

Article

A Review of Entrepreneurship Education for College Students in China

Mansheng Zhou * and Haixia Xu

National Center for Education Development Research, Ministry of Education, No. 37 Damucang Hutong, Xidan, Beijing, 100816, P. R. China; E-Mail: haixia@moe.edu.cn

* Author to whom correspondence should be addressed; E-Mail: zhoumansheng@moe.edu.cn; Tel.: +86-10-66097917; Fax: +86-10-66097042.

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Abstract: Partly as a result of the rapid growth in Chinese higher education, graduate placement has become a critical issue facing colleges and universities. In response, one of the policy initiatives adopted by the Chinese government is for higher education institutions to put an emphasis on entrepreneurship education. In 2002, the Ministry of Education launched a pilot program on carrying out entrepreneurship education in nine prestigious higher education institutions in China. Since then, many colleges and universities have adopted this innovation in education. This study attempts to examine entrepreneurship education as an innovative solution to the challenges facing higher education in China. It first introduces the background for promoting entrepreneurship education in China, analyzes the entrepreneurship education programs and activities in three selected universities, assesses the state of entrepreneurship education both from a student perspective and also through a comparison with developments in the United States, and concludes with recommendations for further developments in entrepreneurship education in China's colleges and universities.

Keywords: China; entrepreneurship education; higher education; innovation

1. Introduction

Since entrepreneurship education was introduced by the United States in the 1940s, this concept has been adopted and integrated into education in many countries as a component of new economic strategies for fostering job creation [1]. It has become such an important part of education that in 1998, UNESCO World Conference recognized its value and advocated cultivating entrepreneurship and skills in higher education [2]. In the late 1990s, following the international trend, China began witnessing entrepreneurship education emerge on individual campuses in the form of college student entrepreneurship competitions. Challenged by the growing enrollments and the difficulty of graduate employment, since 2002 the Chinese government has taken a leading role in promoting entrepreneurship education, hoping to cope creatively with the structural unemployment of university graduates resulting from mass higher education.

This article reviews policy and practices of entrepreneurship education and its impact on Chinese higher education. It starts with background information, including the definition, the context, and the importance of entrepreneurship education in China. It then reviews four stages that entrepreneurship education has gone through in China, followed by an in-depth review of the entrepreneurship education models in three prestigious universities. Then, it analyzes entrepreneurship education from the student perspective, in terms of student interest and motivation, satisfaction, preparation. Next, it compares the state of entrepreneurship education in China with developments in the United States. The article concludes with a set of recommendations for further development of China's entrepreneurship education at its colleges and universities.

As China's entrepreneurship education is minimally discussed in English-language literature, this article primarily looks into Chinese literature and newspaper articles for the most up-to-date information on this topic.

2. Background for Entrepreneurship Education

2.1. The Definition of Entrepreneurship and Entrepreneurship Education

There is a diversity of views among academics about what constitutes "entrepreneurship" as a field of study [3] as well as what constitutes an entrepreneurship program [4]. In the United States, entrepreneurship generally refers to growth-oriented ventures or companies, and entrepreneurship programs promote skills for building, financing, and nurturing high-growth companies. In Europe, entrepreneurship is "often equated with small and medium-sized enterprises (SME), and many entrepreneurship programs are actually SME training programs that focus on functional management skills for small business" [5]. The primary purpose of entrepreneurship education at European universities is to develop entrepreneurial capacities and mindsets [6] that support everyone in day-to-day life at home and in society and provide a foundation for entrepreneurs establishing a social or commercial activity [5].

In China, "entrepreneurship" is equated with business start-up, and the Ministry of Education emphasized four goals for entrepreneurship education in China. Firstly, it should expose students to the challenging prospect for employment and raise their entrepreneurship awareness. Secondly, it should lay a solid foundation of knowledge on entrepreneurship. Thirdly, it should improve college students'

entrepreneurial skills and abilities through both classroom learning and beyond. Last, it should reduce entrepreneurial risks among college students [7].

2.2. *The Context for Entrepreneurship Education*

The adoption of entrepreneurship education is not a coincidence, but instead the result of an interplay of both internal and external factors. Internally, Chinese higher education has faced difficulty with the structural unemployment of university graduates caused by higher education expansion. In 1999, China started its decade-long increase of enrollment. As a result, the gross enrollment rate has increased from 9.8% in 1998 to 24.2% in 2009, an extraordinary growth rate of 240% [8,9]. In 2010, the gross enrollment rate reached 26.2%, marking the beginning of China's entry into universal access to higher education [10]. Accompanying the expansion of access is the difficulty of student employment. The employment rate of college graduates was 82% in 2000; it declined to 70% in 2006–2008; and it went up to 72% by the end of 2010 [11]. Graduate education enrollments have experienced growth at the same pace, and universities overall have been under much pressure to place an increasing number of master and doctoral graduates. With a glut of graduates facing growing competition in a tough job market, entrepreneurship is being presented as one possible solution [7].

