

## Research Article

# Research on Strategies for Cultivating Innovation and Entrepreneurship Talents in Colleges and Universities

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**Abstract:** The aim of this research is to find a solution to the problems in cultivation of I&E talents in higher education institutions in China. The article has analyzed the development of the I&E education and its existing problems. Based on the relevant practices conducted in Changchun University, a series of strategies on how to cultivate I&E talents has been brought up, which includes the build-up of a scientific curriculum system and a practical training center, improving the professional standards of the teaching staff, creating a cultural atmosphere, improving the innovative awareness and entrepreneurship, establishing a sound reward system and building a online platform, to perform the I&E education more efficiently and to cultivate excellent I&E talents.

**Keywords:** Higher education institutions, I&E (innovative and entrepreneurial) talents, I&E (innovative and entrepreneurial) education

## INTRODUCTION

Higher education institutions play a key role in cultivating talents with innovative awareness and entrepreneurship. How to break the conventional rules, adapt to the changing society and cultivate real talents has become an important subject facing all the higher education institutions at present.

In western developed countries, I&E education has a history of several decades. In 1947, Myles Mace, professor of Harvard Business School, was the first to open an entrepreneurship course named "Start-up Enterprise Management"; a total of 188 MBA students attended the course. It was the earliest entrepreneurship education in the world (Zhou, 2009). The University of Southern California set up the master's degree in entrepreneurship in 1971. After more than 50 years of development, entrepreneurship education has become an important subject in the American education system, playing a more and more important role. In England, I&E education for university students has obtained a considerable development since the 1980s. The government has taken it as a priority and made policy to support, guide and regulate it. France regards I&E education as an important activity to enhance national power, and a training center of entrepreneurship has been set up specially. Sweden began to pay close attention to I&E education in the 1990s when there were more and more professors of entrepreneurship education, new entrepreneurship courses and entrepreneurship training programs and academic

monographs in colleges and universities, at the same time, universities also conducted a series of institutional reforms to implement I&E education. At present, Sweden has broken the concept that traditional entrepreneurship education meets the individual needs, emphasizing "learning by doing". Singapore has led the way in I&E education in the Asian-Pacific region. In the last 10 years, Singapore has set up a complete system for entrepreneurship education. Entrepreneurship practice has been carried out through interacting with the science and technology park (Hu, 2010).

In China, the I&E education originated from the reform and opening up in the late 1970s of the last century. As a member of the "Entrepreneurial Education" project of the United Nations educational, scientific and cultural organization, China pilots entrepreneurial education in basic education stage as early as 1991, but the innovation and entrepreneurship education in higher education institutions started rather late. The entrepreneurship plan competition held by Tsinghua University in 1997 is the beginning of implementing entrepreneurial education in colleges and universities in China (Zhu, 2012). *The Decision on Deepening Education Reform and Promoting Quality Education Comprehensively* was released by the State Council of the People's Republic of China in 1998, pointing out that higher education should attach importance to cultivating students' innovative ability, practical ability and entrepreneurial spirit. In 1999, in the conference of national education work, comrade

Jiang Zemin and Li Lanqing pointed out respectively that educators should be helped to cultivate I&E awareness and ability. In 1999, the plan of education revitalization action of facing the 21<sup>st</sup> century made by the Ministry of Education completely puts forward the concept of entrepreneurial education and points out that it should strengthen the entrepreneurial education to teachers and students and encourage them independently to found high-tech enterprises. In 2002, Tsinghua University and the other 9 colleges and universities are identified as the pilot colleges and universities to carry out the innovation and entrepreneurship education by the Ministry of Education, which marks the official launch of the innovation and entrepreneurship education in China (Wang and Gao, 2012). So far, many schools have carried out the innovation and entrepreneurship education in the form of a second classroom. Schools such as East China Normal University and Donghua University have opened the entrepreneurial education courses and elective courses of entrepreneurship and venture capital respectively, etc. The innovation and entrepreneurship has more and more become the focus of the social concern (He, 2012).

