, based on its exploration over the past ten years, SEM's Department of Innovation, Entrepreneurship, and Strategy developed the foundation for a new university-oriented platform, known as x-lab.

X-LAB IS DESIGNED TO FOSTER CREATIVITY, INNOVATION, AND ENTREPRENEURSHIP EDUCATION. THE LETTER "X" HAS THE DOUBLE MEANING OF "UNKNOWN" AND "CROSS-LINKING" AMONG MULTIPLE ACADEMIC DISCIPLINES, WHILE THE WORD "LAB" CONNOTES EXPERIENTIAL LEARNING AND TEAMWORK.

Launched in April 2013 and personally named by Dean QIAN Yingyi, x-lab is designed to foster creativity, innovation, and entrepreneurship education. The letter "x" has the double meaning of "unknown" and "cross-linking" among multiple academic disciplines, while the word "lab" connotes experiential learning and teamwork. Resources integrated by Tsinghua x-lab within the University include the Graduate School, the Department of Academic Affairs, the Career Centre, TusPark Business Incubator Co., Ltd., Fundamental Industry Training Centre, and the Youth League Committee. Government resources include Zhongguancun in Beijing and high-tech zones in Nanjing, Suzhou, Wuxi, and Changzhou. Corporate resources include Intel, IDEO, and Electricite De France. At present, x-lab has 16 Entrepreneurs-in-Residence (EIR) and 24 Angels-in-Residence (AIR), all of whom are active members of China's business community. Tsinghua x-lab has also established collaboration and partnerships with multiple foreign universities and educational programs, including MIT, Harvard, Stanford, Technical University of Munich in Germany, Singapore University of Technology and Design, Stanford Chinese Students' Entrepreneurial Organization, and MIT-China Innovation and Entrepreneurship Forum (MIT-CHIEF).

Who are the learners?

X-lab serves three types of university students:

- **Type A:** Imagination phase students with a strong interest in innovation and entrepreneurship who do not yet have a project. They represent the majority of the student body.
- **Type B:** Innovation phase students who have specific creative and/or innovative ideas but have not yet moved them into entrepreneurial projects.
- **Type C:** Implementation phase students, who have concrete entrepreneurial projects. Tsinghua x-lab helps them with team formation and project improvement and matches them with Entrepreneurs-in-Residence, Angels-in-Residence, and x-lab advisors.

What is being taught?

In contrast to many existing approaches that tend to be result-driven and focused on technical skills related to new venture creation (e.g.

writing business plans), Tsinghua x-lab focuses on the entrepreneurial process with an emphasis on fostering student imagination, creativity, entrepreneurial spirit, and ability. As such, Tsinghua x-lab does not evaluate its performance or accomplishments based on the number of business plans or new ventures created.

Tsinghua x-lab has designed customized academic curricula and experiential learning activities for the three types of students. It offers Type A students multiple entrepreneurship-related courses (e.g., Technical Innovation and Business Opportunity Identification), provides seminars and workshops on various topics (e.g., intellectual property rights), and organizes competitions in creativity and innovation. To help Type B students learn how to transform inventions into commercial ventures, x-lab offers courses on Innovation Method, Design Thinking, From Creativity to Commercialization (C2C), and activities such as Start-up Weekend, Intel China Summer Entrepreneurship Boot Camp, and Business Plan competitions. Finally, Tsinghua x-lab offers Type C students office space, connects them with various external resources and seed capital, builds founders' community (WeChat group for student entrepreneurs), and provides an array of other services.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

The core mission of x-lab can be summarized by three "I's": imagination, innovation, and implementation. Imagination seeks to discover and elevate the creativity of the entire student body, creating the foundation for Innovation and Implementation. As Dean QIAN Yingyi explained: "creating or incubating new ventures is not our goal; instead, we seek to educate and cultivate talents. We stress entrepreneurial ability and are not limited by entrepreneurship in the narrow sense."

Tsinghua x-lab encourages students of different academic backgrounds to explore new opportunities in their respective fields and to engage in interdisciplinary endeavors. It integrates various resources within and outside of the University to provide ways and means to actualize business and social value for members of the broadly defined community of Tsinghua University.

How are they being taught?

Tsinghua x-lab has four functional areas, learning, networking, activities, and incubation, around which it has built a database of more than 80

projects (including three projects by international students). X-lab classifies projects as either a "Pilot Program" or an "Accelerator Program" and provides them with tailored support and mentorship.

Through frequent in-depth discussions with project teams, x-lab is able to keep track of project progress and identify potential problems. Common problems include lack of entrepreneurial orientation and business knowledge in the areas of marketing, strategy, and operations. The "Pilot Program" is intended for projects that are in the creativity phase or possess superior technology. Through competitions and other activities, Tsinghua x-lab offers those projects a platform for demonstration and exposure, hoping to identify several dozen projects with potential for future incubation and training. Tsinghua x-lab is currently planning the "Tsinghua University President's Challenge for Innovation," to be held in the fall semester of 2015, a competition inspired by MIT's 100K Business Plan Competition and Harvard's i-lab model. Unlike traditional entrepreneurial competitions or business plan competitions, the judging criteria for the President's Challenge for Innovation is predominantly based on innovation, stressing the ideal of "innovation = invention + commercialization."

The "Accelerator Program" is intended for projects with ready technologies and products or even early operations. The first program was launched in September 2013, with a plan to spend three months to accelerate the growth of 13 selected projects.

Tsinghua x-lab has also changed the mode of creativity, innovation, and entrepreneurship education with an emphasis on experiential learning, open learning, and teamwork.

At Tsinghua x-lab, students are provided with opportunities to access and gain insight from entrepreneurial community leaders from inside and outside of Tsinghua University and to experience the rich entrepreneurial culture and atmosphere that inspires their own potential for creativity and innovation. Students are also exposed to a variety of industries and entrepreneurial stages of progress and receive professional advising from entrepreneurs, angels, and other professionals in residence in order to accelerate personal development and broaden their social networks.

How is impact being measured and developed? What is being measured?

The impact of Tsinghua x-lab is measured by several indexes including

- number of students participating: more than 8000,
- projects that emerged: more than 580 by the end of April, 2015, (60 percent initiated by students on campus, 40 percent projects initiated by students who have graduated),
- number of registered enterprises: 229 distributed across multiple cities in China,
- expanding employment: more than 5000, and
- innovation achievements: more than 20 invention patents and a Gold Medal at the International Invention Exhibition, Geneva, Switzerland.

How is the program /curriculum being funded and/supported?

To expand the resource base, Tsinghua x-lab has established partnerships with various domestic and foreign educational and social institutions as well as renowned corporations in the fields of innovation and entrepreneurship. Partners provide active support in the areas of Entrepreneurs-in-Residence, Angels-in-Residence, curriculum development, workshops, and seminars.

A faculty committee, chaired by Dean QIAN, oversees the x-Lab, which is managed by an executive director, a deputy executive director, and six other full-time staff. The official Tsinghua x-lab website was launched at the end of September (www.x-lab.tsinghua.edu.cn).

What types of businesses are being started or scaled?

The Accelerator Program is intended for products with ready technologies and products or even early operations.

What is the extent of reach and scalability?

The goals for expanding x-lab include:

• Within three years, provide students with more than 5,000 square meters of space for creative, innovative, and entrepreneurial activities.

• Within three years, engage ten to 20 percent of students across schools/departments annually (approximately 3,000 to 6,000 people) to participate in at least one experiential learning activity related to creativity, innovation, and entrepreneurship; encourage active participation by faculty and alumni (Type A students).

• Solicit more than 200 student teams each year to engage in innovative and entrepreneurial activities inside Tsinghua x-lab (Type B and Type C students).

• Within three to five years, become a higher education role model for cultivating creative, innovative, and entrepreneurial talents.

III- CHINA INSTITUTE OF ENTREPRENEURSHIP OF MUHUA INFORMATION TECHNOLOGY COMPANY (WWW.XUETANGX.COM): THE VANGUARD OF ON-LINE ENTREPRENEURSHIP EDUCATION

Where is the program being taught and by whom?

In March 2015, Muhua Information Technology Company launched a virtual college, China Institute of Entrepreneurship, through www.XueTangX.com, the largest MOOC (massive open online course) in China. Teachers of the China Institute of Entrepreneurship courses include entrepreneurship education experts, professors of related courses, practicing entrepreneurs with a solid track record, and experienced investors are also the members of the faculty.

Who are the learners?

People who are in the process of or preparing for starting a business.

What is being taught?

The online courses are divided into four Modules: Thinking, Skills, Function, and Field. The goals of these modules are to enable the learners to have open minds (Thinking), necessary tools for starting a business (Skills), management knowledge and skills (Function), and multiple abilities for discovering and solving problems (Field).

Why is entrepreneurship being taught to this group of learners and what are the learning outcomes?

In China, there is growing demand for entrepreneurship education, driven in part by government encouragement for people to start their own businesses. Many people, however, do not have access to educational resources. The online China Institute of Entrepreneurship was started in response to this demand, targeted at people who are seeking to start their own business. The intended learning outcome is the skills and knowledge to start and operate a business.

How are they being taught?

Currently, the China Institute of Entrepreneurship program offers courses online, but the Institute is planning to explore an O2O model to leverage the benefits of mixed online and offline learning and to connect students to an incubator facility.

How is impact being measured and developed? What is being measured?

The key measurements indexes are the number of registered students and their feedback on the quality of the program.

IN CHINA, THERE IS GROWING DEMAND FOR ENTREPRENEURSHIP EDUCATION, DRIVEN IN PART BY GOVERNMENT ENCOURAGEMENT FOR PEOPLE TO START THEIR OWN BUSINESSES.

How is the program/curriculum being funded?

The mother company of the Institute is Muhua Information Technology Company, which attracts venture capital to sustain its operations. Additionally, the company is exploring various models for making a profit from online education, such as registration fees and consulting, etc.

What types of businesses are being started or scaled?

Because the China Institute of Entrepreneurship was launched in March 2015, there is no data yet on the types of businesses that students are starting or scaling.

What is the extent of reach and scalability?

The Institute has put more than 20 courses online, including an imported course from MIT. The registered number of users has reached nearly 30,000 for one of the courses.

The Institute plans to develop more than 100 online courses, increase the diversification of the faculty, and attract more people to register. At the same time, it will cooperate with many national incubators offline to assist people in starting their own businesses.

#4

ENTREPRENEURSHIP EDUCATION IN FINLAND

#4 ENTREPRENEURSHIP EDUCATION IN FINLAND

Entrepreneurs are a must for the Finnish economy. For the past ten years, new jobs have predominately been created in companies with fewer than ten employees. However, as more than 45 percent of the entrepreneurs are over age 50, there is an urgent need to ensure that a growing number of young people consider entrepreneurship as a life path.

Apart from an increasing need for those interested in taking over existing businesses, emerging and fast-growing sectors such as healthtech and cleantech hold great potential for new entrepreneurs. With many industries going through rapid transformation due to digitalization and robotization, Finland must strive for a leading-edge position in new and emerging sectors.

Entrepreneurship education is considered a broad concept in Finland. The present form of Finnish entrepreneurship education dates back to the mid-1990s. In 1992, the National Board of Education appointed a committee to define the concept of entrepreneurship and propose and apply different development paradigms, based on their review of the situation. As a result, the Ministry of Education and Culture proposed a framework for blending entrepreneurship into all levels of the curriculum, from primary schools to university.

THE GOALS VARY FOR DIFFERENT LEVELS OF EDUCATION. IN GENERAL EDUCATION, THE EMPHASIS IS ON DEVELOPING A POSITIVE ATTITUDE, ACQUIRING BASIC KNOWLEDGE AND SKILLS RELATED TO ENTREPRENEURSHIP, AND LEARNING AN ENTREPRENEURIAL APPROACH TO TASKS AT HAND

The goals vary for different levels of education. In general education, the emphasis is on developing a positive attitude, acquiring basic knowledge and skills related to entrepreneurship, and learning an entrepreneurial approach to tasks at hand (Finnish National Board of Education, 2014). Beginning in 2016, the new general education curriculum increasingly emphasizes entrepreneurship and working life skills. Schools are encouraged to work with local companies and introduce projects where pupils learn about jobs and business.

After nine years of comprehensive education, students apply to either the general or vocational upper secondary track. While there are some general upper secondary schools with optional courses in entrepreneurship, in the vocational track all students gain skills and basic knowledge about entrepreneurship. In addition, vocational students develop entrepreneurial skills during on-the-job learning periods. Additional elective studies in entrepreneurship are also available, with many hands-on ways to complete the modules. One of the most popular and widespread is the Junior Achievement Young Enterprise program through which students set up a company for a year. Some training providers also offer a low threshold "learn and earn" option for part-time entrepreneurship through the school's cooperative.

Vocational adult education offers the possibility to study for a further qualification in entrepreneurship. This program, also popular among university graduates, is on average a one and a half year journey with regular coaching sessions, guidance, and business skills training.

Higher education has not typically been a pathway to entrepreneurship in Finland. However, universities have made increasing efforts to boost the number of graduates willing and able to consider entrepreneurship as a career. Hubs and incubators supporting startup communities and events like Slush[2] have made academic entrepreneurship more visible. The role of higher education is also of great importance in generating innovations for growth-oriented businesses.

I- ME & MY CITY

The Finnish national core curriculum includes a cross-curricular thematic entity called "participatory citizenship and entrepreneurship." Pupils must become familiar with the world of work and entrepreneurship and gain basic knowledge of the operation and the respective functions of the school community, the public sector, businesses, and of entrepreneurship as a profession. The Finnish Economic Information Office has been a forerunner in developing a hands-on program, Me & My City, to accomplish these goals.

Where is the program being taught and by whom?

Me & My City is a learning module comprising ten hours of classroom orientation and a day at a 500 square meter physical learning environment, the City, that simulates Finnish business life, enhanced with related municipal services. The concept was developed in 2009 by the Finnish Economic Information Office to offer a positive experience of working life, and there are now eight City locations around Finland offering the immersive learning experience.