Externally, small-sized businesses are becoming economic drivers and providing the majority of jobs [12]. Small-sized Business is defined in different ways internationally. According to the Law on the Promotion of Medium-and-Small-Sized Enterprises that was issued in China in 2003, the definition of small-sized business varies in terms of the number of employees depending on the lines of work. For example, a small-sized business comprises 300 employees or below in industry, 600 or below in architecture, 400 or below in wholesale and retailing or catering. In 2005, small businesses made up over 99% of the overall businesses in the United States, European Union, and Japan [7]. In China, small businesses have been growing dramatically and also constituted the majority of the overall businesses. Between 1995 and 2001, jobs in state-owned enterprises decreased by 91,700; in contrast, 269,000 new positions were generated in the small business sector. Census data show that with the same level of investment, small businesses generate employment four times greater than large enterprises [13].

Internationally, the growth of entrepreneurship education in other countries has served as a source of inspiration for Chinese universities. Since entrepreneurship education was introduced by the United States in 1947, over 1,600 American colleges and universities offer courses and degrees in entrepreneurship education. Canadian universities followed their neighbor's lead and began offering entrepreneurship education in the 1970s [14]. In 1997, the German government launched an entrepreneurship initiative at universities, with the goals of entrepreneurial teaching and culture. International organizations such as OECD, the European Commission and others have all recognized the value of entrepreneurship education [5].

It is within this context that creating new positions through entrepreneurship is recognized as an important means to improving student employment and promoting economic development. In 2011, the Chinese government issued new policies to “boost employment through entrepreneurship” [15] and since then governments at each level have advocated entrepreneurship education. At the central level, various national ministries such as the Ministry of Education have issued relevant policies to provide a

favorable environment for students involved in business start-ups. Provincial education authorities are required to provide more favorable policies for university graduates to create their own business plans and start new ventures. 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 [16].

Likewise, higher education institutions are taking this direction, especially in consideration of the challenge facing students struggling to find a satisfactory job. For example, many colleges and universities—public and private—have started offering courses or co-curricular activities on entrepreneurship education. To assist with or carry out entrepreneurship education, at least one-third of the colleges and universities have established units such as Research Center for Entrepreneurship, the Center for Entrepreneurship Education, or the Training Institute for Entrepreneurship. At the same time, some non-profit organizations have joined universities in providing training programs on employment and career development for college students [7].

3. Evolution of Entrepreneurship Education in China

Despite a relatively short history of entrepreneurship education, China has made considerable progress in its experiment with this new education concept, marked by four milestones since its emergence in the late 1990s.

3.1. The First Milestone: 1997

The first milestone was the Student Entrepreneurship Competition organized by Tsinghua University in 1997. Modeled after a similar competition at the Massachusetts Institute of Technology, the Tsinghua University competition became known as the birth of entrepreneurship education in China. In the following years, many universities made similar move on their campuses. For example, Fudan University encouraged its faculty to integrate entrepreneurship basics into their daily instruction; East China Normal University was the first to offer a course on entrepreneurship education; Wuhan University offered a course on creativeness, innovation, and entrepreneurship; and Beijing University of Aeronautics and Astronautics provided capital support to student entrepreneurs. Although these initiatives were no more than experiments by individual institutions, they provided valuable lessons for and paved way to the expansion of entrepreneurship education after 2002 [7].

3.2. The Second Milestone: 2002

The second milestone was achieved in April 2002, when the Ministry of Education took the lead in selecting nine institutions participating in the National Entrepreneurship Education Pilot Program (NEEPP) with the stated purpose of exploring a number of entrepreneurship education models. Specifically, the nine universities include Tsinghua University, Beijing University of Aeronautics and Astronautics, Renmin University of China, Heilongjiang University, Shanghai Jiaotong University, Nanjing University of Finance and Economics, Wuhan University, Xi'an Jiaotong University, and Northwestern Polytechnic University. Until then, entrepreneurship education had remained an individual institutional practice. Each of the nine pilot projects has a different focus. Depending on the

settings where entrepreneurship education is conducted, these projects can be divided into three models, including classroom-based model, a practice-oriented model, and a hybrid model.

