"Profession and Entrepreneurship Integration" Strategy of National Tsing Hua University and Its Enlightenment

Houchun Ding and Li Jiang*

Huanggang Normal College, Hubei, Huanggang, China

*Corresponding Author

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Abstract: "Profession and entrepreneurship integration" is the key point to deepen the development of entrepreneurial education in Chinese colleges, and can bring beneficial references for National Tsing Hua University to carry out case research on the development of entrepreneurial education. According to the research, the entrepreneurial education in National Tsing Hua University has distinctive characteristics in three aspects below: The exquisite design of general education course has fully highlighted the attention paid to knowledge breadth and knowledge integration; Diversified studying channel and format have fully ensured the personality and comprehensive development of students; Independently set Innovation and Entrepreneurship Program, and deepen the working depth of entrepreneurial education. "Profession and entrepreneurship integration" for entrepreneurial education in our country must reinforce course system design by regarding this as the reference, and then on the basis of enriching course categories, it has introduced the concept of "class group", gave considerations to both the professional characteristics and students' personality demand, and integrated entrepreneurial education into the professional education of students by providing them with dazzling "options".

1. Introduction

From the perspective of the time, there are key time nodes in the development of entrepreneurial education for Chinese colleges (refer to Table 1). Some people thought that the year of 1998 is the starting point for entrepreneurial education in Chinese colleges [1], and a more striking mark is the pilot work of entrepreneurial education in colleges started in 2002 [2, 3]. According to the "Notice of the Ministry of Education about the *Basic Requirements for Entrepreneurial Education and Teaching in Common Undergraduate Colleges (Trial)*" in 2012, colleges are requested to independently set "Entrepreneurial Foundation" Required Course for all students in colleges, which can be said as a leap forward from "a pilot" to "popularization". As the State Council released the *Implementation Opinions about Deepening the Innovation and Entrepreneurial Education in Colleges* in 2015, it has opened a reform process of entrepreneurial education in colleges "from minority to mass" and "from quantitative change to qualitative change".

In the development trace of "pilot operation--scale popularization--reform promotion", a new round of "entrepreneurial education" research climax was raised in 2014 in the academic circle, to explore the new mechanism of "whole-staff entrepreneurial education" fitting "mass entrepreneurship and innovation", and implement innovation and entrepreneurship in the entire process of talent cultivation (Yiming WANG, 2015[4]; Xiaohui MA, 2013[5]; Erlei ZENG, and Xinmin HUANG, 2010[1]), Promotion of entrepreneurial education "popularization and deepening" by integrating with professional education (i.e., "profession and entrepreneurship integration") (Xuan YI, Danlin SHEN, 2012[6]; Yize WU, 2016[7]) has become a key point for innovative and entrepreneurial education of colleges in "the era of mass entrepreneurship". So, how to realize "profession and entrepreneurship integration" in entrepreneurial education? This paper plans to carry out case studies on the entrepreneurial education of National Tsing Hua University, and provide references for "profession and entrepreneurship integration" in the entrepreneurial education of Chinese colleges.

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Table 1 Key Time Nodes in the Development of Entrepreneurial Education for Chinese Colleges

Time	Representative event	Realistic significance
1998	Successfully held the 1st "Tsinghua Entrepreneurial Plan" Event	Starting point: Pilot run
2002	The Ministry of Education has started the pilot work of entrepreneurial education, and carried out entrepreneurial education pilots in 9 colleges, including Tsinghua University, and Shanghai Jiaotong University	
2003	The First Entrepreneurial Education Training for Backbone Teachers was held at Ruxin Conference Center of Beijing University of Aeronautics and Astronautics	Entrepreneurial education teaching officially started [3]
2005	KAB Entrepreneurial Education (China) Project was implemented	From "pilots in colleges" to "popularization in colleges"
2010	According to the *Opinions for Promoting Innovative and Entrepreneurial Education in Colleges and the Entrepreneurial Work of College Students* by the Ministry of Education, it is requested that colleges should pay high attention to innovative and entrepreneurial education work	Introduce "college popularization" intro institutional regulations
2012	According to the Notice of the Ministry of Education about the *Basic Requirements for Entrepreneurial Education and Teaching in Common Undergraduate Colleges (Trial)*, are requested to independently set "Entrepreneurial Foundation" Required Course for all students in colleges	
2014	Premier Keqiang LI called for "mass entrepreneurship and innovation" in Summer Davos Forum;	New Start: "From minority to mass" and "from quantitative change to qualitative change".
2015	The word of "Creator" was firstly put forward in the government work report in 2015; The State Council released the *Implementation Opinions about Deepening the Innovation and Entrepreneurial Education in Colleges* in May 2015	