Prior to spending a day at the City, pupils complete an orientation program taught by their own class teacher using the Me & My City material package, which includes a workbook and teacher's manual. During their day in the City, pupils are coached by Me & My City instructors who have a Masters degree in education and have been trained by the Finnish Economic Information Office and by the companies represented in the particular City location. In addition, the Cities offer students of local universities and vocational schools the opportunity to become involved as trainee instructors.

Who are the learners?

The learners are Finnish 6th grade pupils who complete the module together with their teachers.

What are they being taught?

The ten hour orientation themes include:

- Orientation to economics,
- What are private companies and public services,
- Being a part of working life and how to apply for a job,
- What is profit,
- Why do we need banks,
- Earning a salary,
- Why do we pay taxes, and
- Advertising.

The orientation lessons are integrated into the normal class curriculum, as the content has been designed based on the learning goals for the sixth grade. The topics and themes are typically covered in three subjects: Finnish as a mother tongue, civics, and mathematics.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Entrepreneurial thinking is an invaluable asset to the people of Finland, a country of 5.5 million with an aging population. In addition to those setting up new businesses, Finland needs out-of-the-box thinking leaders and employees to grow existing companies and to manage municipal services in a sustainable manner. Finland has strived to embed entrepreneurship into the curriculum at all levels of education in order to boost active citizenship and develop young people.

For pupils in the K through 9 stages, the overall goal is to provide a tangible approach to learning about citizenship and developing financial literacy skills, as well as building an understanding of how working life and society as a whole operate. Me & My City has, for the past five years, provided an immersive learning experience for a growing number of sixth graders. As a whole, the Me & My City module serves as a tangible foundation for entrepreneurial thinking. Pupils gain understanding about different careers, the knowledge and skills required for different positions within a company, and the importance of working as a team.

According to the feedback from the pupils, they learned to:

- Budget and plan spending,
- Work together with others in a polite and friendly manner,
- Solve problems and ask for help from peers, and
- Understand about work and how businesses operate.

How are they being taught?

Me & My City is based on action learning. As a part of the orientation process, pupils apply for jobs within the City, listing their top three choices, and they are assigned to work for companies, municipal functions, or to set up their own Me & My City company. During their day in the City, learners are given real life tasks to complete, are paid a salary for the day (City has its own currency), sell services, and face realistic

situations that a City Mayor or CEO would face.

The core of the City is built around 15 to 18 booths forming a town where pupils spend the day performing tasks related to the occupation they have been assigned. The companies they work for range from large international businesses, such as Samsung, to local small businesses. As in all Finnish cities, there is a Mayor responsible for municipal decisions.

As a learning environment, Me & My City reflects the way Finnish society functions, offering insight into how companies work, what it takes to become an entrepreneur, and the role of the public sector.

How is impact being measured and evaluated? What is being measured?

The overall goal is to give all Finnish sixth graders concrete experience with how the society functions and address issues such as:

- Why we pay taxes,
- What working life is all about,
- Why companies are needed, and
- What it takes to start and run a company including financing, leadership, and sales skills.

Feedback is gathered during and after the day from the pupils and teachers. 73 percent of the pupils evaluate their learning experience as nine or ten out of ten. If needed, the instructors, who constantly monitor the progress of the groups in the City, can make changes to the pedagogical script on the spot.

How is the program/curriculum being funded?

Typically, the set-up phase involves negotiations with one or more municipalities interested in hosting a City. After a general three-year agreement has been reached, companies are brought on board, each sponsoring a corporate package including brand items such as logos, office equipment, furniture, products, or service-related information, anything needed to make the experience as tangible as possible for the learners, including even a video message from the CEO. The budget to run a City is approximately 400,000 Euros per year.

What types of businesses are being started or scaled?

As this is an introductory program for sixth graders, no businesses are started.

What is the extent of reach and scalability?

In total, over 100,000 pupils and 5000 teachers have participated in Me & My City, and with the scheduled opening of new locations, 40,000 pupils will have the opportunity to complete the module in 2015 - 2016.

Me & My City received the European Enterprise Promotion award in 2013 and was among the 2014 WISE award winners. The concept is now in the early steps of going global. There is also an initiative, to be piloted in 2015-2016, to expand the program in a different format to reach ninth graders.

II- CASE TEAM ACADEMY, JYVÄSKYLÄ FINLAND

All Finnish universities are committed to supporting entrepreneurship. However, the forms and intensity vary greatly. While there are many emerging good practices in Finland in terms of academic entrepreneurship, Tiimiakatemia (Team Academy) stands apart with its immersive approach. In Team Academy, all students become team entrepreneurs on day one, running their own cooperative businesses and learning with real money and real customers throughout the three and a half year program.

Where is the program being taught and by whom?

Tiimiakatemia (Team Academy) is the Jyväskylä University of Applied Sciences Entrepreneurship Center of Excellence, located on a separate campus, designed to meet the needs of 180 team entrepreneurs. Established in 1993, Team Academy runs a hands-on three and a half year program, which leads to a Bachelors of Business Administration degree. The founder, Johannes Partanen, was nominated for Counselor of Education in 2010 for his groundbreaking work in entrepreneurship education.

Currently, there are five full-time coaches working with the 180 students in the program. Team Academy coaches have a business degree,

business-related work experience, and have completed the pedagogical studies required of all University of Applied Sciences teachers in Finland. World CSR Day recently chose the Head Coach, Ms. Ulla Luukas, as one of world's 50 most influential leaders.

Who are the learners?

The typical full-time student is 19 to 21 years old upon entry to the program. In addition, Team Academy runs part-time programs in entrepreneurship and management for adult learners.

THE TEAM ACADEMY PHILOSOPHY ESPOUSES THE IDEA THAT ENTREPRENEURSHIP CANNOT BE TAUGHT SOLELY AS THEORY BUT MUST ALWAYS BE CONNECTED WITH PRACTICAL AND INDIVIDUAL EXPERIENCE.

What are they being taught?

The Team Academy approach refers to the hands-on peer-learning method in which teams of ten to 20 students, formed during induction, operate throughout the program as independent cooperatives. Thus business is taught through running a business. The Team Academy philosophy espouses the idea that entrepreneurship cannot be taught solely as theory but must always be connected with practical and individual experience. The Team Academy model challenges the status quo of teaching and learning by stating that there are:

- No students but team entrepreneurs,
- No classrooms but an open plan office,
- No teaching but learning,
- No teachers but coaches,
- No simulations but real business, and
- No control but self-organizing.

Theory is blended into the program, through readings on leadership, marketing, creativity, and innovation, entrepreneurship and personal

growth. On average, each student will read between 60 and 80 business-related books during the program as well as write a thesis at the end.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

With unemployment of recent university graduates a growing problem, universities have had to become more creative with their approach to supporting startups. Team Academy has been a forerunner in not only teaching entrepreneurship but also using it as a method of learning: business through doing business. The approach also helps team members develop and fine-tune twenty-first century skills.

How are they being taught?

The Team Academy model is based on Nonaka & Takeuchi's knowledge-creating theory, which emphasizes getting experiences, sharing experiences with the others, finding potential new solutions, and testing those concepts in practice.

The Team Academy learning approach relies on both self-directed individual and team learning. First, students write a learning contract outlining the topics they want to learn. The plan is shared with the team and updated on a regular basis as students progress through the program. Questions covered in the contract are:

- Where have I been? (Learning history)
- Where am I now? (Current situation)
- Where am I going? (Future aspirations)
- How do I get to where I want to go? (Means of reaching the goals)
- How do I know I have reached my goals? (Indicators and how they are measured)

The student-run cooperatives sell their services to companies in the form of customer projects which function as the practical learning platform for increasing the competencies of students. In addition to instilling sales, marketing, finance, and other business-related skills, the projects and team dynamics provide multiple opportunities to learn

and demonstrate leadership and management skills.

The core of the program is delivered through obtaining and completing a chain of increasingly complex tasks within the cooperatives' customer projects. The first year projects are small, two to three team member tasks with earnings in the range of $1100 (USD). The more complex third year projects can result in over $450,000 (USD)contracts involving the entire team. Each project holds several elements of learning addressed in team training sessions, held weekly and typically lasting for four hours. Through dialogue and reflection, team members fine-tune the skills of linking theory to practice.

Team coaches ensure that dialogue goes sufficiently deep and that the topics are viewed and discussed from different angles. The knowledge creation process leads to practical experiments, implemented by the team entrepreneurs as services within the customer projects. The team entrepreneurs themselves are responsible for all sales activities. Marketing campaigns, customer events, and product promotions are typical examples of services being offered by the cooperatives. Students are motivated to learn the theory because they apply it immediately in projects for real customers.

How is impact being measured and evaluated? What is being measured?

Students maintain a learning diary and write reflection papers on the key learning outcomes, which they share with other team members. Students also regularly analyze and reflect on the learning process, their failures and success factors, both as an individual and as a team member and update their learning contracts accordingly. When a project is completed, each team member receives 360 degree feedback from teammates, coaches, and customers. These practices ensure effective peer-to-peer learning and build general twenty-first century skills.

Thirty-nine percent of Team Academy graduates continue as entrepreneurs immediately upon graduation, and, after two years, 47 percent have founded a company. Ninety-seven percent of graduates have a job upon graduation. The high success rate is due to fine-tuned team skills and the extensive networks students build, while working on a portfolio of customer projects during the three and a half year journey as team entrepreneurs.

How is the program/curriculum being funded?

The program is funded by the government at a rate of $13,500 (USD) per student annually. Additional funds can and have been obtained through national and international awards and development projects.

What types of businesses are being started or scaled?

As the students themselves run the cooperative-based team companies, business concepts become very real quite fast. During the first year, the cooperatives' turnover typically varies between $34,000 (USD) and $68,000 (USD), while during the third year the turnover can be as much as $450,000 (USD). The team entrepreneurs pay a modest rent for the premises but cover all expenses related to running their cooperative, which is a legal entity. Companies started during and after the program include such sectors as consulting, event organizing, retail, and advertising, in addition to various other digital and service sector businesses.

What is the extent of reach and scalability?

The high percentage of graduates choosing entrepreneurship has sparked both national and international interest. Team Academy has become a popular destination for national and international benchmarking visits, generating a spreading network of spin-offs. In Finland, there is a network of 30 vocational upper secondary and university of applied science campuses modeled after the Team Academy approach.

An international network of 16 centers includes Team Academies in Spain (Basque Country), the Netherlands, Hungary, the UK, France, Brazil, and Argentina. Although the main focus of the international spin-offs is team learning and entrepreneurship, implementation of the concept varies and is subject to cultural adaptation.

III- INNOOMNIA AND LEARNING GUILDS - ENTREPRENEURSHIP IN FINNISH VOCATIONAL EDUCATION AND TRAINING

Where is the program being taught and by whom?

In Finland, all vocational qualifications (VET) are required to have entrepreneurship embedded as a lifelong learning skill. InnoOmnia, a part of Omnia, the Joint Authority of Education in the Espoo Region, has been one of the forerunners in developing innovative approaches to VET entrepreneurship in Finland. Owned by three municipalities and located in Espoo, the second largest city in Finland and one of Finland's high technology cities, Omnia took the challenge of creating an environment supporting entrepreneurship in the service sector and artisan trades.

Established in 2011, InnoOmnia was the first initiative to mix students, teachers, and entrepreneurs in an open and collaborative learning community. With premises on the Omnia Kirkkokatu campus, InnoOmnia rents out both office space and multi-purpose creative space to entrepreneurs. Community members receive guidance and coaching from each other, teachers, and staff members with a business background. VET teachers must have either a Bachelors or Masters degree, a minimum of three years' work experience, and a pedagogical qualification.

Everyone joins the InnoOmnia community through an application process. Entrepreneurs are selected based on their need for peer and business support, as well as their ability to offer projects and on-the-job-learning opportunities for the upper secondary VET students.

Who are the learners?

As an open learning community within Omnia, InnoOmnia offers services and learning opportunities to individuals 16 to 60 years old. The artisan or service sector-oriented entrepreneurs are primarily individuals looking for premises and a supportive environment. They appreciate the community and diverse spaces available. Most of the upper secondary VET students come from the business and administration program, but projects and on-the-job learning opportunities are also open to students from other programs.

What are they being taught?

In Finland, all VET students have an individual learning plan with clear measurable goals, derived from the national level qualification requirements. Students complete learning outcomes-based compulsory, optional, and elective modules, as agreed in the learning plan.

All learning, formal, informal and non-formal, counts in the Finnish VET system. The InnoOmnia community offers Omnia students flexible opportunities to complete qualification modules through on-the-job learning or project work. Some will complete several modules in this manner over a period of three years, while others can choose to work on a project or sign up for ten weeks of on-the-job learning to complete a single module.

Apart from learning hands on about entrepreneurship, the upper secondary VET students learn about customer service, visual marketing and team skills, time management, planning, taking responsibility, and other essential work related skills.

The InnoOmnia community entrepreneurs vary in their needs and background. Some are professionals with many years of work experience prior to starting a business while others are fresh-out-of-school carpenters or tailors. InnoOmnia caters to the diverse needs of its members by arranging community events and business workshops.

The entrepreneurs can also sign up for the Further Qualification in Entrepreneurship offered by Omnia Adult Education. The part-time one and a half-year program has the following structure:

Table 3: Further Qualification in Entrepreneurship

Track 1 For starting entrepreneurs	**Track 2** For experienced entrepreneurs
Module 1: Planning phase Module 2: Starting your company	Module 1: Analyzing your business
One elective module from the following: Product and service design, human resources management, financing your business, franchising, sales and marketing, manufacturing, e-business	Two elective modules from the track 1 list or one elective and one module from another further or specialist level qualification.