(1) *Classroom-based model*: The pilot projects primarily take advantage of classroom instruction to provide entrepreneurship education. For example, Renmin University of China emphasizes “fostering students’ awareness and constructing their knowledge structure.” Accordingly, the institution has devised a few courses to accomplish these goals primarily through classroom learning.

(2) *Practice-oriented model*: These pilot projects focus on enhancing students’ knowledge and skills, primarily through the support of institutional infrastructures such as entrepreneurship parks, capital support, consulting services, and incubators. One example of this model is Beijing University of Aeronautics and Astronautics, which established the Training Institute for Entrepreneurship Management where full-time faculty members are exclusively devoted into the research and operation of entrepreneurship education. The university also maintains an entrepreneurship fund of three million Yuan (nearly \$ 400,000) to evaluate students’ business plan and finance those that show special promise.

(3) *The hybrid model*: Other pilot projects employ a combination of both classroom instruction and training in practical settings. On one hand, they denote innovation as the basis for entrepreneurship education, integrating entrepreneurship education into students’ chosen field of study. On the other hand, they provide financial and technical consultation to student entrepreneurs. For example, Shanghai Jiaotong University created a framework for the development of innovative talents, guided by three basic tenets—quality education, lifelong education, and innovative education—and by three transformations—from specialist to generalist, from instruction to education, from impartment to learning [7].

3.3. *The Third Milestone: 2005*

The third milestone occurred in 2005 when the Know about Business (KAB) program was introduced and became available to the student body in six prestigious universities including Tsinghua University, Beijing University of Aeronautics and Astronautics, China Youth University for Political Sciences, Heilongjiang University, Tianjin Polytechnic University, and Beijing Youth Political College. This model provided an exceptional example of the collaboration among organizations and higher education institutions in promoting entrepreneurship education. A systematic entrepreneurship education program developed by the UNESCO labor organization, the KAB program has been well recognized. Through teaching basic knowledge and skills about enterprises and entrepreneurship, this program helps students to gain an overall understanding of how to start an enterprise, promotes the concept of entrepreneurship, and cultivates innovation and entrepreneurship in talented young talents. Specifically, this program uses psychological assessment and team-based games to help students understand entrepreneurs’ general characteristics and quality and acquaint them with the whole process—from developing business ideas, writing a business plan, launching a business, and all the way through running a business. This program also invites accomplished entrepreneurs to contribute to classroom instruction and discuss real-world case studies, a practice which is especially well received by students. By 2009, KAB had provided training opportunities to 795 faculty members representing 318 higher education institutions in 25 provinces, and it had offered a course titled “KAB

Entrepreneurship Basics for College Students” to over twenty thousand students in 100 universities, including Tsinghua University, Zhejiang University, and China Youth University for Political Science [17].

3.4. The Fourth Milestone: 2008

The fourth milestone was reached in 2008, when the government called for some governmental agencies, universities, and enterprises to set up a pilot program to develop talents of innovation and entrepreneurship [18]. At the national level, the Ministry of Education initiated such programs in nine universities. 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. Similar initiatives also were begun at the provincial level, and the corporate sector became an active player. These accomplishments marked the beginning of a new phase for entrepreneurship education, which is characterized now by the advocacy and support of the government, widespread participation by the society, and active participation by higher education institutions [19]. In early 2010, this momentum was reinforced by the formation of a national advisory committee which is to function between 2010 and 2015. Consisting of college presidents of 41 higher education institutions, governmental officials, and successful entrepreneurs, this advisory body is charged with providing consultation and guidance for colleges and universities in the field of entrepreneurship education [15].

4. Case Studies

To provide a closer look at entrepreneurship education in more details, initiatives at three pilot institutions are discussed in detail below, including Tsinghua University, Beijing University of Aeronautics and Astronautics, and Renmin University of China. Each university represents a different entrepreneurship education model in China.

4.1. Entrepreneurship Education in Tsinghua University

Entrepreneurship education at Tsinghua University reportedly dates back to 1983, when the university organized the first Challenge Cup Competition and Exhibition for Extracurricular Academic Science Projects. This event was so successful that the government expanded it to the whole higher education sector. In 1997, Tsinghua University launched its annual Student Entrepreneurship Competition, which is heralded as the official beginning of China’s entrepreneurship education initiative.

Entrepreneurship education at Tsinghua University is administered by the Office of the Youth League, which traditionally focuses on student ideology. Entrepreneurship education at Tsinghua University is generally characterized by innovative education as its basis; the Student Entrepreneurship Competition as its vehicle; entrepreneurship education courses and international exchanges as its “push”; co-curricular entrepreneurial activities as its primary format; and the development of entrepreneurship awareness, ability, and quality as its primary content.