“The party central committee and the state council attach great importance to the education work about innovation and entrepreneurship in colleges and universities”, mentioned in the speech of Yandong Liu, at the symposium on further promoting the innovation and entrepreneurship education reform in colleges and universities in 2015. The 18<sup>th</sup> National Congress of the Communist Party of China has clearly pointed out that it should enhance the support for innovation and entrepreneurship talent cultivation. Jinping Xi, the general secretary, has made important instructions for many times that it should speed up the reform of education system, pay attention to cultivating students’ innovative spirit, and create innovative and entrepreneurial talents in large scale, full of innovation spirit and daring to take risks. Lately during the visit to the United States, Jinping Xi, the general secretary, also paid a special visit to Global Innovation Institute which was founded in Seattle by Tsinghua University, Washington University and Microsoft, and brought a metasequoia as gift to the institute, wishing it thrives like the tree and high-end talents urgently needed by global economic development and scientific research innovation. Keqiang Li, the prime minister, stressed for many times that the core of the public entrepreneurship and everybody innovation lies in arousing the creativity of people, especially the creativity of youth. In May 2015, in order to implement the major decision deployment of the party central committee and the state council, the general office of the state council specially issued the implementation opinion on deepening the education reform of innovation and entrepreneurship in

colleges and universities, to make the system design and the comprehensive deployment from the national level.

At present, in accordance with the unified deployment of the party central committee, the compilingwork of the Thirteenth Five-Year Plan is busily underway. Yandong Liu stresses that it should bring the reform of deepening the innovation and entrepreneurship education into the Thirteenth Five-Year Plan, according to the requirements of the upcoming Fifth Plenary Session of the Eighteenth Central Committee, as an important content of accelerating the comprehensive reform of the higher education to plan entirety and design systematically.

Changchun University attaches great importance to the work of I&E talents cultivation, and quickly puts it into practice, seriously implementing the requirements of the party central committee and obtaining important achievements. This study takes the Changchun University as an example to introduce the strategies for cultivating I&E talents comprehensively, so as to provide some experience and references for the I&E education in the other higher education institutions.

#### **PROBLEMS EXISTED IN CULTIVATING INNOVATIVE AND ENTREPRENEURIAL TALENTS IN HIGHER EDUCATION INSTITUTIONS**

Colleges and universities across China makes a lot of exploration and practice in cultivating innovative and entrepreneurial talents as the reform for I&E education goes deeper. Despite of the achievement, the ability of the students still can’t meet the requirements of the national talent strategy and has its limitation in helping china achieve the goal of an innovative country. In many schools, the I&E education is still just a formality or even absent from the curriculum (Wang and Gao, 2012).

**Curriculum setting problems:** The importance of cultivating innovation and entrepreneurship talents has been realized by the society and schools, and the I&E education have been carried out in practice. What is undeniable is that it has not been better implemented and supported in the whole education plan. Most curriculum setting for the I&E education is unreasonable and monotonous. It has failed to combine with the professional course. Some universities just do the image project in carrying out the innovation and entrepreneurship education. It has no content at all. The innovation and entrepreneurship education is basically free from the traditional formal education and mostly carries through amateur guerrilla education using after school practice, which could not effectively improve

students' knowledge and skills in innovation and entrepreneurship and at the same time also affects the enthusiasm of students carrying through the innovation and entrepreneurship (Zhu, 2012).

**The limited actual use of the practice base for innovation and entrepreneurship:** In China, although there are many practice bases available for innovation and entrepreneurship in colleges and universities, their actual use is so limited. Most of equipments in campus base are old-fashioned and campus bases are lack of necessary materials. Although there are some newly purchased instruments and equipments, most of them are not open to students, so it is very difficult for students to undertake the innovation and entrepreneurship training. Moreover, it is not easy to contact the off-campus practice bases, and most of off-campus practice bases are privately owned. Even if accepting students to practice, usually these enterprises also only allow students to have a tour. So the student training is often just a formality, which could not meet the requirement of cultivating innovation and entrepreneurship talents (Jiang, 2014).