The program is delivered through a series of workshops, typically two days per month plus online sessions, providing the entrepreneurs with practical tools to analyze and build their businesses.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

In Finland, VET education is not only about acquiring skills for work, it is also about learning skills and competencies needed to create jobs. More than a third of Finnish entrepreneurs have a VET background.

The process of growing into entrepreneurship, learning to embrace creativity, innovation, risk taking, and work attitudes, is a holistic journey, during which students learn much about themselves and grow as professionals. InnoOmnia and other similar initiatives are designed to support this process by challenging community members to step out of their comfort zones, share stories of success and failure, and seek synergy through new business opportunities.

How are they being taught?

Upper secondary VET students can learn hands-on through running a one year JA Company, a concept tailored especially for learning purposes. JA student companies are practice enterprises founded and formed by students and operated for one year. In 2014, over 4500 students were involved in 1500 JA companies all over Finland.

Some VET providers offer their students the possibility to join a school-based cooperative and use the facilities and equipment to manufacture goods or offer services on a small scale. Such arrangements that combine earning and learning (e.g., during vacation time), motivate students and accelerate studies, reducing drop-out rates and making VET more appealing to those interested in entrepreneurship as a career.

Omnia upper secondary VET students can choose to complete qualification modules by working for or together with InnoOmnia entrepreneurs, applying theory into practice in hands-on projects. There are also several real-life business environments within InnoOmnia offering opportunities for on-the-job learning, including:

- OmniaShop, which offers shelf space on campus and at pop-up locations for products made by students and entrepreneurs,

- Business & Art Omnia, an in-house agency designing and implementing media campaigns,
- Aurinkokivi Wellness center, offering spa and wellness services, and
- Restaurant Henricus, which offers lunches and catering services.

These learning and earning spaces offer the chance to gain work experience and promote one of the core principles of the community: everyone is a teacher and a learner in InnoOmnia.

How is impact being measured and evaluated? What is being measured?

In upper secondary VET, national key performance indicators include dropout rate, completion time, and employment rate after graduation. Prior to the opening of InnoOmnia, the business and administration program dropout rate was as high as 50 percent. The flexible, hands-on learning opportunities have since decreased the rate to close to zero percent.

The entrepreneurs applying into the InnoOmnia community state their goals prior to joining. Regular surveys and group and one-on-one meetings provide feedback from the entrepreneurs to ensure the community and events are serving their purpose, helping the businesses grow and prosper.

How is the program/curriculum being funded?

VET providers in Finland receive a lump sum from the budget of the Ministry of Education and Culture to offer training to a set number of students in the different qualification programs. VET education is free to students.

All innovative Finnish VET initiatives can apply for public and EU project funds. As a center for developing VET pedagogy and learning environments, InnoOmnia has received project funding annually. Community membership fees cover some of the costs of running the center. The initial budget for building the premises came from the City of Espoo.

What types of businesses are being started or scaled?

InnoOmnia specializes in supporting artisan and service sector small businesses. This means anything from jewelry makers and driving schools to mobile app developers and accountants; all share the same communal kitchen and are welcome.

What is the extent of reach and scalability?

In Finland, annually over 50 percent of 15-year-olds choose VET studies at the end of the ninth grade, benefiting from the embedded entrepreneurship elements in the curricula.

In the Espoo area, InnoOmnia has supported over 100 entrepreneurs in setting up sustainable businesses. Approximately 600 students have benefited from the community, over 800 teachers and school leaders have been trained in teaching entrepreneurship and educational technology, and over 2,700 visitors have had contact with the new pedagogical approaches.

Omnia has received the Ministry of Education and Culture quality award. The European Training Foundation, OECD, and InnoveEdu have recognized the InnoOmnia model as a good practice in entrepreneurship education. InnoOmnia has also been featured as a case in the 2012 WISE publication, Learning a Living.

#5

ENTREPRENEURSHIP EDUCATION IN QATAR

#5 ENTREPRENEURSHIP EDUCATION IN QATAR

Qatar is endowed by oil and gas, which makes it one of the wealthiest countries in the world. Although there is not an employment issue among Qatari citizens that drives entrepreneurial activity to exploit business opportunities, the Qatari government is eager to stimulate entrepreneurship as a tool to diversify the economy. The National Development Strategy 2011-2016 (NDS), which derived from the Qatar National Vision 2030, identified specific objectives to encourage SMEs and entrepreneurs. The government has introduced a number of measures to achieve those objectives, including the creation of a government agency to be in charge of stimulating entrepreneurial activities and modernizing business regulations.

In 2011, the government issued Amri decree No 17 of 2011 which established Enterprise Qatar as a government agency mandated to develop and stimulate SMEs and entrepreneurship. Additionally, there are a number of Non-Government Organizations which encourage SMEs and entrepreneurship. Such efforts have been integrated with the efforts of financial institutions which started to introduce new financial instruments to support SMEs. Qatar Development Bank (QDB) is the government financial institution which leads the efforts to facilitate financing SMEs and entrepreneurs, and it began to introduce new support programs targeted to this sector. In order to avoid overlapping of activities and improve efficiency, a cabinet decree was issued on 2014 merging Enterprise Qatar into QDB.

The government and non-government efforts to stimulate SMEs and entrepreneurship are not going to be successful without introducing specific educational programs to develop the skills of entrepreneurs and business owners in general. This issue has been recognized by a number of entrepreneurship and educational institutions, including universities in Qatar.

I- ENTREPRENEURSHIP EDUCATION BY INJAZ QATAR

INJAZ Qatar, established in 2007 as a non-government organization (NGO), is a member of Junior Achievement Worldwide (JA), the world's largest organization dedicated to educating students about workforce readiness, entrepreneurship, and financial literacy through experiential, hands-on programs. INJAZ aims to achieve the following objectives:

- To link youth with successful role models from the business sector
- To enhance young people's skills and their participation in the economy
- To introduce students to innovation, critical thinking, and new business concepts
- To give corporations an opportunity to shape their future work force

In order to achieve these objectives, INJAZ offers free training programs covering three areas: entrepreneurship, work readiness, and financial literacy.

Where is the program being taught and by whom?

INJAZ Qatar training programs are delivered at schools and universities by professionals selected and trained by INJAZ. These professionals are often senior officials (CEOs or CFOs) of large corporations in Qatar who dedicate time to share their business experiences with the younger generation. Business owners of SMEs also volunteer in the INJAZ program. The number of volunteers has grown from 23 in 2007 to 279 in 2014.

Who are the learners?

INJAZ Qatar provides entrepreneurship training to students ages 12 to 24 years (grade six to university), at 37 public and private schools and seven universities, including Qatar University, Stenden, and Georgetown University in Qatar. INJAZ Qatar works closely with the Supreme Education Council in Qatar to identify target institutions, which grew from a total of six in 2007 to 43 in 2014.

What are they being taught?

INJAZ Qatar offers more than 15 training programs covering interpersonal skills, financial management, entrepreneurship, work readiness, and career success, all of which are designed for different ages and academic levels. For example, a five session (one hour per session) training program for preparatory school students (junior high, ages 11 to 14) called "It's My Business" emphasizes entrepreneurship while providing a strong focus on identifying four entrepreneurial characteristics: ambition and self-confidence, willingness to take a leap of faith, ability to learn from mistakes, and trust in and respect for the team.

For secondary students (high school, ages 14 to 18), a program called "Be Entrepreneurial" challenges students, through interactive classroom activities, to start their own entrepreneurial ventures while still in high school. "Be Entrepreneurial" provides useful, practical content to help students transition into becoming productive, contributing members of society. By bringing these ideas to life, this program makes entrepreneurship appear to be a more attainable goal.

Another program, called Company Program, encourages students 14 to 24 years old to start a business. This program teaches entrepreneurship, work readiness, and financial literacy skills as students are provided with the unique opportunity to establish and run a real company. Company Program is delivered over 12 sessions, one hour per session, and culminates in a national and regional competition for the best company award.

Another approach to creating a new generation of entrepreneurs is a half-day training camp focused on innovation where students learn how to identify and analyze a business problem and develop a new mechanism or tool to solve it. Students work in groups, guided by volunteer professionals, who are willing to teach and transfer experience to the attendees, leading to more practical and marketable solutions.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Teaching entrepreneurship to school age and university students is important to create a new generation of entrepreneurs who are willing to take initiative and risks. Some of those students will be willing to create new ideas and develop their own businesses, which will contribute to diversifying the Qatar economy. One important learning

outcome, measured through pre- and post-program evaluation, is critical thinking, a key entrepreneurial skill.

How are they being taught?

Non-traditional teaching methodology is employed as the volunteer trainers are professionals who are willing to transfer knowledge and experience to the students. In this context, the methodology of the entrepreneurial program focuses on learning through exploring the lives of entrepreneurs and analyzing current examples of social entrepreneurs. During the program, students also identify businesses they can start, and they examine ways entrepreneurs use the four entrepreneurial characteristics to develop their business plans.

The learning approach for the Company Program focuses on enabling students to go through the entire life cycle of a start-up venture, including (1) creating a team, (2) developing a business idea, (3) identifying finance needs and sources of fund, (4) setting up a new business, and (5) producing new products or rendering new services.

How is impact being measured and evaluated? What is being measured?

In various programs, INJAZ Qatar conducts a pre- (before the start of the program) and post-evaluation test to measure critical thinking. In "Be Entrepreneurial," the score increased from 48 percent (pre) to 82 percent correct (post). Impact is also measured by the number of student companies started by the end of the academic year and the number of start-ups spun off.

How is the program/curriculum being funded?

A number of institutions, such as Vodafone Qatar, Qatar Petroleum, Qatar Commercial Bank, and Bedaya Center sponsor INJAZ events and activities, but the programs rely heavily on volunteers to work as trainers.

What types of businesses are being started or scaled?

INJAZ Qatar encourages students to develop their business ideas

in various business areas based on marketability of the product/service in local market and finance constraints.

What is the extent of reach and scalability?

INJAZ Qatar launched in 2007 and has expanded to 15 programs in 2014, which have trained approximately 19,000 students. Furthermore, the number of partners and volunteers has increased significantly, ensuring stability and continuity of INJAZ activities.

II- ENTREPRENEURSHIP EDUCATION IN QATAR UNIVERSITY

Where is entrepreneurship education being taught and by whom?

Qatar University (QU) is the national university of the State of Qatar and comprises eight colleges: (1) College of Sharia and Islamic Studies, (2) College of Art and Sciences, (3) College of Business and Economics, (4) College of Education, (5) College of Engineering, (6) College of Law, (7) College of Medicine, and (8) College of Pharmacy. The total student population is 20,000 students, 70 percent of whom are Qatari Nationals.

Entrepreneurship education is taught primarily in two colleges, the College of Engineering (CENG) and the College of Business and Economics (CBE), which offer both academic and non-academic programs. In September 2013, CBE established the Center for Entrepreneurship (CFE) in order to create an entrepreneurial culture, develop entrepreneurial skills, and incubate promising business ideas. The CFE provides training programs for QU students, faculty, and staff, and it also provides training programs to external individuals and institutions under specific circumstances. The College of Engineering sponsors a number of entrepreneurship and innovation contests for their students in collaboration with the Center for Entrepreneurship.

Who are the learners?

Entrepreneurship education at QU is being delivered to three groups:

- Undergraduate students at CBE and CENG. Undergraduates at CBE have the opportunity to choose an entrepreneurship track

as a minor specialization, an option launched in 2012-2013. Enrolment in the track has grown steadily (See Table 4. The downturn in the spring 2015 semester is attributed to the large increase in Fall 2014.)

Table 4: Number of CBE Students who enrolled in Entrepreneurship Minor Specialization

Number of Students Minoring in Entrepreneurship Registered in a Semester						
Semester	Fall 2012	Spring 2013	Fall 2013	Spring 2014	Fall 2014	**Grand Total**
No	13	22	24	36	79	**28**

• Graduate students. The CBE has two graduate programs, Masters of Business Administration (MBA) and Masters of Accounting. Additionally, a Masters of Marketing will be launched in Fall 2015. MBA students can specialize in entrepreneurship, a concentration started in the 2013-2014 academic year.

• Students from various QU colleges and outsider learners. This group includes attendees of various CFE training programs. In addition, CFE has a Business Incubator which provides one-to-one coaching for the most promising students and faculty members who want to set up or further develop their own businesses.

What is being taught?

The minor specialization in Entrepreneurship has two groups of required core courses, which are designed to develop the necessary skills to become entrepreneurs (Table 5).

Table 5: Core Courses of Minor Entrepreneurship Specialization

No	Course Name
1	Entrepreneurship & Small Business
2	Business Planning for Entrepreneurship
3	Building & Sustainable Success Entrepreneurship
4	Finance for Entrepreneurship Ventures

Students specializing in entrepreneurship also choose one of a number of elective courses which aim to develop other entrepreneurial skills (Table 6).

Table 6: A list of Elective Courses of Minor Entrepreneurship Specialization

No	Course Code	Course Name
1	ACCT331	Cost & Management Accounting
2	ACCT421	Accounting Information Systems
3	FINA402	Personal Finance
4	MAGT302	Human Recourse Management
4	MART401	Marketing Research

The College of Engineering offers two courses about entrepreneurship and innovation designed to develop the entrepreneurial skills of engineering students.

The Center for Entrepreneurship offers two types of training programs. The ERADA Training Program introduces basic information about entrepreneurship, and professional training programs cover a number of areas, such as marketing for entrepreneurship, financial management, and accounting for entrepreneurship.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Developing human resources is one mandate of QU, which includes creating a new generation of entrepreneurs who will contribute to government efforts to diversify Qatar's economy in accordance with the Qatar National Development Strategy 2011-2016. To achieve this objective, CBE established the minor specialization in entrepreneurship to encourage students to obtain both entrepreneurial skills and an academic degree in entrepreneurship.

Furthermore, the College of Business and Economics is eager to create an entrepreneurial culture and develop entrepreneurial skills which will facilitate the creation of a new generation of start-ups from within the QU community and will help company owners scale their businesses.