As one of the pilot institutions selected by the Ministry of Education, Tsinghua University proposed the model of “Innovation Loop” to carry out entrepreneurship education. Specifically, the loop emphasizes a benign interaction among innovation awareness, practice, and outcome, with a support system in place to ensure the smooth transition from awareness to practice, then to outcome, and finally back to awareness. The support system includes: (1) financial support (*i.e.*, an innovation fund as the seed money), (2) consulting support (*i.e.*, an expert commission consisting of faculty members, and labs open to students as the base for co-curricular science and tech activities), and (3) a support system for students to take part in domestic and international competitions and exchanges.

The Student Entrepreneurship Competition has been a crucial part of Tsinghua’s entrepreneurship education, with over 40% of the student body having either participated or wishing to participate in this event. Starting in May 1998, the institution offered entrepreneurship training in the form of workshops, seminar, salons, and investment fairs. The original goal of this competition was to urge students’ scientific transfer; facilitate the interaction among students, S&T achievements, and venture capital; and eventually lead to the establishment of student-initiated enterprises. The event formerly focused on communication between students and investors, business ideas, and value, instead of on education for the overall student body. Although some student enterprises emerged as a result of this event, few lasted very long, partly because China lacks a mature mechanism of venture capital and fails to provide necessary counseling and assistance, and partly because students were not fully prepared in terms of awareness, qualities, and abilities. These failures, in turn, affected students’ confidence in entrepreneurship. Realizing this mistake, Tsinghua University has changed the focus of this event and now uses it to enhance entrepreneurship awareness, qualities, and ability in university students. As a supplement, the university also established Summer Boot Camp for Entrepreneurship Qualities, making available the experience of entrepreneurial businesses to competition teams and providing short-term internships for the participants, thereby making the boot camp more like a course. Moreover, the university has designed systematic training programs on entrepreneurial skills. By doing so, the competition has switched from an emphasis on competitiveness to the development of entrepreneurship skills and from attracting a small elite group to involving a wider representation from the student body. The goal is no longer to encourage students to start business upon graduation, but instead to cultivate the inter-disciplinary talents of risk prediction and business awareness, as well as a solid knowledge base.

Besides the Student Entrepreneurship Competition, Tsinghua has developed or encouraged students to participate in other competitions, including National Entrepreneurship Competition, Graduate Student Technology Entrepreneurship Competition, Tsinghua Summer Camp for Innovation and Entrepreneurship, and Global Entrepreneurship Competition [7]. Moreover, Tsinghua University has solely, or in collaboration with other institutions, launched various projects on entrepreneurship education, such as Talents Business Plan for undergraduate students, the National College Student Innovation and Entrepreneurship Camp, China Entrepreneurs Summer Camp, Innovation Management Design, the Global Technology Entrepreneurship Program (in cooperation with University of California at Berkeley), the Venture Lab (in cooperation with Taiwan Tsinghua University), and Tsinghua Graduate Student Business Plan Practice (in cooperation with Tsinghua Science Park) [20].

Tsinghua University has expanded its course offerings on entrepreneurship education. In 2000, only two courses were offered, “Entrepreneurship Management” and “Venture Capital”. A decade later, ten

more courses have been added to the catalog, including “Business Plan”, “Leadership”, “the Growth of Corporations”, “Venture Marketing”, “Venture Finance”, “New Product Development”, “Organizational Structure and Design”, “Opportunity and Business Plans for Entrepreneurship”, “Venture Lab” and “New Venture Creation” [16].

As one of the most prestigious universities in China, Tsinghua University took advantage of its international networks to push for stronger entrepreneurship education. As a member of the Global Network of Business Plan Competitions, Tsinghua University has conducted active exchanges with the world’s premier universities. In September 2009, Tsinghua University and the University of California at Berkeley jointly established the Tsinghua-Berkeley Global Technology Entrepreneurship Program (GTE), which teaches core concepts in technology entrepreneurship and innovation to a pilot group of 50 Tsinghua students, primarily graduate students from engineering and science. The program includes four components, including five credit courses; skill in business plan development; practice with over 30 mentors, mostly alumni of Tsinghua University and the University of California at Berkeley; and incubation in two science parks. A key tenet of the program is bringing real-world experience to the classroom. To this end, seasoned entrepreneurs and experts in innovation from the Asia-Pacific region and the United States join the faculty of the University of California at Berkeley in Tsinghua’s Beijing classrooms. The goal is to universalize entrepreneurial knowledge and develop the world’s next technology leaders.