**Lack of teaching staff:** Most university teachers do not have practical experience from a factory, and are lack of practical experience and also have no idea of what a enterprise really needs. They could only teach the theory of innovation and entrepreneurship. It is difficult for them to guide students to take the innovation and entrepreneurship practice well and help students with their careers. According to statistics, in our country, among the professional teachers, who have the related working background are less than 10% and even if some teachers have a certain working background, the working time is also limited. The current situation of teaching staff doesn't match the talent cultivation for the innovation and entrepreneurship (Peng *et al.*, 2011).

**Lack of the cultural atmosphere for innovation and entrepreneurship:** Cultivating innovation and entrepreneurship talents can hardly do without the support from social and campus environment. At present, the talent cultivation for innovation and entrepreneurship has not yet created the cultural atmosphere for innovation and entrepreneurship. National culture, family culture, enterprise culture and campus culture have not yet given the leading connotation of innovation and entrepreneurship. The enthusiasm and efficiency of enterprise participating in the innovation and entrepreneurship education is not high and the costs and benefits boundary of university-enterprise cooperation is not clear, so it is difficult to deeply carry out university-enterprise cooperation. The lack of innovative culture and the low social participation restrict the talent cultivation for innovation and entrepreneurship to carry out (Liu, 2012).

## MATERIALS AND METHODS

When and where this study was conduct\*: This study was conducted in 2016 in Changchun, China.

**A scientific curriculum system for innovation and entrepreneurship:** Colleges and universities should scientifically design the curriculum according to the goal of talents cultivation, reasonably establishing curriculum category, class hour, form, etc., screening courses, optimizing the structure, gradually realizing the proportion of 5:5 between the compulsory courses and elective courses and the balance of in-class and after-class time, cutting professional classes to give students more time, so as to make the curriculum into a system of "widening specialty, thickening foundation, valuing practice and strengthening personality". On the other hand, Higher education institutions should break the traditional concept in specialty, carrying out the integration of each subject to realize the penetration and merging of each subject. In this way, set up some marginal courses and new comprehensive courses, to combine two or more subjects into one to form a compound curriculum and to establish a general education mode, and so on, so as to make curriculum gradually structured and integrated (Chen and Lin, 2015).

Set up three platforms, which are education, practice and incubation, and then courses can be established accordingly on the three platforms. Education platform is theory study, activities, trainings and cultural festival of I&E; the practice platform is practical training in or out of schools and college students' scientific research project; the incubation platform is entrepreneurship centers for undergraduates (Table 1).

At the same time, higher education institutions should also organize more competitions and activities related to I&E to give students more opportunities and platforms.

Changchun University adheres to the belief that creating more employment opportunities through establishing more business, 11 business courses, including "Gold Business Class", "Entrepreneurial Guidance for Blind Students" have been established. And I&E education have infiltrated into professional courses. Meanwhile, Changchun University encourages teachers to explore and research curriculum construction in I&E education, enabling I&E teaching philosophy to run through the whole teaching process. So students major in different subjects have the opportunity to learn the basics in I&E education, to cultivate innovative consciousness and entrepreneurial spirit of students from different subject background. In addition, teachers are required to integrate the innovative ideas into their teaching and to pay attention to discussion.

Table 1: Curriculum system for innovation and entrepreneurship

Three platforms	Course carriers
Innovation and entrepreneurship education	Theoretical teaching, activities, innovation and entrepreneurship training and cultural festival of innovation and entrepreneurship
Innovation and entrepreneurship training	Practice base for innovation and entrepreneurship in or out of schools and university students' scientific research project
Entrepreneurship incubation	Entrepreneurship garden of undergraduates

In order to constantly enhance students' ability of I&E, according to the instruction from Province Education Hall, a school level "College students I&E Training Plan" project and also a province level one shall be organized. And an intermediate inspection shall be performed and a final report shall be done. "College Students I&E Training plan" includes innovation training project, entrepreneurship training and entrepreneurship practice, of which the innovation training is that the undergraduate students individually or grouply, under the guidance of a tutor, independently complete the work of innovative research project design, the preparation of research condition and project implementation, research report writing and achievements (academic) exchanges; the entrepreneurship training project is that the undergraduate students, under the guidance of a tutor, complete the writing of a business plan, carrying out a feasibility study, simulating enterprise operation, taking part in enterprise practice and writing business reports; the entrepreneurship practice project is that the students under the guidance of tutors from both schools and enterprises, adopting the achievements of the previous training projects, putting forward a innovative product or service which is market-promising. The students' innovative ability and entrepreneurial ability based on innovation have been enhanced and the trying of building up a mechanism which allows students to participate in scientific research and I&E practice has been experimented through this plan.