How are they being taught?

Undergraduate courses are taught as academic courses, using textbooks, local case studies, and group projects and are focused on achieving defined objectives and learning outcomes. Group projects engage students in the development of new businesses. In the Fall semester course, Business Planning for Entrepreneurship, groups learn the process of entrepreneurship by choosing an idea and starting to develop a business project. In the Spring semester, each group continues working on their project as a part of the Finance for Entrepreneurship Venture course. Over four core courses, students move through an in-depth process of developing a new ideas and transforming them into reality.

The CFE training programs are often delivered in a workshop style, employing an interactive learning approach that gives learners the opportunity to engage with the trainer and to assess their business ideas. Generally, the teaching methodology at CFE can be classified into three categories:

- Interactive workshops invite students to get involved in activities, games, and other creative experiential learning modalities. Examples include "innovate the pizza", "paper tower challenge", "role playing", etc.
- Contests, involving pitching to investors and forming real partnerships, enable students to face their fears of public speaking and learn much faster about team work and startups.

• Networking is another essential entrepreneurship skill. Students are encouraged to participate in various networking events, seminars, and panel discussions to learn from experts in the field and build their own networks.

How is impact being measured and developed? What is being measured?

The CBE employs a number of techniques to assess the effectiveness of its academic programs according to ACCSSB standards. The minor specialization in entrepreneurship is assessed by two criteria, the number of enrolled students in each semester (Table 4), and the number of graduated students (Table 7).

Table 7: Number of graduated Students with a minor specialization in Entrepreneurship

Number of students minoring in Entrepreneurship who graduated						
Semester	Spring 2013	Spring 2014	Summer 2014	Fall 2014	Spring 2015	**Grand Total**
No	3	3	4	8	10	**28**

The number of the graduated students is increasing but remains small compared to the total number enrolled students due to the time needed to complete the required credit hours in order to graduate.

Assessment of each academic course is based on achievement of learning objectives, determined in part by student and faculty feedback. Additionally, each year, a number of students in the entrepreneurship minor participate in internal and external entrepreneurship contests and have won such contests both in Qatar and internationally.

The CFE training program is assessed through pre- and post-program surveys to measure program quality and trainer skills. This approach has played an important role in improving the CFE training programs.

How is the program/curriculum being funded?

Entrepreneurship education programs at QU are funded through the QU budget, which is a part of the state budget and is funded by the government.

What types of businesses are being started or scaled?

Entrepreneurship students develop business ideas in various business sectors with a focus on service sectors, such as marketing, IT, and transportation. Engineering students attending training programs develop ideas primarily in computer software, new products and services.

What is the extent of reach and scalability?

The minor specialization in entrepreneurship started in Fall 2012 and has grown significantly as shown in Table 1. QU is planning to introduce a general course in entrepreneurship as a core course for all QU students. Activities of the CFE are expanding from year to year, and the Center's internal and external networks are growing.

III- ENTREPRENEURSHIP VOCATIONAL TRAINING BY QATAR DEVELOPMENT BANK

Qatar Development Bank (QDB) is the government agency in charge of supporting SMEs and stimulating entrepreneurship in Qatar. Among the services QDB provides are entrepreneurship education and training. Established as the Qatar Industrial Development Bank in 1997, QDB reflects the farsighted vision of H.H. Sheikh Hamad Bin Khalifa Al Thani, Emir of the State of Qatar, to diversify the Qatari economy by promoting private sector projects. QDB is mandated to be the primary enabler of Qatar's private sector and economic diversification by

- Direct financing of target sectors,
- Enabling access to finance from partners,
- Promoting and supporting exports,
- Actively enabling the creation of new knowledge-based industry verticals within Qatar, and
- Delivering housing development-related services and initiatives to citizens on behalf of the Qatari government.

Where is vocational training being taught and by whom?

QDB training programs are often out-sourced to external institutions, such as Qatar University or professional training agencies. Trainers include both academics and professionals.

Who are the learners?

As the primary government agency dedicated to training entrepreneurs, QDB delivers programs to three types of learners: potential entrepreneurs, entrepreneurs starting up new ventures, and business owners eager to scale their companies. There is no age limitation for attending QDB training programs, which are open to all Qatari citizens, regardless of age, who intend to start or grow a new business.

TO BUILD THE CAPACITIES OF ENTREPRENEURS, THE TRAINING PROGRAMS COVER A WIDE RANGE OF TOPICS, INCLUDING FINANCIAL PLANNING FOR ENTREPRENEURS, PREPARING FEASIBILITY STUDIES, SALES AND MARKETING, CUSTOMER SERVICES, PROJECT MANAGEMENT, AND IMPROVING INDUSTRIAL PRODUCTIVITY.

What are they being taught?

To build the capacities of entrepreneurs, the training programs cover a wide range of topics, including financial planning for entrepreneurs, preparing feasibility studies, sales and marketing, customer services, project management, and improving industrial productivity. Many programs are designed to serve specific categories of entrepreneurs. For example, there is an introductory training program for potential entrepreneurs that covers how to choose a business idea, the basics of project management, problem solving and decision making.

A training programs for retirees (Al Khutwa) features a one day workshop designed for three groups of businesses: trading and services,

manufacturing, and food and beverages. Using group work and a participatory approach, the workshop trains owners in how to manage and scale a business. This program is based on business cases that business owners raise during the training, which helps them find solutions to real problems.

QDB also delivers training programs designed for specific industries, such as manufacturing, health care services, and hotels and hospitality. As an example, the three-day manufacturers' program focuses on improving production, featuring topics such as measurement and improvement strategies, time and motion studies, capacity planning, total quality management, lean methods, and process mapping. The teaching methodology uses case studies, teamwork, and assignments that assess attendees' level of understanding.

THE OUTCOME OF THE PROGRAMS IS DEMONSTRATED THROUGH IMPROVED ENTREPRENEURIAL SKILLS AMONG QATARI YOUTH AND AN INCREASED NUMBER OF START-UPS AND EXPANSION OF EXISTING BUSINESSES.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Delivering a range of training programs designed to create a new generation of entrepreneurs and support expansion of existing businesses is an effective way for QDB to achieve its mandate to stimulate SMEs and entrepreneurship in Qatar. The outcome of the programs is demonstrated through improved entrepreneurial skills among Qatari youth and an increased number of start-ups and expansion of existing businesses. Additionally, there has been a significant increase in the demand for financial instruments that QDB developed for SMEs, such as the ALdamean project, which is a financial program for insuring the SMEs loans from other banks. In this program, when an entrepreneur approaches QDB for a loan, QDB conducts due diligence for the project, and, if the project is profitable and the loan less than QR 15 million (about $4.12 million USD), QDB refers the customer to a partner bank and insures 85 percent of the loan amount.

How are they being taught?

The QDB training programs focus on real situations through the use of case studies, solving real problems that attendees bring to class. This approach exposes attendees to real experiences and helps them learn how to make business decisions about real situations. For example, the finance training program enables attendees to determine a finance gap, identify a source of funds, and learn how to secure financing.

Every year, QDB runs a national contest for entrepreneurs, known as ALFIKRA, in which participants attend two training sessions to learn about business plans and financial planning. The contest aims to encourage entrepreneurs to compete and further develop their business ideas. The winners are eligible for cash and in-kind prizes, including specific QDB services such as participation in the QDB business incubation unit.

How is impact being measured and evaluated? What is being measured?

In some training programs, attendees are required to solve an assignment or resolve a case study as a tool to assess attainment of learning objectives. Additionally, at the end of each training program, attendees complete a survey to assess program content, their understanding of the material, and the trainer's teaching approach and skill.

Training programs are also evaluated on the number of attendees. For example, Improving Industrial Productivity, which is usually offered twice a year, had 25 business owners in August 2015.

How is the program/curriculum being funded?

The QDB training programs are funded by the government and are free to all attendees.

What types of businesses are being started or scaled?

QDB encourages entrepreneurial activities across a range of businesses, though it has started to focus on service sector industries such as health services and tourism. Furthermore, QDB is committed to support

entrepreneurial activities through different entrepreneurial paths, including developing entrepreneurial cultures, building skills, and supporting growth.

What is the extent of reach and scalability?

QDB has delivered more than 30 training programs to more than 400 participants. It started with a focus on SMEs and entrepreneurship, delivering services to various community groups. It then expanded its activities to include students, young people, and retirees. QDB has started to align its strategy with the National Development Strategy 2011 to 2016 in order to integrate its activities with other government activities, and it has created a number of subsidiaries to support its entrepreneurial activities. For example, in 2013, QDB founded Qatar Business Incubation Company (QBIC0), and it also founded Bedaya Center, whose main objectives include career development and supporting entrepreneurial actives. Through such initiatives, QDB is able to reach various categories of people in order to create a new generation of entrepreneurs.

#6

ENTREPRENEURSHIP EDUCATION IN THE UNITED STATES

#6 ENTREPRENEURSHIP EDUCATION IN THE UNITED STATES

Entrepreneurship is deeply-rooted in the history and culture of the United States, a nation founded, explored, and settled by risk-embracing people seeking new opportunities. It continues to have widespread appeal to the US population, as evidenced in a recent study indicating that more than 70 percent of Americans would prefer being an entrepreneur to working for someone else, attitudes confirmed by GEM reports (GEM, 2013). In 2009, The Economist declared the United States "a beacon of entrepreneurialism," and a study of 20 leading global economies found that the US was one of the most favorable entrepreneurial environments in the world (EY, 2013). This strength is based on multiple factors that create a supportive and robust ecosystem for entrepreneurs:

- **Culture:** In addition to an historic culture that celebrates the US as the "land of opportunity," the entrepreneurship culture offers an attractive model of the future of work.
- **Legal/regulatory context:** Patent, property, labor, and bankruptcy laws facilitate business formation and dynamic evolution.
- Immigration: Although immigration policy is seen as restrictive, aspiring entrepreneurs are eager to take advantage of the attractive and conducive ecosystems.
- **Financial markets:** Robust and innovative funding sources such as venture capital, angel investors, and emergent crowd-funding markets facilitate access to capital.
- **"Venturesome" consumers:** Consumers who are willing and eager to try new products and support local entrepreneurs.
- **Engaged academic institutions:** US universities play a critical and growing ecosystem role, fostering entrepreneurship through business incubators, venture funds, and rapidly expanding focus on teaching entrepreneurship.

In spite of these advantages, several factors in the US may constrain entrepreneurship including complex tax code with high corporate rates, potential for patent law abuse, lagging student performance in science and mathematics, and the high cost of a university education.

But the strong foundation for entrepreneurship endures, and the United States has witnessed a surge in interest in entrepreneurship over the past decades across academic institutions, foundations, and government policy makers, all of whom see entrepreneurship as a vehicle for economic development and job creation. Entrepreneurship has been one of the fastest growing subjects in undergraduate curricula as the number of university courses has expanded from 250 in 1985 to more than 5,000 today. The subject has also been gaining increased attention in secondary schools and even among younger students, through such programs as Lemonade Day®, a national curriculum through which K through 12 students learn and practice entrepreneurship by starting their own lemonade stand businesses. Numerous private and public institutions offer a variety of practical entrepreneurship programs for individuals who are starting their own businesses. The Kauffman Foundation allocates substantial resources to support entrepreneurship research and to sponsor events such as "Global Entrepreneurship Week," and the Goldman Sachs Foundation has pledged more than $500 million (USD) to provide entrepreneurship education to 10,000 entrepreneurs in the US. State governments have taken the lead in introducing policy initiatives to foster entrepreneurship, often through programs focused on regional economic opportunities, such as the Scale Up Milwaukee Project, a public/private partnership supporting small business growth that is now in its third year.

I- ENTREPRENEURIAL STUDIES AT HAWKEN SCHOOL

Where is entrepreneurship education being taught and by whom?

The Entrepreneurial Studies Program is taught at Hawken School, an independent, coeducational college preparatory day school serving 1,010 students (Pre-K to 12) in Northeast Ohio. The semester program is housed at The Sally & Bob Gries Center for Experiential and Service Learning, which serves as the School's urban extension campus in Cleveland's University Circle. The program was developed and has been taught by two faculty members who possess diverse and complementary skills and experience. Before joining Hawken, the program director, an engineer by training, taught high school mathematics for 14 years, following a 15 year career as a software entrepreneur. The assistant director has taught social studies and humanities at Hawken for 20 years and is also an instructional technologist and published author. A recently-hired new teacher brings eight

years of social entrepreneurship experience, including working with women in developing countries.

Who are the learners?

The honors-level semester course is offered to juniors and seniors (eleventh and twelfth grades) who apply to participate. The primary selection criterion is the student's desire to be in the course.

THE HAWKEN PROGRAM IS BASED ON A BROAD DEFINITION OF ENTREPRENEURSHIP: "TURNING IDEAS INTO SUCCESSFUL REALITIES," AND IT USES ENTREPRENEURSHIP PRIMARILY AS A VEHICLE THROUGH WHICH STUDENTS LEARN TWENTY-FIRST CENTURY SKILLS SUCH AS PROBLEM SOLVING, COMMUNICATION AND COLLABORATION, CRITICAL THINKING, AND SELF-UNDERSTANDING

What are they being taught?

Entrepreneurial Studies is an academic program in which students learn how to solve today's problems. The Hawken program is based on a broad definition of entrepreneurship: "turning ideas into successful realities," and it uses entrepreneurship primarily as a vehicle through which students learn twenty-first century skills such as problem solving, communication and collaboration, critical thinking, and self-understanding. As a byproduct, students also learn about the process and business/management skills required to create and launch a company. Knowledge is gained, both from classes and engagement in the entrepreneurial process, in such areas as market research, finance, statistics, industry knowledge, writing, and presenting. Students develop a deep understanding of methodologies such as the critical and often under-appreciated role of customer development in new venture creation. The course teaches students techniques for innovation, analytical approaches to research, and evidence based systems for decision-making. The course also integrates social responsibility, learning about the rest of world, and human-based "design thinking," in which students learn skills such as observing, interviewing, discovering problems,

and forming solutions using rapid prototyping. Students perform most of their work in teams, and there is a well-developed curriculum to build skills for collaboration and teamwork, such as identifying, understanding, and appreciating one's own and others' strengths, figuring out how to successfully employ them, and learning how to navigate conflict.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Addressing the fact that today's world requires a differently skilled workforce, Hawken wanted to create a special semester course for juniors and seniors in which students could acquire twenty-first century skills, competencies, and knowledge sets. Hawken considered several "themes" that might serve as vehicles for such learning and concluded that entrepreneurship was the best vehicle.