During the last decade, the approach to entrepreneurship education has broadened as well. In 2000, there were only two lectures on knowledge and skill yet no practice of any sort at all. In 2010, a component of practice was added. Besides completing relevant courses, students can participate in internships and implement their business plans in an incubator. For the incubation, Tsinghua University collaborates with two science parks: Tsinghua Science Park, the largest university science park in China with over 400 corporations, including world-known corporations such as Microsoft, Google and Proctor and Gamble; the Haidian Incubator, which primarily houses enterprises by overseas returnees’ enterprises. The university has garnered investments from both Chinese and international agencies, which provided consultation and funds to student entrepreneurs [20].

In terms of research on entrepreneurship education, Tsinghua University has established China Research Center for Entrepreneurship, which is Global Enterprise Monitor’s sole partner in China in issuing an annual China report. According to the report, entrepreneurship is the fundamental driving force for economic development and wealth creation. The mission of the National Entrepreneurship Research Center at Tsinghua University is to cultivate the leaders of China’s high-tech ventures and venture capital firms. The center offers educational courses and conducts basic research to further the understanding of the dynamic process of entrepreneurship. With the support of the government, the center advocates in-depth policy and strategy research on entrepreneurship and venture capital in China. The center also develops cooperation among domestic and international institutions and enterprises for knowledge contribution and the effective transformation from knowledge to wealth [21].

4.2. Entrepreneurship Education in Beijing University of Aeronautics and Astronautics

At Beijing University of Aeronautics and Astronautics, entrepreneurship education is administered by three units on campus—the training institute, the incubator, and the science park. Each unit supports entrepreneurship education in different stages of a student-initiated enterprise. Specifically, the University’s Training Institute for Entrepreneurship Management is devoted to offering entrepreneurship-related courses to the students and also provides technical consultation to students after they develop a workable business plan and officially begin an enterprise. The university’s science park serves as the incubator.

Entrepreneurship education focuses on developing students’ knowledge, skills, and ideas on the management of emerging and growing enterprises. The curriculum consists of ten modules, including opportunities and entrepreneurship, strategic management of enterprises, human resources management, marketing, financial management, taxation planning, legal support, accounting, risk management, and innovative thinking and entrepreneurship management. These modules aim to apply students’ knowledge to real-world scenarios and to realize expansive contacts between students and entrepreneurs so that the former can acquire necessary skills, knowledge, and ideas related to entrepreneurship.

Only one to three entrepreneurship-related courses are required for students at the university, with practice-oriented activities embedded. For example, the course “Science & Tech Entrepreneurship” is open to all undergraduates and covers entrepreneurship skills and basic qualities and abilities for entrepreneurs, with a focus on innovation and entrepreneurship awareness. A business plan is required at the end of the course, and those students who stand out will be awarded with an entrepreneurship fund of over \$ 6,000 to launch their enterprises. Graduate students can choose the course “Entrepreneurship Management”, and some have started up their business as a result.

Besides providing classroom learning, the university, relying primarily upon its alumni resources, has also created various co-curricular events which enable students to learn about entrepreneurship. For example, the Campus-wide Business Plan Competition selects and provides funding for promising business plans, using the Trust Fund for Entrepreneurship as the seed money. The New Forum on Entrepreneurship invites entrepreneurs to teach college students real-world entrepreneurship face-to-face. Entrepreneurship Saturday, initiated by the University Science Park and the University Alumni’s Entrepreneurs Division, facilitates the dialogue between students and successful entrepreneurs, especially prominent graduates of the university. The University’s Training Institute for Entrepreneurship Management chooses entrepreneurship tutors to provide technical consultation to students. Moreover, the tutors, most of whom are alumni owning or running successful enterprises, provide short-term positions to their student advisees so that they can experience the responsibilities of running an enterprise.

During the incubation, the university’s science park appoints its senior managers to offer guidance and deliver relevant services, including further assistance from registered consultants and experts in the related fields, partial waiver of rent, and preferential policies about taxation for three years during incubation. At the end of the third year, if a new enterprise has achieved market survivability, it will move to university’s science park and seek further growth there; otherwise the university will deem it a failure and announce its discontinuation [7].

4.3. Entrepreneurship Education in Renmin University of China

Renmin University of China focuses its entrepreneurship education on the enhancement of students' overall ability and quality, with the goal of cultivating innovation, creativeness, and entrepreneurship in students. What makes the university's entrepreneurship education unique is that it proposes integrating entrepreneurship education into quality education, which is a new education mode in China that stands in contrast to an examination-oriented education. The university's entrepreneurship education emphasizes raising students' entrepreneurship awareness, building a sound knowledge structure for entrepreneurship, and enhancing overall quality, primarily through a seamless combination of classroom instruction and extracurricular learning. To its curriculum the university adds entrepreneurship-related electives, such as "Entrepreneurial Spirit", "Venture Investment" and "Enterprise Management". The university also calls for a reform of instructional activities and encourages more participation from students, as well as interaction between instructors and students.