In order to cultivate students' pioneering consciousness, to arouse the enthusiasm and to improve the ability for entrepreneurship, Changchun University also organizes entrepreneurship plan competitions. A total of more than 40 academic skill competitions are sponsored by the school yearly. The academic skill competitions will gradually cover all colleges, and the competition category ranges from professional competitions such as mechanical design and electronic design to the basic skill competitions such as flower arrangement and business negotiation, from competitions focusing on the application of theory such as mathematical modeling to the competitions paying attention to the practice such as computer skills. It has played a positive role in improving the professional skills and innovative ability of students.

Changchun University also frequently performs the innovation and entrepreneurship training in the form of activities, such as "The Activity of Entrepreneurship Training of Changchun University", which is very



Fig. 1: Activity of entrepreneurship outdoor training of Changchun university



Fig. 2: Activity site

popular among the students. The activity was conducted outside the campus, which had lasted for a week, from 8:20 to 16:00 each day, including free shuttle bus service, lunch served for ten RMB. The activity is to let students set up 22 organizations, which are media company, bidding center, accounting agency, document center, logistics company, IT service hall, commercial trading company, seven manufacturing companies, commercial bank, industrial and commercial bureau, tax bureau and four software and information service enterprises. The Chief Executive Officer (CEO) of each company was selected in a meeting before the activity. After arriving at the site of the activity, the CEO of each company started to make recruitment posters; company profiles, rules and regulations, and then the recruitment began. At the same time, the other students were preparing resumes and apply for the jobs. After the establishment of the companies, they got registered and made the Logos. Manufacturing companies carried out their production and contacted software companies to speed up the production rate and increase products yield, and then logistics companies and commercial trading companies are contacted for trading; media companies drew the posters and made logos with software, meanwhile were in charge of the broadcasting room; bidding center organized and auction for advertising space. Students got as much practice as they can in such activities (Fig. 1 and 2).

**Building practical practice center for I&E:** Higher education institutions should attach great importance to the construction of practice center for I&E and make full use of it. The outdated equipments should be replaced in

time. In Germany the equipments for students tend to be the most advanced (Jiang and Sun, 2015). Each college should be encouraged to set up innovative laboratories, and let students make use of the platform to develop and do research on the project of science and technology innovation.

In addition, Higher education institutions also should join hands with enterprises to establish high quality practice centers outside schools, and let students get first-hand working experience (Ding *et al.*, 2009).

Changchun University encourages each college to establish practice centers outside the campus and encourage them to establish laboratories for I&E according to their actual needs, and encourages the professional laboratories to open to students. The teaching institutes such as Electronic Information Engineering College and College of Computer Science and Technology are the first to set up the innovative laboratories which have been opened to all students along with their professional laboratories. Changchun University has got special funds from the government, about 5 million yuan to support the construction of training room for I&E and to build school-level and cross-major practice platform.

**Improvement of the professional level for the teaching staff:** Teaching staff with innovative thinking and entrepreneurial spirit is key to cultivating I&E talents. Only by consistently improving the quality of teaching staff and their professional standards, can students with such a quality be cultivated.

- Teachers are encouraged to walk out of the campus to learn in an enterprise to improve their practical ability. It will be challenging for teachers without a lot of practical experience to give lessons in I&E (Jiang and Cheng, 2013). Teachers and the enterprise personnel could also exchange their positions, in this way, teacher can get trained and the experienced working staff from enterprises can give the students an elaborate and intensive lecture. It could benefit both the teachers and their students.
- Strengthen teachers' training and study for I&E knowledge and skills. Changchun University attaches great importance to teachers' training for I&E knowledge and skills. Teachers are sent to training very often. For example, in November 2015, the school sent several teachers to participate in "Network Training Program for National College Teachers", "Senior Seminar for Backbone Teachers on Curriculum Development and Practice

of Innovation and Entrepreneurship Education in Higher Education Institutions".