How are they being taught?

The ES program is an experiential, trans-disciplinary, immersion environment in which students learn by working on real problems in real business contexts. For the first two-thirds of the semester, student teams (four students per team, re-mixed for each project) work for several weeks each with three young companies on start-up venture challenges. The problems are real and urgent, and teams work under real deadlines, creating significant pressure to develop evidence-based solutions, which the teams present to the company CEOs. The nature of the problems (e.g., type of product, nature of challenge) increases in complexity from the first to third round challenge (Sidebar – Project Examples). Over the course of working on the three business challenges, students cover a breadth of learning terrain in both skills and concepts. The course is entirely "flipped," with assignments and individual learning done at night while class time is used for team work and problem-solving.During the first business challenge, teachers lead exercises that require students to "learn by doing" as they are introduced to foundational problem-solving, teaming, and presentation

Sidebar: Project Examples

1st Business Challenge: Rustbelt Reclamation uses reclaimed wood to produce custom furnishings for hotels and bars and wanted help figuring out how to expand into the consumer marketplace selling accessories.

3rd Business Challenge: Healthspot makes technically sophisticated kiosks in which people can have routine medical appointments with a doctor who can be located anywhere in the world. Each student team was given a different problem to solve, including how to use Healthspot: to improve healthcare for senior citizens, to improve healthcare in developing nations, to create new business models for general practice doctors, and to develop a business for routine medical care in the home.

techniques. Following completion of the first challenge, class time is increasingly dedicated to team-based problem-solving. Throughout, teachers answer student questions with questions, with a consistent emphasis on evidence-based solutions.

In the second phase, students create and develop their own businesses, which they present to a "shark tank" panel of local venture capitalists. The course incorporates the Lean LaunchPad (LLP) methodology, developed by serial-entrepreneur and academician Steve Blank, to guide the business creation process. Lean LaunchPad® uses scientific experimentation and iterative product releases to shorten product development cycles, measure progress and gain valuable customer feedback. Students track progress and manage the process with tools developed as part of the course's learning management system.

The structure of the program, putting the ideation and creation phase last, is based on the belief that often the role of market development in the venture startup process is underemphasized. Thus, students begin with in-depth real-time opportunities to test the validity of ideas, examining real marketplace issues around products, customer segmentation, channel selection, and pricing. First phase learning enables students to develop and present business concept ideas that are sophisticated, well-supported, and better grounded in practical market reality.

How is impact being measured and evaluated? What is being measured?

The program uses a portfolio-based assessment system to measure student performance in skills and knowledge acquisition. Progress and growth areas measured include, among others, market research, critical analysis, communications, collaboration, and problem-solving. The portfolio comprises work selected as best evidence of learning from what was completed throughout the semester, including thrice-weekly blog posts, research, reflections, book reports, videos, and presentations, all of which are housed in a learning management system developed for the program (built on the free Google suite). A program priority is to identify an established assessment tool that can be used to evaluate such competencies as critical thinking, quantitative analysis, problem solving, and communication on both a pre-and post-course basis in order to capture "the kind of growth that we are observing." Students themselves cited major lessons learned as often being about "their character, strengths and weaknesses and how they handled failure."

How is the program/curriculum being funded?

Funding for the ESP originated within the school operating budget, but the program is now primarily funded through the Miller Institute for Entrepreneurial Studies, established by a large gift from a family with close ties to the school. Hawken is seeking additional funding to support its ambitions to expand the program and the sharing of the curriculum through its Educators Program, including workshops (see below), consultations, visits, and curricular resources.

What types of businesses are being started or scaled?

Students' business ideas range from a health drink company that uses "ugly" fruit that would otherwise be wasted to a web-based business that brings gamers, hosts, and venues together to create local video game events.

What is the extent of reach and scalability?

The program completed its third year and fourth semester course in Spring 2015, reaching 96 high school students. The school held a week-long course for middle school students (grades five to eight) in 2013 and 2014. In response to strong interest from other schools, in 2014 Hawken developed a teacher training workshop for the program, which it has delivered three times to a total of 90 educators, whose teaching spans from second grade to college. Hawken has additionally helped dozens of other schools/educators develop new programs through consultations and visits. Hawken has developed a systematized process for delivery of their curriculum and is currently exploring ways to "take the packaging and sharing [of the program] to the next level."

II- FOUNDATIONS OF MANAGEMENT AND ENTREPRENEURSHIP AT BABSON (FME)

Where is FME being taught and by whom?

FME is delivered at Babson College. The year-long course is coordinated, managed, and taught by a team of faculty with core expertise in entrepreneurship, management, marketing, accounting, finance, and organizational behavior.

Who are the learners?

FME is a required course for all Babson freshmen, typically about 500 students per year, who are divided into 13 sections, each led by two faculty members from different management disciplines and two undergraduate mentors.

What are they being taught?

FME is a two-semester, experiential immersion into the world of entrepreneurship in which student teams conceive, launch, manage, and harvest a business. The program has three phases, Explore, Pursue, Launch & Grow, which track the process of starting and running an enterprise (Figure 2). FME was significantly redesigned in 2014, replacing the original emphasis on IT with a strong focus on Organizational Behavior (OB), in response to the recognition that social capital was increasing seen as a key ingredient of entrepreneurial success. As shown in Figure 2, entrepreneurship and OB content are linked throughout the program, as students explore critical aspects of self-discovery, such as working style, passions, leadership, and collaboration, in the context of creating and launching a business.

• **Phase 1** Explore: In teams of ten, students focus on idea generation, creativity, and exploring personal values and interests, leadership style, and social identity. They generate two to three business ideas per team, using effectuation concepts/tools and gauging the potential to create economic and social value. Following delivery of a rocket pitch for each idea, teams determine the readiness and potential of ideas to move to the next phase.

• **Phase 2** Pursue: To understand the feasibility of the business opportunity, teams assess market potential, develop pro-forma financial projections, and conduct a corporate social responsibility assessment for the supply chain. At the end of Phase 2, students winnow the number of businesses to two to four per section by voting.

• **Phase 3** Launch & Grow: Students learn and practice the fundamentals of business management including operations, financial controls, marketing communications, etc. They learn to build capabilities as a team, leveraging diversity, exercising positive influence, managing conflict, and dealing with ethical challenges. Final "legacy" presentations offer an opportunity to reflect on lessons learned in relation to business, careers, and one's self.

Deeply embedded in FME is Babson's unique methodology, Entrepreneurial Thought and Action® (ET&A®), through which students learn to use creative and predictive logic to resolve venture creation challenges. A core facet of ET&A is iterative market experimentation, using creative action to test new ideas where existing data does not provide sufficient direction.

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

Entrepreneurship is central to Babson's educational mission. FME is designed to inculcate all freshmen into the world of entrepreneurship and provides a context for the following years of learning. Students gain a foundational experience on which to apply newly acquired theories, practices, methods, and models. Five specific learning objectives are:

- Experience the nature of business as an integrated enterprise,
- Practice entrepreneurial thought and action,
- Identify, develop, and assess entrepreneurial opportunities that create social and economic value,
- Analyze local and global context as it relates to entrepreneurial opportunities, and
- Explore the self, teams, and organizations in relation to entrepreneurial leadership.

How are they being taught?

The guiding philosophy of FME is "learning by doing," building on founder Roger Babson's belief that experience is the best teacher and that curriculum should be based on "a combination of both class work and actual business training." Students are encouraged to adopt an "Action, Reflection, Application" (Do, Learn, Apply) approach in which mistakes and failure are viewed as opportunities to learn when they are used to inform future decisions and actions. FME proposes a "humble" approach to the venture creation process, encouraging students to start with their passions and what and who they know and explore opportunities through iterative experimentation rather than try to forecast the future and create a grand vision for a large enterprise. Class session topics align with the activities students are conducting in the three FME phases, offering theory, practices, and tools (e.g., ideation,

market research, and leadership) on a just-in-time basis. Faculty play a "lead from behind" role in FME: coaching, asking penetrating questions, and allowing students to make their own mistakes.

How is impact being measured and evaluated? What is being measured?

Student performance is evaluated against the learning objectives according to the rubric shown in Table 8.

Table 8: FME Student Evaluation Rubric

- Class Participation (20%)
- Mid-Term Exam (20%)
- Final Exam (30%)
- Business Project (30%), comprising the following components
  - 15% - Rocket Pitch (team grade)
  - 25% - Feasibility (team grade)
  - 45% - Launch Plan (team grade)
  - 15% - Individual (faculty, peer & mentor evaluations)

Additionally, program faculty are exploring assessment techniques to measure changes in behavior and attitude. A survey, conducted in 2013/2014, demonstrated that students had significantly improved their use of both the creation and prediction logics, and a new survey to be conducted in 2015 and 2016 will assess the relationship between FME and entrepreneurial intention on a pre- and post-program basis.

How is the program/curriculum/course being funded?

FME is an integral part of the undergraduate curriculum and is therefore supported by the operating budget, which is funded by student tuition and endowment income. As important as funding is the support received from multiple college offices and departments, including Academic Services, the Bernon Center for Public Service, the Office of Campus Life, Financial Affairs & Purchasing, IT, the Alumni Office, the Media Lab, College Marketing, College Attorneys, and Human Resources.

What types of businesses are being started or scaled?

Since inception, FME businesses have evolved from selling cookies on campus to negotiating contracts with suppliers in China. Average revenue and profit for FME businesses are $5,500 (USD) and $2,000 respectively; however, businesses have earned as much as $30,500 in revenue and $18,000 in profit in a 12 week period. The portfolio of FME businesses has never had a losing year. Most importantly, the FME businesses are able to make a significant impact on their local communities. Each year, FME students provide more than 2,500 hours of service to charitable organizations.

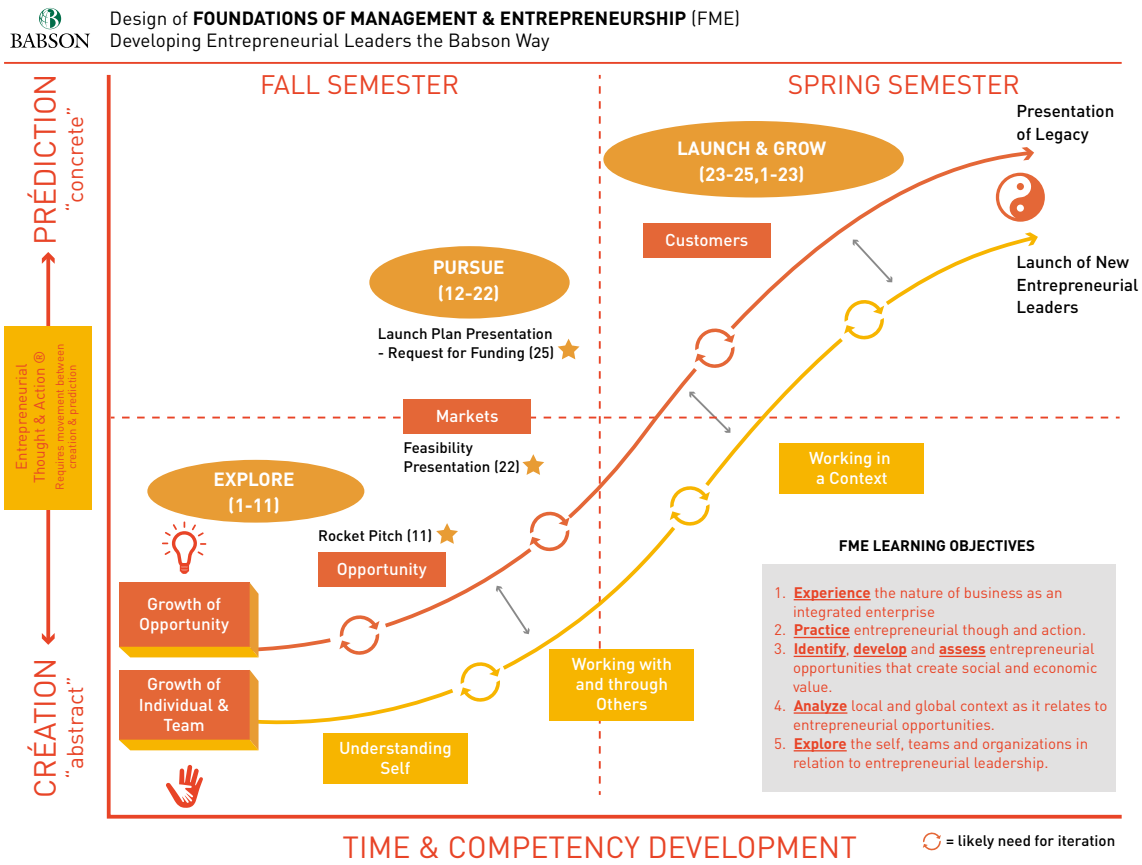
What is the extent of reach and scalability?

More than 7,500 Babson freshmen have experienced FME since its launch in 1996. The college receives numerous inquiries about the program and regularly hosts groups of interested educators from around the world, with whom it shares the FME curriculum and methodology. As with many experiential programs, FME requires substantial resources, but it is possible even for an individual instructor to capture major elements of the spirit of the program in a streamlined fashion with minimal additional resources.