Although this university's entrepreneurship education is primarily achieved inside the classroom, it also encourages its students to engage themselves in social courses and charities. By participating in entrepreneurship education seminars and various competition activities, students have formed entrepreneurship education practice groups that are based primarily within discipline or organized by student clubs. The university has also launched the National Entrepreneurship Forum for College Students and has invited scholars and entrepreneurs to teach entrepreneurship education on campus. In addition, the university has established long-term entrepreneurship education bases, such as Visa Entrepreneurs Classroom, to develop entrepreneurship in students. To encourage peer learning, the university has initiated Tell Your Story Program for students active in entrepreneurship education-related activities to share their experience. The university also hosts the Star of Management Competition, with prestigious entrepreneurs as the judges, and invites business plans from Beijing's universities [7].

A comparison of the three cases shows that despite their different approach to entrepreneurship and entrepreneurship education, the three institutions have much in common. For example, all focus on the entrepreneurship awareness, skills, and ability; all rely upon both classroom learning and co-curricular activities; all have created entrepreneurship courses, mostly electives for undergraduates; and all use seminars by successful entrepreneurs and business plan competition to engage students in extracurricular entrepreneurship-related learning.

5. A Survey of Students in China's Entrepreneurship Education

This section reviews college students' perspectives toward entrepreneurship and entrepreneurship education, primarily drawing upon three recently released reports. One, the 2008–2009 annual report released by the National Research Center for Entrepreneurship at Tsinghua University [22], uses survey data involving 30 provinces, cities and municipalities across China. A second study, conducted jointly in 2010 by five Chinese universities, includes data about the attitudes of college students from ten Chinese Universities regarding entrepreneurship education and the factors that contributed to these attitudes [23]. A third study, jointly conducted in early 2011 by China Association for Adolescent Networking and a media outlet, China Youth, reports on the investigation of Chinese college students

and entrepreneurship [24]. The three reports, together with news coverage, provide a broad picture of entrepreneurship and entrepreneurship education from the students' perspectives.

In terms of interest and motivation, the study by the China Association for Adolescent Networking and China Youth [24] reports that three out of four college students expressed interest in entrepreneurship, and more than a quarter planned to start their own enterprise. According to the survey of 4,551 students in ten Chinese universities, students did not choose enterprise-building in pursuit of power or money or simply employment, but out of internal interest and passion. This is confirmed by another study [23], which found that the motivation of college students to be entrepreneurs related more to the individual's work experience and sense of achievement, according to 21.3% and 15.4% of the total sample. Only 9.1% of the total sample reported that their motivation was an issue of survival.

In terms of attitude and tendency toward entrepreneurship education, students in law, economics, and management received the highest score, while those in engineering and public administration had the lowest scores. Students who took part in business plan competitions received higher score than those who did not. Those who won awards in business plan contests received higher scores than those who did not, and those who had practical entrepreneurial experience received higher scores than those who did not [23].

In terms of preparation for entrepreneurship, low score on this item indicate that there is a lack of effective and sufficient advising for entrepreneurship education in the higher education system. A study shows that only one out of seven college students reported having the experience of taking part in business plan competition or practice—a telling story of entrepreneurship education being largely neglected by society at large. Not surprisingly, students surveyed expressed eagerness for advising and opportunities within a real-world practicum. With regard to the curriculum, they believed they needed to learn interpersonal communication skills, marketing, and other practical entrepreneurial activities related to their chosen major [24].

In terms of business selection, college students were mainly active in basic services (e.g., communications, information) and production services (e.g., logistics, e-commerce, finance, intermediary consulting), while the number in agriculture is low. They were most likely to start businesses at the ages of 18–35 years, and they reported to have established private and joint-stock enterprises through partnerships [22].

In terms of satisfaction with entrepreneurship education, nearly 13% reported no such courses or program in their institutions, 8% had little knowledge of entrepreneurship education in their school, nearly 40% were not impressed by entrepreneurship education initiatives in their school, and only 12% were satisfied with entrepreneurship education in their school [24].