- Experts from home and abroad should be extensively brought into the teaching group. Meanwhile, make full use of social resources, entrepreneurs, successful people, experts, scholars, and university graduates who have successfully started their own business should be invited to guide and instruct the I&E education (Jiang and Song, 2015).

**Creating a cultural atmosphere and strengthening the innovative consciousness and entrepreneurial spirit:** The key to cultivate I&E talents is to transform students' traditional way of study and their concept about getting employed, the change can be made gradually through campus culture and the appropriate guidance from the school, and the students' cooperation is also very essential.

Campus culture has directly affected students' growing and development. Higher education institutions should make full use of campus publications and network, radios and many other ways to promote an I&E environment. So the students can feel this atmosphere the moment they set foot in the campus, which will help to form their I&E quality gradually and encourage them to start business on their own. Well-known experts and entrepreneurs should be hired as visiting professors, holding special lectures to motivate students' consciousness in innovation and entrepreneurship (Ding *et al.*, 2009).

Higher education institutions should hold science and technology I&E activities regularly. Make innovative consciousness and entrepreneurial spirit become the campus culture and spirit by organizing "Science and Technology Culture Art Festival", "Youth Entrepreneurship BBS", "Innovation and Entrepreneurship Design Competition" and many other activities, so as to build a good atmosphere for I&E (Yang, 2012).

**Establishing a sound rewarding mechanism:** Sound rewarding mechanism in I&E can motivate students' enthusiasm. Therefore, High education institutions should set up special scholarship for college students who are innovative and entrepreneurial, and reward students or teachers for their outstanding contribution to I&E (Eludire, 2011).

Table 2: Course for I&E

Forms	Main contents
Theoretical teaching	Lecture Hall for I&E,I&E Meeting, I&E Salon
Activities	Summit of I&E, Seminar for I&E, Reports from outstanding students, lectures from self-made man and experts, etc.
Mentor's guidance	Defense and debate meeting
Cultural festival	Career planning competition, entrepreneurship plan competition, "innovation and entrepreneurship cup" college students debate and poetry recitation contest, etc.
Training	I&E Awareness training; entrepreneurship simulation training; I&E Quality Extended Training ; I&E Group Management training

Changchun University funds school-level and provincial projects for college students' I&E training plan, issues certificates to individuals or teams, makes an evaluation system which contains three evaluating levels -excellent, qualified, unqualified. At the same time, Changchun University rewards teachers 500 yuan for school-level projects and 1000 yuan for provincial projects and their performance will also be used as a reference to elevate their titles.

#### **Building a network platform:**

- Build a platform to publish high-quality lesson plans, PPT, videos, books, simulation exercises and papers etc, readers will have a comprehensive understanding to I&E for college students by viewing online materials or downloading them (Huang and Huang, 2014). Changchun University has invented high-quality online courses to allow students to study online or offline and has purchased a set of teaching software to conduct I&E training activities throughout the campus, popularizing I&E knowledge, enhancing their awareness and improving their ability in innovation.
- Build education management platform to issue training arrangement and project application and skills competition. Changchun University has built a undergraduate practice website for innovation, a platform to issue information in practice teaching and I&E education, to achieve those functions.
- Build a systematical information platform to introduce organizations or institutions relating to I&E education and to display the developments and achievements (Huang and Huang, 2014).
- Build university-enterprise joint platform to release cooperation among colleges, enterprises and the society. In 2015, Guidance Center of Employment and Entrepreneurship in Changchun University has approved for the application of the provincial employment and entrepreneurship special funds, which is 500,000 yuan. Establish cooperation with "Maker's Nest" and "3icity Maker space". Realize information, capital and human resources' sharing through establishing Alumni Makers' Tribe of Changchun University to achieve the mode of 1+1 > 2, to create Changchun University's I&E space.
- Build a collaborative innovation platform to realize students' independent study, free exchanges and mutual evaluation between teachers and students. Changchun University has build up SPOC (Small Private Online Course), a platform to make all the functions become true.