III- GOLDMAN SACHS 10,000 SMALL BUSINESSES

In 2009, Goldman Sachs, a global financial services firm, launched 10,000 Small Businesses, a $500 million (USD) initiative for an integrated approach to providing a practical entrepreneurship education, business support services, and access to capital to 10,000 small businesses in the United States. The program is administered by the Goldman Sachs Foundation and involves multiple partners to manage its components. Babson College is the education partner and has been responsible for curriculum design, development, and training for delivery at each site, measurement and evaluation, and alumni program development. The Initiative for a Competitive Inner City (ICIC) is the recruiting partner.

Figure 2: FME Program Design



Where is the program being taught and by whom?

10KSB is delivered primarily through community colleges, public institutions providing open enrollment for post-secondary education, including workforce and skills development. Each selected site receives a grant from the Goldman Sachs Foundation to support a dedicated program delivery team, each trained by Babson.

While allowing for some local variation to suit college schedules and regional cultural norms, typically the program is based on cohorts of up to 40 business owners meeting for a full-day module every other week for approximately four months.

Who are the learners?

Participants in the 10KSB program (known as "Scholars") are the owners of businesses that have been in operation for at least two years, have revenues of at least $150,000 (USD) and employ at least four people.

Additionally, successful applicants need to demonstrate that they do want to grow their business. Of note, the owners in the program are extremely diverse. Almost half are women (46 percent), they have a median age of 46 (ranging from 22 to 75,) and educational levels range from less than high school to multiple graduate and doctoral degrees.

What are they being taught?

The curriculum focuses on the growth of entrepreneurial firms and is based on the principle of "Invisible theory: practically actionable immediately," meaning that theory drove the selection of content matter and the method of delivery and practice for every exercise but is never used as a lecture topic. The program uses a business growth plan, designed as more tactical, timely, and personal than a traditional business plan, as a unifying thread to connect and integrate business topics and to guide the business owners in applying them to their own growth (Table 9). Scholars work on their growth plans over the course of the program, integrating classroom learning and input from their Business Advisors (described below).

Table 9: GS10KSB Curriculum

Mod #	Module Title	Examples of Tools and Exercises
1A & 1B	You and Your Business	Resource Map Risk Profile
2	Growth and Opportunities	Opportunity Generation and Evaluation
3	Money and Metrics	Financial Management Growth Plan
4	You Are the Leader	Your Leadership Style
5	It's the People	Vision Plan
6	Marketing and Selling	Customer Value Proposition
7	Operations and Processes	Process Map Organizational Audit
8	Being Fundable	Financial Projections Break even Analysis
9A & 9B	Action for Growth	Pitch Delivery

Why is entrepreneurship being taught to this group of learners? What are the learning outcomes?

This program is focused on small business owners because of the demonstrated connection between their entrepreneurial success and economic development. The program is an intervention for business owners to learn how to grow and scale successfully and thereby create jobs, and as such, it is tightly aligned with Goldman Sachs' historic mission and philanthropic efforts to support entrepreneurs.

How are they being taught?

10KSB emphasizes participant "learning" rather than faculty "teaching." Through action-learning exercises working directly on their own businesses and peer-to-peer engagement, scholars leverage their experience and knowledge to gain substantial value from program material. The role of faculty is to facilitate the exploration and practice of business topics, not to serve as experts presenting abstract concepts and models. As such, faculty members need to have deep domain knowledge, but, just as importantly, they need to be skilled facilitators and have practical connections to the small business community. Training faculty in this style of teaching is a critical element of the program. Babson conducts an annual training event comprising two sessions of two days each, a month apart. In the first session, the Babson team introduces new faculty to the entire curriculum and models the facilitative teaching approach, followed by intensive one-on-one sessions. During the interim month, faculty study their modules and Skype with their Babson coaches, preparatory to the second session, in which they conduct a "teach-back," delivering their section of the curriculum to their Babson coaches and the rest of the program faculty. In addition, Babson faculty members co-teach 40 percent of the first cohort at a new site.

Peer-to-peer learning is purposely built into the curriculum, supported by the use of Growth Groups, groups of six scholars, placed together to form diverse teams from different industries, companies of different size and age, and socio-demographic mix. Business Advisors (BA), practitioners selected from the community and trained by Babson faculty, work directly with scholars to help them transfer content from the program into immediate operational action. By filling the "implementation gap," the BA role has emerged as a critical element in the success of the program.

How is impact being measured and evaluated? What is being measured?

Measurement and evaluation has been deeply embedded into 10KSB with a focus on pedagogic effectiveness, personal growth, and business impact. Specifically, assessment seeks to measure:

- Module value and instructor effectiveness,
- Change in scholars' entrepreneurial mindset and behaviors, including aspirational and confidence levels, and
- Job creation and revenue growth.

Scholars are required to complete a baseline self-assessment at program start, with follow-up assessments at six, 18, and 30 months. Scholars also complete surveys at the end of every class that allow them to rate the effectiveness of the material and instructor. Scholars' growth plans and final presentations provide ad hoc indicators of learning progress.

Data collected to date show that at six months 66.8 percent of the participants report growing revenues and 46.2 percent report growing jobs. At 18 months, 87.0 percent report growing revenues and 57.1 percent report creating new jobs. This compares to rates of 45 percent for revenues and 22 percent for jobs in the general U.S. economy.

How is the program/curriculum being funded?

GS10KSB is funded entirely by the Goldman Sachs Foundation (GSF), which also provides operational support through GSF program officers, each of whom manages multiple sites.

What types of businesses are being started or scaled?

GS10KSB is a growth program, as distinct from start-up or turn-around programs. The businesses owned by the scholars cover a broad industrial range, with no industry other than Professional Services representing more than 10 percent. The median age of the businesses is 11 years, with a range of two to 103 years.

What is the extent of reach and scalability?

Launched in 2010, by the summer of 2015, 10KSB had served over 5,000 small business owners in the United States and the United Kingdom. The United States now has 13 delivery sites, 12 of them at community colleges and one national blended version that combines online learning with face-to-face sessions at Babson College in order to reach anyone in the U.S. outside the range of the 12 physical sites. The goal is to reach the 10,000 business owners, while also enhancing the ability of the participating community colleges to teach entrepreneurship and to strengthen each of the entrepreneurial ecosystems in which the programs are located.

#7

THEMES AND IMPLICATIONS FOR PRACTICE AND POLICY

#7 THEMES AND IMPLICATIONS FOR PRACTICE AND POLICY

The analysis of 12 cases across China, Finland, Qatar, and the United States highlights best practices and, perhaps more importantly, provides implications for practice, policy, and research to advance the state of entrepreneurship education around the globe. Findings are organized according to the core questions embedded in the research framework. The cases yielded many interconnected themes, evidence that entrepreneurship education is complex and requires multiple stakeholders to create and collaborate on policies to develop and support entrepreneurship education at all levels.

Following a discussion of findings and implications across the framework questions, we conclude with specific recommendations for policy, practice, and research.

Where is entrepreneurship education being taught and by whom?

• **Place matters**: A common theme across all countries and learner levels was the use of space designed to promote "entrepreneurial thinking and activity," by fostering creativity and collaboration, enabling simulation, and/or encouraging real world interaction. This "entrepreneurial locus" may be especially important in K through12, where learning environments tend to be dominated by conventional classroom arrangements, which then tend to reinforce a "teacher-dominated" pedagogy. The Hawken School (US) houses its program (grades 11 & 12) in its "Experiential and Service Learning Center," the School's urban extension campus, a location that is separate from its main site and that allows students easy access to city neighborhoods and businesses where they can engage with customers in practical

market development. Multiple programs, such as the x-lab (China) and Maker Innovation Center (China) offer "innovation spaces," outfitted with equipment that enables students to collaborate on real-time prototyping, model making, and small-scale creative and manufacturing projects. In Finland, model "Cities" (Me & My City) simulate a social and business environment where sixth graders spend a day in the role of a worker, executive, or civic leader, and InnoOmnia blends working and learning in office and multi-purpose creative spaces rented out to entrepreneurs. Traditional classroom space is still in use and does have a programmatic role in education that focuses initially on awareness of entrepreneurship or to prepare students for activity in the "engagement spaces." At all levels, however, the physicality of entrepreneurs coming together in real, live spaces is perhaps paradoxical in a world that is becoming more and more dominated by online, social connections.

→ Policy and practice implications: As with many aspects of entrepreneurship education, dedicated space, especially if outfitted for physical prototyping, can be resource-intensive. Simple re-arrangement of conventional classrooms can, however, be an easy way to foster team-work and collaboration, reduce focus on the teacher as "all-knowing provider of knowledge," and thus enhance the learner-centered environment conducive to creativity and innovation. Intentionally creating places for entrepreneurs to meet, collide, and create together cannot be overlooked. The energy and culture emanating from such spaces is an essential community building component. Notably, the idea of co-work and creation spaces is relevant for all types of businesses, not just those focused on the development of technology.

- **Multi-faceted faculty**: A consistent theme across many case studies was the importance of faculty who possess a combination of academic qualification and work experience, reflecting the interplay of theory and practice that guides most effective entrepreneurship education programs. In some cases, both qualifications reside in an individual, and, in others, they are provided by a combination of (primarily) academic faculty together with practitioners who serve such roles as "entrepreneurs-in-residence." Practicing entrepreneurs not only bring the value of their real-world experience into the classroom, they also serve as important role models, inspiring students by their example to pursue entrepreneurial endeavors. Many programs (INJAZ Qatar, Hawken, InnoOmnia and x-lab) engage entrepreneurs explicitly for this purpose. It is important that such role models represent multiple types of entrepreneurs across the business

and social entrepreneurship spectrum.

Because best practices demonstrate the effectiveness of "learner-centered" entrepreneurship education, faculty often function best as guides and coaches who facilitate learning, rather than as "instructors" who present information. Faculty in many school and university systems lack sufficient skill and practice in this type of facilitation, and thus teacher training for entrepreneurship education takes on added importance. Faculty (individually or collectively) need to understand theory, have practical experience, and be able to combine those in a facilitated learning environment that encourages experimentation and creativity. Many of the vocational programs (e.g., InnoOmnia, Goldman-Sachs) are illustrative of how entrepreneurship should be taught.

→ Policy and practice implications: Entrepreneurship education is dependent on teachers, and, if teachers lack experience and confidence in their ability to teach actionable entrepreneurship, even the well-funded and good-intentioned programs will quickly become irrelevant. It is critical to develop effective training programs for faculty, especially those who are working in educational systems that feature conventional classroom instruction. Effectively teaching and learning entrepreneurship requires a less traditional approach. While many faculty are willing to experiment and teach in more entrepreneurial ways, this often conflicts with the norms of academic institutions and what constitutes quality instruction. A related challenge is how faculty training can be delivered in a way that is efficient and ongoing. There are opportunities for new ways of training and updating the skills and competencies of faculty so that they can teach in different settings, on different platforms, and to different audiences.

Who are the learners?

Learners ranged in age from sixth graders learning about working life to retirees seeking to start or grow a business. Although most programs focus on venture creation as the learning motif, many view entrepreneurship as a vehicle through which students achieve personal and collective growth and maturity. As such, they are not designed or intended solely, or even primarily, for business students. Entrepreneurship in many of these settings is being taught as a life skill to a cross-section of learners. Many programs recognize the need to provide and tailor entrepreneurship education to a variety of learners who bring differing aspirations and objectives to the classroom.

As examples, the Tsinghua x-lab "encourages students of different academic backgrounds to explore new opportunities in their respective fields." At Qatar University, entrepreneurship courses are intended for students from various QU colleges in addition to those explicitly pursing an entrepreneurship minor concentration or an MBA. In some cases, such as Me and My City (Finland) and Babson FME (US), entrepreneurship is required of all students at a certain grade level. Most programs, however, are voluntary and learners opt-in.

→ Policy and practice implications: The idea of voluntary entrepreneurship education should be questioned. What if entrepreneurship was compulsory as are reading, math, and science? It's an interesting question to consider if we are trying to use entrepreneurship to build more entrepreneurial societies and create economic futures for generations to come. Approaching entrepreneurship as a life skill supports compulsory entrepreneurship education at the primary and secondary levels. Given the arc of early childhood development, waiting until post-secondary education and beyond may be too late (and definitely more difficult) to inculcate an entrepreneurial mindset that is the precursor to entrepreneurial action.

An additional area to be considered goes beyond the educational backgrounds of the audience and relates to the demographics of the entrepreneurial students. Gender is just one example. Many programs exist around the world to advance women entrepreneurs and their businesses. The policy and practice questions are whether these programs are uniquely designed for women, or is the only difference that the entire class is made up of women? For one example, the Goldman Sachs 10,000 Women curriculum is built on a model that integrates entrepreneurship education with gender theory to provide the most relevant and actionable curriculum possible.

CURRICULA IN THE CASE STUDIES VARY VERY SIGNIFICANTLY ACCORDING TO TARGET AUDIENCE NEEDS AND PROGRAM OBJECTIVES.

What are they being taught?

Curricula in the case studies vary significantly according to target audience needs and program objectives. It is clear that one size

does not fit all, and entrepreneurship education cannot and should not be a global recipe-driven discipline. Given the differences in motivation and audience, we should celebrate differences and not expect a common curriculum core. For some, the role of entrepreneurship education is to foster entrepreneurial activity, economic development, and job creation, outcomes which actually do depend on a fairly universally acknowledged set of business start-up and growth activities. Other programs exist to give learners a realistic view of what entrepreneurship is so they are better able to make informed career path choices (Babson FME). Still others are used to teach citizenship and life skills (Me & My City, INJAZ Qatar). Furthermore, different types of learners require varied content, different levels of rigor, and different approaches. Even within the differences, however, common elements occur.