In terms of college students' potential for entrepreneurship, there is reportedly more probability of success in entrepreneurship for the university student group. According to the 2008–2009 annual report entitled “Chinese People Get Rich through Entrepreneurship”, the 26–35 year old age group continued to contain the highest proportion of entrepreneurs, representing 49.7% of entrepreneurs surveyed. On the whole, entrepreneurs tended to be young. Compared with the survey in the previous year, the percentage of highly educated entrepreneurs was growing. The report showed that in 2008–2009, the proportion of undergraduates and graduate students in entrepreneurship accounted for

20.5% and 4.3% of the sample group, respectively; while in 2007–2008 the data were 16.7% and 3.3%. These two indicators show an upward trend [22].

In terms of existing student-run enterprises, they were small in size. Half of the enterprises had five or fewer employees, 35% had five to ten, 11% had eleven to twenty, and only less than 4% had over twenty employees. Forty-five percent of leaders of student-initiated enterprises were considering discontinuing or had already discontinued their operation; 32% barely reached the break-even point; and only 23% reported making a profit [24].

In terms of sustainability, statistics show that no more than 20% of the new enterprises survived at the end of the fifth year. Failure was mainly due to capital and market competition, followed by poor management, and outmoded products and technology [22].

6. A Comparison of Chinese and American Entrepreneurship Education

As much progress as China has made in entrepreneurship education, it still lags behind other countries, especially the United States which is far ahead of other regions in terms of entrepreneurship and entrepreneurship education [25]. Therefore, it is reasonable to assess the state of China's entrepreneurship education by comparing it with the developments in the United States.

6.1. Function

Historically, entrepreneurship education has been utilized as a key driver for economic growth in the United States. Similarly, creativity and entrepreneurship in Chinese higher education have been promoted to cope with the structural unemployment among university graduates. The emphasis on the economic dimension differs from the European model which incorporates social or civic goals as well as commercial goals [5].

6.2. As a Field of Study

Entrepreneurship education has established itself as a mature field of study. As early as 2002, the United States offered more than 2,200 courses at over 1,600 schools, had more than 300 endowed positions, 44 refereed academic journals, over 100 centers, and a dozen professional organizations on entrepreneurship education [5]. American institutions offer degrees of entrepreneurship education at baccalaureate, master's, and doctoral levels. Accordingly, they have created comprehensive curricula for entrepreneurship education majors that consist of courses touching on each aspect of entrepreneurship. In contrast, entrepreneurship education remains an emerging area in Chinese institutions, which offers only individual courses instead of concentration or majors in entrepreneurship education.

6.3. Entrepreneurship within the University

In the United States many entrepreneurship programs have found an academic home in business and engineering schools, and a growing number of American schools offer concentrations or majors in entrepreneurship [5]. Many universities have established academic entrepreneurship departments, and over 1,600 schools offer entrepreneurship courses. Entrepreneurship education is a major national

trend, “becoming university-wide, featuring cross-disciplinary programs with diverse missions at each institution, rather than existing simply as a sub-specialty in business or engineering programs” [26]. In comparison, few universities in China have academic entrepreneurship departments. In most cases, entrepreneurial initiatives exist as part of the responsibilities of the student affairs division. In addition, there is no differentiation of courses to students at different levels, despite their differences in academic preparation and demand.

6.4. Funding

In the United States, entrepreneurship education receives financial support from external sources such as successful entrepreneurs and foundations, as well as from government. Many universities have founded entrepreneurship centers and secured chaired professorships of entrepreneurship, most of which are provided by successful entrepreneurs who graduated from those institutions [27]. In China, however, entrepreneurship education is primarily funded by the government, and lack of funding has been identified as a major obstacle to development, growth and sustaining of entrepreneurial education in the nine pilot institutions.

6.5. Curriculum

American universities have developed a variety of courses in entrepreneurship education. The courses fall into the three categories: (1) courses that teach an overview of the business plan; (2) courses that are highly related to stages of the business life cycle; (3) courses on business functions including management-related issues (e.g. the characteristics of entrepreneurs, management of innovation, team building) and/or on finance, accounting and tax, law, and/or marketing [28]. Universities offer two types of co-curricular activities: less intensive exploratory opportunities, such as student clubs and speaker series to increase exposure to entrepreneurship, and more intensive, experiential learning activities, such as business plan competitions and internships to encourage further development of entrepreneurial skills.

In China, entrepreneurship tends to be offered in stand-alone courses rather than being integrated into the content of courses in other departments or disciplines. Entrepreneurship remains primarily elective, and the courses typically begin with a definition and conceptual explanation of entrepreneurship and move onto the fundamental skills of starting a business—generating an idea, analyzing the market, finding the capital, and following the management and accounting procedures for running a business. Co-curricular activities such as entrepreneurship clubs, lectures and speakers, workshops and seminars, business plan competitions, internships, and venture incubators are available but primarily limited to pilot institutions participating in the National Entrepreneurship Education Pilot Program.