#### **RESULTS AND DISCUSSION**

Curriculum system plays an important role in I&E education. A systematic and scientific curriculum

system can improve I&E consciousness and ability of the students effectively. So we need to reform the traditional teaching style, introduce I&E courses, enrich students' theoretical knowledge and establish a scientific and appropriate curriculum system.

Contents of the course should be practical and meaningful. For example, arrange I&E lectures to display the spirit, method, experience and rules that a successful entrepreneur has or has followed; hold seminars, reports, self-made man and experts' lectures, etc. to give the students the access to communicate with successful entrepreneurs in person and to provide theory guidance (Table 2).

#### **CONCLUSION**

Cultivating I&E talents is a new trend for each college under the new situation, which is not just a slogan. It is a requirement of the times. Due to the late start of I&E education in China and the influence of traditional education and employment concept, it still has a long way to go. Therefore, higher education institutions should deepen the reform further, explore strategies in I&E talent cultivation and establish a high-quality mechanism. Only in this way, the I&E education can be better carried out and excellent talents can be cultivated.

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#### **REFERENCES**

- Chen, Y. and K. Lin, 2015. University curriculum reform based on innovation talents cultivation: A case study of Shenzhen University. *Chinese Univ. Sci. Technol.*, 1: 134-136.
- Ding, Y., S. Zhang and Q. Zhou, 2009. A brief analysis on the construction of innovation and entrepreneurship training mode in independent colleges. *Cul. Hist. Vision Theor.*, 10: 77-78.
- Eludire, A.A., 2011. The design and implementation of student academic record management system. *Res. J. Appl. Sci. Eng. Technol.*, 3(8): 707-712.

- He, Y., 2012. Research on training methods of innovation and entrepreneurship talents from student perspective. *Sci. Technol. Innov. Herald*, 18: 255-256.
- Hu, S., 2010. The development and characteristics of entrepreneurship education of foreign undergraduate. *High. Educ. Dev. Eval.*, 26(4): 13-17.
- Huang, N. and G. Huang, 2014. Construction a network platform based on the "world university city" for undergraduate innovation and entrepreneurship education. *High. Educ. Tribune*, 2: 31-32.
- Jiang, X., 2014. Research on building a practice platform for innovation and entrepreneurship in mechanical industrial design. *Res. J. Appl. Sci. Eng. Technol.*, 7(2): 343-347.
- Jiang, X. and X. Cheng, 2013. Study and practice on manufacturing practice for mechanical industrial design. *Res. J. Appl. Sci. Eng. Technol.*, 5(14): 3736-3740.
- Jiang, X. and Y. Song, 2015. Research on platform construction of manufacturing practice for industrial design specialty in colleges. *Curr. Res. J. Soc. Sci.*, 7(1): 11-15.
- Jiang, X. and Y. Sun, 2015. Study on constructing an education platform for innovation and entrepreneurship of university student. *Res. J. Appl. Sci., Eng. Technol.*, 9(10): 824-829.
- Liu, H., 2012. Improving the mechanism of college students' innovation and entrepreneurship training. *Shandong Textile Econ.*, 8: 119-120.
- Peng, Y., Q. Sun and J. Yang, 2011. Exploration and practice on the training mode of the applied talents majoring in machinery. *J. Jilin Educ. Instit.*, 27(6): 143-145.
- Wang, L. and Z. Gao, 2012. Research on college students' innovation and entrepreneurship training. *Res. Coll. Stud.*, 10: 96-109.
- Yang, Y., 2012. Constructing a support platform for scientific and technological innovation and entrepreneurship of higher vocational college students. *Ind. Sci. Tribune*, 11(5): 177-178.
- Zhou, D., 2009. International comparative analysis on entrepreneurship education. *J. Jiangxi Norm. Univ.*, 1: 126-139.
- Zhu, X., 2012. Historical development and enlightenment of Chinese college students' innovation and entrepreneurship training. *Ind. Sci. Tribune*, 11(8): 158-159.