- **Curricula Definition and Creation:** In many countries, government agencies play an important role in defining or helping to shape entrepreneurship education philosophy and content. In Finland, the National Board of Education and the Ministry of Education were involved in first defining the concept and then proposing a framework for integrating entrepreneurship education into all education levels. In China, the Ministry of Education established pilot programs to test education approaches and introduced specific curricula (Know About Business) at the university level. In Qatar, support for entrepreneurship and SMEs is part of the National

  Development Strategy 2011-2016, with government assistance overseen by an economic rather than an education organization. In the US, oversight of education is decentralized to the state and local municipal levels, and there is no articulated national entrepreneurship education vision promulgated by the federal government. Content is established by public school systems or by individual schools (Hawken and Babson) or programs (10KSB).

- **Business Plan:** The role of the Business Plan, the traditional stalwart of entrepreneurship education, varies greatly. It remains a core element in some programs (QDB), though often less as an academic exercise than as a template for guiding the process of moving through the start-up life-cycle. 10KSB uses a variation, a Growth Plan, as such a model. Many programs (e.g., Team Academy, Babson FME) have moved away from a focus on the "planning" concepts inherent in a Business Plan in favor of an approach that emphasizes experimentation, information, modification and iteration to move entrepreneurs through the venture creation and operation process.

• **Start-up life cycle:** Many programs "teach" the venture life-cycle, either as an academic exercise to familiarize students with the entrepreneurial process (Business Planning for Entrepreneurship at Qatar University) or as a hands-on methodology for gaining actual start-up experience (Babson FME, which runs from ideation through harvest/exit.)

• **Ideation/Innovation:** Some programs focus primarily on the ideation phase of the entrepreneurial process, often in conjunction with a focus on innovation. Students develop an idea and may carry it through to a prototype stage (along with some basic market assumptions and financial projections) in order to present a rocket pitch to potential investors (Hawken, INJAZ Company Program).

• **Theory and Practice:** The importance of and link between theory and practice is explicitly stated in several of the cases (10KSB and Team Academy), and it is clearly followed in others (Hawken and InnoOmnia). The connection of theory and practice is necessary to ensure that we don't lose the education in entrepreneurship education, which is the ability to test and practice theory and to think critically about its relevance and merit in entrepreneurial activities. Theory guides learners in a very ambiguous and uncertain discipline and helps inform students and give them direction for action.

• **Entrepreneurial Ability/Mindset and Twenty-first Century Skills:** In addition to venture creation skills, entrepreneurship education is viewed across multiple programs as a vehicle to instill a set of skills and attitudes often called "twenty-first century skills" or "life skills" that typically include creativity, communication and collaboration, problem-solving, opportunity evaluation, critical thinking, and self-understanding (INJAZ Qatar, Hawken, China Institute of Entrepreneurship, InnoOmnia, Me & My City, and Team Academy)

• **Entrepreneurship and Work-Readiness Awareness:** A key element of several secondary school programs was to build awareness of entrepreneurship as a desirable career choice.

→ Policy and practice implications: More countries are starting to embed entrepreneurship as a core curriculum requirement. It needs to be determined how best to do this and the appropriate alignment of entrepreneurship content and grade level. Primary and secondary programs should focus more on skill-building to navigate uncertain futures.

College and university programs should focus on the creating and critical analysis of new business opportunities across various contexts while also developing a sense of entrepreneurial self. Vocational level entrepreneurship education should emphasize developing the actual skillset and mindset to support business start-up and growth. Finally, teaching entrepreneurship skills and competencies that can lead to both social and economic outcomes needs to be part of a curriculum.

APPROACHES TO TEACHING ENTREPRENEURSHIP ARE CLOSELY TIED TO LOCATION, FACULTY AND CONTENT, OFTEN CHALLENGING (OR EVEN OVERTURNING) THE CONVENTIONAL CLASSROOM INSTRUCTION PARADIGM

How are they being taught?

As discussed above, approaches to teaching entrepreneurship are closely tied to location, faculty and content, often challenging (or even overturning) the conventional classroom instruction paradigm, as Team Academy neatly summarizes.

- No students — but team entrepreneurs,
- No classrooms — but an open plan office,
- No teaching — but learning,
- No teachers — but coaches.

Many entrepreneurship programs share the following characteristics:

- **"Learning" not "Teaching":** this distinction characterizes many of the best practice programs and includes several elements introduced earlier. Effective entrepreneurship education is heavily learner-centered and self and team-directed. Students take responsibility for setting goals (Team Academy "learning contracts"), directing action, brain-storming ideas, self-evaluation (Hawken), etc. Students, not teachers, drive the learning. Consequently, teachers need to serve as guides, coaches, and/or facilitators. The traditional lecture format where the instructor is the expert and has all the correct answers does not and cannot work in an entrepreneurship context. Instructors must work to build

communities of learning where engagement, motivation, and bias for action are driven by the community and not a "sage on the stage." Flipped classrooms are the model in the most current entrepreneurship education classrooms. The traditional classroom still works, but what the instructor does in the classroom is dramatically different. The flipped approach requires hands-on activity inside the classroom and preparation activity done at home before class.

• **Activity-based:** Entrepreneurship requires an "act-to-learn" approach rather than the more passive "learn-then-act" tradition. Students starting businesses, working through simulations, engaging in group projects and problem-based learning, and interacting with the real world contribute to a deeper learning experience. Examples include Team Academy, Maker Space, and FME.

• **A greater tolerance for failure:** Entrepreneurship education must encourage failure, a bold but necessary statement. Because of the action-orientation of programs, it is expected that students fail, learn from failure, and apply their learning in the next iteration. As such, failure, given the harsh connotations of the word and its associated stigma, should be reframed as intentional iteration. Such a trial-and-error approach has become a hallmark of entrepreneurship education, often replacing the aforementioned business plan as the gold standard. Educational settings provide safer environments to prepare, learn from, and even recover from failure.

• **MOOCs and On-Line Technologies:** Although only one case featured a MOOC (China Institute of Entrepreneurship of Muhua Information Technology Company) we recognize the potential of such technologies to increase teaching efficiency by enabling a few well-qualified instructors to reach thousands of students. Especially when used in an "online/offline" (O2O) program structure in which facilitated, hands-on activities supplement Internet-based instruction, MOOCs can be powerful tools to reach a wider audience.

→ Policy and practice implications: Given the variation in content, commonality can be found in process, the methods used to teach the content. Teacher training becomes paramount to ensure that instructors are adequately prepared in current methodologies, able to manage flipped classroom environments, and can design curricula and programs where students are able to practice and live entrepreneurship rather than simply become aware of the discipline. In addition, tax laws,

business regulations, and banking guidelines need to be examined in regard to their reaction to business failure. The more negatively failure is perceived and treated, the less likely entrepreneurs are to take the type of risks necessary to start and grow businesses.

CREATING OR INCUBATING NEW VENTURES IS NOT OUR GOAL, INSTEAD, WE SEEK TO EDUCATE AND CULTIVATE TALENTS.

Why is entrepreneurship being taught? What are the learning outcomes?

The historical motivation to teach entrepreneurship has been to spur venture creation/growth and economic development, but times are changing, and the future of entrepreneurship seems to be more inclusive and far reaching. For some programs, the connection to new venture creation is explicit and proximate, but, for others, the link is implicit and even tenuous. Hawken School teaches entrepreneurship primarily as a vehicle through which students learn twenty-first century skills: "problem solving, communication and collaboration, critical thinking, and self-understanding." But it does so because it believes that those skills will be critical for working in the twenty-first century economy. As Dean QIAN Yingyi of Tsinghua's x-lab explains: "Creating or incubating new ventures is not our goal, instead, we seek to educate and cultivate talents. We stress entrepreneurial ability and are not limited by entrepreneurship in the narrow sense." Yet x-lab measures outputs which are directly reflective of venture creation, implicitly stressing the link between broadly developed "entrepreneurial ability" and economic development. Economic development is usually closely related to job creation, but, interestingly, Qatar offers an alternative motivation: economic diversification. Unemployment in Qatar is not a problem; over-reliance on a fossil fuel-based economy may be the challenge, certainly in the long term. One motivation for teaching entrepreneurship that did not figure prominently in any of the cases was social entrepreneurship, a surprising omission given the rise of attention to and activity within the social entrepreneurship realm.

→ Policy and practice implications: Outcomes of entrepreneurship education are not universal. Sometimes they are broad and even unclear. It is not clear whether entrepreneurship education needs a universal outcome or whether it is sufficient, and appropriate, that

governments and educational programs define and communicate their program objectives. Entrepreneurship is more accessible than ever before because of the varied and accepted definition and outcomes. If we narrowly define and measure impact, then we may lose the momentum and excitement that entrepreneurship inspires across generations. What is clear, however, is that impact (however defined) must be measured. There is not nearly enough evidence that entrepreneurship education works.

SOMETIMES THE FEAR OF WHAT WE MAY FIND DECREASES OUR MOTIVATION TO MEASURE AND ASSESS IMPACT, BUT, WITH A MINDSET OF CONTINUOUS IMPROVEMENT RATHER THAN RETRIBUTION FOR UNDERPERFORMANCE, THE EDUCATION COMMUNITY CAN CREATE BETTER PROGRAMS AND BETTER MEASURES OF SUCCESS AND IMPACT.

How is impact being measured and evaluated? What is being measured?

Other than participation rates (e.g., enrolled and graduated students), which are common across all programs, measurement is largely a function of program type and objective. Those programs which serve as core curriculum (e.g., Hawken, Babson FME, XLP, Team Academy) focus on assessment of program performance and skill acquisition as measured by tests, case study solutions, and teacher observation or through student portfolios of written reflections, blogs, etc. Programs that explicitly define their objective as "acquisition of entrepreneurial ability, mindset, spirit, or twenty-first century skills" may even dismiss such measurements as venture creation in the assessment of student achievement. A few programs measure quantitative output: x-lab captures numbers of registered enterprises, projects, innovation achievement awards, patents, and financing. Actual impact on economic output and/or job creation is less common, though 10KSB does capture revenue and job growth in the businesses run by its entrepreneur scholars. Several programs (e.g., 10KSB and QBD VT) ask students to assess content and instructor effectiveness, an important tool to inform continuous improvement of the programs.

→ Policy and practice implications: Measuring input (participation) and output (number of projects ideated or ventures financed) is fairly straightforward. Measuring outcomes and/or impact, either on attitudes/skills/behavior or on net economic development or job creation is challenging, especially given the lack of a common set of outcome expectations and the critical need to develop a comparative method for reviewing programs. Sometimes the fear of what we may find decreases our motivation to measure and assess impact, but, with a mindset of continuous improvement rather than retribution for underperformance, the education community can create better programs and better measures of success and impact. It is clear, however, that measuring entrepreneurship education on simple measures of "how many have started a business" is misleading and goes against the tenets and findings of this report. From a policy perspective, it also means that reliable data on business start-ups and life cycle is critical in order to know what is working and what is not.

Outcomes might be measured across levels, such as individual, group, family, firm, community, or society.

How is the program/curriculum being funded and supported?

In Finland, Qatar and China, most programs are funded directly or indirectly by the government, while the US programs are funded by private institutions (schools and foundations). That distinction, however, masks more complex support arrangements that often include multiple funding sources and partnerships. While InnoOmnia receives a lump sum from the Ministry of Education and Culture, it also has received EU project funds to support pedagogy development. Me and My City derives considerable support from businesses. The Qatari government plays a strong funding role at the university and vocational levels and supports INJAZ Qatar through Qatar Commercial Bank, but that youth program is also supported by private companies (e.g. Vodafone Qatar) and relies heavily on volunteer trainers. In addition to government funding, x-labs has formed an intricate ecosystem of partnerships with an array of organizations and individuals including university departments, government institutions, foreign universities, and members of China's business community. The Extreme Learning Process supplements government funding with support from the Lego Children's Fund. In fact, China might be an example of being supported and driven from both from top-down (governmental) and bottom-up sources. Finally,

Babson FME, though funded through the college budget, relies on support from a variety of school departments in order to deliver the program.

→ Policy and practice implications: Many entrepreneurship programs require a greater degree of resources than conventional classroom instruction. Regardless of core program funding sources, there are many opportunities to secure supplemental resources in order to strengthen and expand programmatic elements. Private foundations, NGOs, other governmental entities, individual volunteers, Chambers of Commerce, etc. all offer potential. With the success of entrepreneurship programs in the countries featured in this research and others around the world, the evidence is mounting that entrepreneurship education funding does have a return on investment. Entrepreneurship education is a prime opportunity to test the development of public-private partnerships.

TECHNOLOGY BASED BUSINESSES ARE IMPORTANT FOR ECONOMIES; HOWEVER, THESE ARE NOT THE TYPE OF BUSINESSES THAT MOST PEOPLE START.

What kind of businesses are being started or scaled?

Although technology-based start-ups often seem to garner most media attention, these cases include a wide variety of industry sectors. In 10,000 Small Businesses, no industry other the Professional Services had more than 10 percent representation. InnoOmnia is designed specifically to support entrepreneurs in the service sector and artisan trades, which does include technology (e.g., app developers) but also such non-tech businesses as driving schools. With an explicit mission to diversify its industrial base, Qatar has developed vocational training programs targeted to support growth of businesses in specific sectors, including health care, tourism, and manufacturing.

→ Policy and practice implications: Technology-based businesses are important for economies; however, these are not the type of businesses that most people start. And, while growth means very different things to different people, job creation drives economic development, and we need all types of jobs. The relationship between the motivations for starting a business and the type of business created must also be considered. Someone creating a business out of necessity will create a business with the cost of entry as low as possible and build on something

they know how to do. Others, when creating a business motivated by opportunity (GEM, 2014) will largely follow a passion for something about the business. Trying to programmatically drive the type/industry of business being created is a less successful approach. In addition, considering the array of pathways into entrepreneurship (family, independent start-up, franchise, buying a business, corporate start-up, or social venture) all need to be included. In the past, policy and program approaches also sometimes tried to define and select who would be successful. This in itself was largely unsuccessful, and the field of entrepreneurship education evolved to recognize and focus upon a skill set and mindset that proved to be teachable and learnable. Recognizing the diversity of people that start and grow many different types of businesses should actually drive programmatic support.