6.6. Research

In the United States, there are a large number of researchers fully devoted to entrepreneurship education, as reflected in the number of referred journals. As early as 2001, 44 refereed entrepreneurship journals were accepting papers, with a new one appearing approximately every 4

months since 1987 [29]. In contrast, there are few full-time researchers devoted to the research of this topic, and currently there exists not a single professional journal on entrepreneurship education.

6.7. Faculty

Institutions in the United States employ full-time faculty who are exclusively committed to entrepreneurship education program, although there is a high percentage of adjunct faculty (*i.e.*, non-tenure track, part-time) teaching entrepreneurship, even in some of the most renowned business schools in America [5]. In contrast, the majority of the entrepreneurship professors in China are from traditional disciplines such as economics or business administration, which reflects long-standing policies and practices. It is evident that China needs to invest in the training and development of entrepreneurship professors and researchers. Although the Ministry of Education has designed and made available since 2003 a series of training programs for faculty members in the field of entrepreneurship education, the shortage of capable faculty remains an issue for China's entrepreneurship education.

6.8. Evaluation and Rankings

The ranking of college-level entrepreneurship programs were launched first in 1995 by *Success Magazine*, which based its evaluations on criteria that included the qualifications of faculty, the variety and depth of the entrepreneurship curriculum, academic standards and student scores, and the quality and depth of resources [14]. Since 2005, rankings have been published in media such as *Entrepreneurship Media*, *U.S. News and World Report*, *Fortune Small Business and Business Week* [26]. Although these rankings are controversial and some of the criteria are questionable, they serve as a means of measuring the progress of entrepreneurship education. In China, the evaluation and follow-up on the results of the National Entrepreneurship Education Pilot Program lags behind. The overall tendency seems to be to evaluate individual courses and the individual activities; monitoring and evaluating on a more general level seems to be less common.

7. Conclusions and Recommendations for Further Development

Overall, China's entrepreneurship education is still in the early stage, and China lags behind the average standard of Global Entrepreneurship Monitor (GEM) in entrepreneurship education [30]. Two national surveys indicate that less than one percent of college graduates actually go on to lead start-ups as opposed to twenty to thirty percent in developed countries. Instead, most top graduates either go on to graduate school or prefer the job security of working for a large Chinese firm or become a public servant [31,32].

For the further development of entrepreneurship education in Chinese colleges and universities, a series of recommendations are provided below, based on the analysis of the three pilot programs on entrepreneurship education and the comparison of the developments in China and the United States.

1. Apply a broader definition of entrepreneurship so that higher education institutions will no longer equate engagement in entrepreneurship only with business ventures and offer incentives to expand the entrepreneurial spirit across the institution.

2. Launch a national strategy to call for the active involvement of all of the stakeholders including both public and private sectors.
3. Develop a policy framework to mainstream entrepreneurship into higher education.
4. Provide sustained funding and support for entrepreneurship education activities.
5. Integrate entrepreneurship-related programs and activities in the established curriculum across different subjects so that it may add value to all degree courses.
6. Develop strong partnerships among higher education institutions, businesses, and other community organizations so that business leaders can serve as adjunct professors, mentors, coaches, and speakers, and involve students directly in enterprise projects.
7. Provide intensive training to teachers in entrepreneurship programs, and increase funding to support teacher training, curriculum development, and professional development.
8. Provide incentives for faculty members to conduct research in entrepreneurship education.
9. Encourage students, graduates and researchers with commercially viable business ideas to develop them into enterprises, and provide an effective support infrastructure within the institution such as incubators, financing, mentorship, *etc.*
10. Evaluate the effects of entrepreneurship education and prove its legitimacy on campus.

China today is not fully exploiting its entrepreneurial potential, and enhancing this will help the country in further transforming its economy and achieving future economic and competitive strength. Therefore, China still has a long way to go before entrepreneurship education is available in educational institutions at all levels and of all types and establishes itself as a mature field of study. In this sense, the recommendations stated above will help accelerate the way forward for the government and for individual institutions. Entrepreneurship education in China will benefit greatly from the combination of a clearer and broader meaning of the concept, an insightful and visionary strategic framework at the national level, an integrated curriculum across the disciplines, an intensified training program for the faculty, a closer link between the academy and the industry, and a sound scheme to record the process and evaluate the impact of entrepreneurship education on a regular basis.

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