What is the extent of reach and scalability?

The programs described in the cases range from a single class in a single school with 24 students (Hawken) to entire middle school grades with 40,000 students (Me and My City) and MOOCs (China Institute of Entrepreneurship of Muhua IT Co) with the potential to reach hundreds of thousands of participants. While scalability is not an issue for a pure online offering, it can be challenging for many of the described programs due to their resource intensity. Moreover, the ecosystems developed to support programs, including local entrepreneurs and businesses who serve as mentors, partners, and field learning laboratories, may be difficult to replicate in other contexts. Nevertheless, some programs offer models that have been replicated successfully. Team Academy has generated a network of spin-offs; 30 vocational schools and universities in the country and 16 international schools use the Team model, often adapted to local cultural contexts. Other institutions "scale" their programs indirectly through training and curriculum sharing. In response to strong interest from educators, Hawken launched a teacher training workshop, and it is now exploring how to expand its reach. Babson regularly hosts visits from interested educators and discusses its FME curriculum and methodology. Other schools are looking to scale entrepreneurship education by broadening the audience footprint. For example, Qatar University is planning to introduce a general course in entrepreneurship as a core course for all QU students, moving beyond those opting for the entrepreneurship minor specialization.

→ Policy and practice implications: While resource intensity and local ecosystem nuances can be constraints on replication and scaling of some programs, there is evidence of increasing availability of training

and curriculum resources. Many institutions feel they are part of a mission to promote and disseminate entrepreneurship education and thus are willing to share freely the materials and methodology they have developed in the service of expanding and improving the practice of entrepreneurship education. Convening entrepreneurial providers to encourage an inventory of services available and then developing an integrated and coordinated pathway for entrepreneurs to use the most appropriate services for their needs increases both efficiency and the ability to scale the ecosystem.

#8
RECOMMENDATIONS

#8 RECOMMENDATIONS

The heart of entrepreneurship education is learner-centered, creative problem-solving to turn ideas into opportunities that can be transformed into realities. To achieve this objective we offer the following recommendations to policy makers, practitioners, and institutional advocates:

- **Develop Teachers:** Establish program standards, training programs, and assessment tools that encourage teachers to acquire and employ skills and behaviors that enable them to function as facilitators and guides to learning rather than as traditional classroom instructors.

- **Expand Ranks of Learners:** Make entrepreneurship education compulsory for all learners in primary, secondary, and perhaps even tertiary levels, because of its effectiveness in instilling twenty-first century skills, in addition to venture creation skills.

- **Facilitate Sharing of Content and Pedagogy:** Create a clearinghouse of leading-edge curricula and pedagogic methodologies. Much good work has been done in this field over the past decade, and many institutions are willing to share their curricula and teaching methodologies.

- **Overhaul Pedagogy and Place:** Revamp instructional standards and classroom paradigms to promote team-based, action-oriented learning in spaces designed to enhance collaboration and creativity that include real world interactions with entrepreneurship practitioners and with target markets for new products and services.

- **Expand Access to Resources:** Increase funding for entrepreneurship education and develop and promote innovative mechanisms to leverage partnerships with corporations, NGOs, global institutions, and foundations, as well as with individuals.

Additionally, we offer the following three recommendations for research trajectories that will advance entrepreneurship education.

- We need to define and assess an array of learning outcomes to better understand the impact of entrepreneurship education. This requires creating and experimenting with various metrics

beyond starting a new venture and also includes a consideration of different types of entrepreneurial learners. Consideration must be given to the qualty of the learning outcomes in addition to quantitative measures. Comparative studies across institutions, countries, and types of learners are suggested. In addition, measuring outcomes such as business start up or venture growth is not sufficient. Instead, measuring a student's confidence in entrepreneurial competencies, cognitive approaches to idea generation, or the influence of families, society, and other macro influences on entrepreneurship learning are important considerations. By sharing data, we are more likely to determine what works and what can be improved. Evaluating a single course with a small sample is no longer sufficient if the field is depending on government support to fund new or to expand existing programs.

• Though we are recommending compulsory entrepreneurship education at the primary/secondary level, we strongly urge researchers not only to look across schools where this is taking place but to research stakeholders within the ecosystem at this level. Primary and secondary teachers as well as parents and administrators need to have a better understanding of what entrepreneurship is and can be in their education systems. In order for local governments to support this level of programming, the thoughts and insights from multiple stakeholder groups must be assessed and be included in the creation of any type of compulsory entrepreneurship education program. Forced entrepreneurship education is not effective from either a teaching or a learning perspective.

• Great examples and best practices abound, as is evidenced by this report. The larger issue to address now is scalability of programming. Entrepreneurship education requires a hands-on, active, and experiential approach. These approaches are hard to scale when large numbers of students are involved. How might we scale innovative educational programs? When and how might technology be helpful? What is the effect of technology clusters on entrepreneurship education and entrepreneurship ecosystems? These are important macro questions that might be addressed going forward.

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About Babson College

Babson College, established in 1919 in Wellesley, Massachusetts, is an independent, not-for-profit institution offering undergraduate (2100 students) and graduate (900 students) degree programs in management and entrepreneurial leadership. Babson also has a division of Executive Education which designs and delivers open enrollment and custom programs at the college's residential conference center and at sites globally. Babson's historic and continuing focus on entrepreneurship has enabled the college to be recognized as one of the world's premier entrepreneurship institutions, and its extensive commitment is demonstrated across activities and programs - from award-winning, innovative curricula to pioneering work in teaching others how to be entrepreneurship educators. Under its unique methodology, Entrepreneurial Thought and Action® (ET&A), Babson seeks to be "the educator, convener and thought leader for Entrepreneurship of All Kinds™, leveraging the power of entrepreneurship as the most positive force on the planet for generating sustainable economic and social value.

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Any errors or omissions remain the responsibility of the authors.

About WISE
Qatar Foundation, under the leadership of its Chairperson, Her Highness Sheikha Moza bint Nasser, established the World Innovation Summit for Education in 2009. WISE is an international, multi-sectoral platform for creative thinking, debate and purposeful action that contributes to building the future of education through innovation and collaboration. With a range of ongoing programs, WISE has established itself as a global reference in new approaches to education. The WISE Summit brings together over 1,500 thought leaders, decision makers and practitioners from education, the arts, business, politics, civil society and the media.

The WISE Research Reports bring key topics to the forefront of the global education debate and reflect the priorities of the Qatar National Research Strategy.

These publications present timely and comprehensive reports produced in collaboration with recognized experts, researchers and thought-leaders that feature concrete improved practices from around the world, as well as recommendations for policy-makers, educators and change-makers. The publications will focus on topics such as system-level innovation, teacher education, early-childhood education, new ways of financing education, entrepreneurship education, wellbeing, twenty-first century skills and education reform in the Gulf Cooperation Council Countries.

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ENDNOTES

1-The Global Entrepreneurship and Development Institute (GEDI) publishes an annual Global Entrepreneurship Index that measures the health of the entrepreneurship ecosystems in each of 120 countries

2- Slush is a Finnish two-day event for startups and tech talent to meet with international investors, executives, and the media. In 2014, Slush brought together over 14,000 attendees and more than 3,500 companies.

REFERENCES

Alberti, F., Sciascia, S. & Poli, A. 2004. Entrepreneurship education: Notes on an ongoing debate. Proceedings of the 14th Annual International Entrepreneurship Conference. Naples, Italy.

Amoros, J.E., Bosma, N., 2014. Global Entrepreneurship Monitor: 2013 Global Report. Wellesley, MA: Babson College

Audretsch, Grilo, & Thurik. 2011. Globalization, entrepreneurship, and the region. In M. Fritsch (Ed.), Handbook of research on entrepreneurship: 11-32. Cheltenham: Edward Elgar.

Brush, C.G. Exploring the Concept of an Entrepreneurship Education Ecosystem

Center for Entrepreneurship, College of Business and Economics, Qatar University. 2015. Accessible at: http://www.qu.edu.qa/business/entrepeneurship_center/

Dainow, R. (1986) Training and Education for Entrepreneurs: The current state of the literature, JSBE, 3(4):10-23.

Dickson, P., Solomon, & Weaver, 2008. Entrepreneurial selection and success: Does education matter? Journal of Small Business and Enterprise Development 15 (2): 239-258.

EY. 2013. The power of three: Together, governments, entrepreneurs and corporations can spur growth across the G20. The EY G20 Entrepreneurship Barometer 2013. Accessible at: http://www.ey.com/GL/en/Services/Strategic-Growth-Markets/The-EY-G20-Entrepreneurship-Barometer-2013

Fetters, M., Greene, P., Rice, M., & Butler, J. 2010. The development of university-based entrepreneurship ecosystems: Global Practices. Northampton, MA: Edward Elgar Publishing.

Finnish National Board of Education. 2014. National Curriculum for General Education. Accessible at http://www.minedu.fi/export/sites/default/OPM/Julkaisut/2009/liitteet/opm09.pdf and http://www.oph.fi/ops2016/perusteet.

Fisher, J.L., and Koch, J.V. 2008. Born Not Made: The Entrepreneurial Personality. Westport, CT: Praeger.

Gartner, W. B. & Vesper, K.H. 1994. Experiments in entrepreneurship education: success and failures. Journal of Business Venturing 9: 179-187.

George, G. & Zahra, S. 2002. Culture and its consequence for entrepreneurship. Entrepreneurship and Practice 26 (4): 5-8.

Global Entrepreneurship and Development Institute (GEDI). 2015. Accessed on October 7, 20115 at http://thegedi.org/countries.

Greenberg, D., McKone-Sweet, K., and Wilson, H.J. (eds.). 2011. The New Entrepreneurial Leader: Developing Leaders Who Will Shape Social and Economic Opportunities. San Francisco: Berrett-Koehler.

Henry, C., Hill, F., & Leitch, C. 2005. Entrepreneurship education and training: Can entrepreneurship be taught? Part 1. Education + Training, 47 (2): 98-111.

Hofstede, G. 1980. Culture's Consequences. Thousand Oaks, CA: Sage.

Honig, B. 2004. Entrepreneurship education: Toward a model of contingency-based business planning. Academy of Management Learning & Education 3: 258-273.

Injaz Qatar. 2015. Various Publications. Accessible at: www.injaz-qatar.org

Isenberg, D. 2010. How to start an entrepreneurial revolution. Harvard Business Review 88 (6): 40-50. Reprint R100A.

Kauffman, The Foundation of Entrepreneurship. 2008, Entrepreneurship in Higher Education: A Report from the Kauffman Panel on Entrepreneurship Curriculum in Higher Education. July 2008. Accessible at Kauffman.org/uploadedfiles/entrep_high_ed_report.pdf

Kuratko, D.F. 2005. The emergence of entrepreneurship education: Development, trends, and challenges. Entrepreneurship Theory and Practice 229 (5): 577-598.

Martínez, A.C., Levie, J., Kelley, D.J. Sæmundsson, R.J. & Schøtt, T. 2010. Global Entrepreneurship Monitor Special Report: A Global Perspective on Entrepreneurship Education and Training.

McClelland, D. 1965. Need achievement and entrepreneurship: A longitudinal study. Journal of Personality and Social Psychology, 1, 389–92.

Miner, J.B. 1996. The 4 Routes to Entrepreneurial Success. San Francisco: Berrett-Koehler.

Ministry of Development Planning and Statistics, Qatar. 2015. Qatar national development strategy 2011-2016, available at: www.gsdp.gov.qa/gsdp_vision/docs/NDS_EN.pdf.

Neck, H. M., Greene, P. G. & Brush, C. (2014). Teaching Entrepreneurship: A Practice-Based Approach. Northampton, MA: Edward Elgar Publishing.

Neck, H. M., & Greene, P. G. 2011. Entrepreneurship Education: Known Worlds & New Frontiers. Journal of Small Business Management, 49(1): 55-70.

Noyes, E., and Brush, C. 2012. Teaching entrepreneurial action: Application of creative logic. In A.C. Corbett and J.A. Katz (eds.), Entrepreneurial Action: Advances in Entrepreneurship and Firm Emergence and Growth (pp. 253–80). Bingley, UK: Emerald Group Publishing.

Peterman, N.E. & Kennedy, J. 2003. Enterprise education: Influencing students' perceptions of entrepreneurship. Entrepreneurship Theory and Practice 28 (2): 129-144.

Qatar Development Bank. 2015. Various publications. Accessible at WWW.qdb.qa

Rauch, A. & Hulsink, W. 2015. Putting entrepreneurship education where the intention to act lies: An investigation into the impact of entrepreneurship education on entrepreneurial behavior. Academy of Management Learning & Education 14 (2): 187-204.

Regele, M.D. & Neck, H.M. 2012. The entrepreneurship education sub-ecosystem in the United States: Opportunities to increase entrepreneurial activity. Journal of Business and Entrepreneurship 25-47.

Sarasvathy, S. D. 2001. Causation and effectuation: Toward a theoretical shit from economic inevitability to entrepreneurial contingency. Academy of Management Review 26 (2): 243-263.

Sarasvathy, S.D. 2008. Effectuation: Elements of Entrepreneurial Expertise. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

Singer, S., Amoros, J.E., & Moska, D. 2015. Global Entrepreneurship Monitor: 2014 Global Report. Wellesley, MA: Babson College

Vanevenhoven, J., and Liguori, E. 2013. The impact of entrepreneurship education: Introducing the entrepreneurship education project. Journal of Small Business Management 51(3): 315-328.

Weaver, K.M., Dickson, P.H. & Solomon, G. 2006. Entrepreneurship and education: What is known and what is not known about the links between education and entrepreneurial activity. In C. Moutray (Ed.), The Small Business Economy: A Report to the President: 113-156. Washington: SBA Office of Advocacy.

Zhou, M. & Xu, H. 2012. A review of entrepreneurship education for college students in China. Administrative Sciences 2: 82-98.

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