2. Typical Approaches of Entrepreneurial Education in National Tsing Hua University

National Tsing Hua University has obvious effect in the so-called "high-end" innovative and entrepreneurial education measures. The website information of the innovation and incubation center is as shown below: The center won "2009 AABI Annual Best Incubation Center Award" held by Asian Association of Business Incubation in 2009, and the First Prize of "Science and Technology Award" for "Performance Incubation Center" of Taiwan SMEs in 2013. However, the "basic" links are worthy of learning. Innovative and entrepreneurial education can be truly included in the conventional teaching of schools by careful design.

2.1 The Exquisite Design of General Education Course Has Fully Highlighted the Attention Paid to Knowledge Breadth and Knowledge Integration

National Tsing Hua University has a clear positioning for general education courses: Implement study-cored education concepts for students, enrich general courses, and cultivate students' diversified capacity; Give full consideration to the academic tradition that combines traditional and contemporary contents as well as cultural and scientific contents, and encourage original explorations; It has been engaged in diversified cultural understanding, social care and behavioral participation in the face of global competition. This concept is identical to the "connotation of entrepreneurial education" discussed in the academic cycle, i.e., it has sufficiently reflected "the talent concept of the 21st century", valued "knowledge scope and knowledge integration", and also reflected that the cultivation of innovative talents in National Tsing Hua University has been fully integrated into the layer of "general education", which can best reflect its integration in professional education.

Meanwhile, in order to ensure that this concept can be truly implemented, the school has established a professional institution--"general education center" to be responsible for the general education engineering of the school. This center is positioned by the school as "an independent teaching and research unit that is actually in charge of promoting, planning and executing general education". Under their leadership, the school has made constant researches and reforms in the general education mode of the entire school, and has formed an architecture formed by "core general course" and "elective general course", in which the former one follows "the knowledge

integration and topic orientation of basic discipline knowledge with thinking orientation, and interdisciplinary dimensions", and totally set 6 dimensions, including thinking mode, life exploration, art and culture, social culture pulsation, science, technology and society, and historical analysis, and requested students to select 4 dimensions freely from 6 dimensions, and study 1 course respectively in 4 dimensions (10-12 credits). On the basis of the difference in specialties of the school, the latter one has set three categories, including natural science field (basic science category; application science category, science, technology and social category), social science field (legal affair category; social, psychology, human, education and gender research category; management, information transmission, and economic categories), humanities field (art category, philosophy and religion category; humanity history), and requested students to select interdisciplinary courses, and expand knowledge scope (refer to Table 2 and Table 3).

Table 2 Six Dimensions of Core General Courses and Representative Courses in National Tsing Hua University

Name of core dimension	Name of representative courses
Dimension I: Thinking mode	Contemporary science and civilization, critical thinking, value and practice, knowledge and reality, Mathematical thought, daily physics, and eastern classic thoughts
Dimension II: Exploration of life	Contemporary life science, ecological system and global transition, psychology, and modern life, and contemporary cognitive neuroscience: Brain and mind
Dimension III: Art and literature	Cognition art, art and society, visual culture, cultural creativity inspiration and new media, classic Taiwan film appreciation: Art, politics and social development, Taiwan cultural classic reading selections, and cultural classic series
Dimension IV: Social and cultural pulsations	Civil society and legal governance, social culture analysis, culture and economics, the principle of economics, economics, media exploration and reflection, and global political economics
Dimension V: Science, technology and society	Pre-modern science history, scientific reform, science and technology and the society
Dimension VI: Historical analysis	Historical thoughts, historical and modern world, introduction to history, historical literature reading selections, and historical culture classic

Data source: Collected as per the data on the official website of National Tsing Hua University.

Table 3 Requirements to Study General Education Courses in National Tsing Hua University

object/field	Core general courses	Elective general courses (required credit at least)			Total credit (Core general courses+ Elective general courses)
		Natural science field	Social science field	Humanities field	
Foreign Language Department Chinese Department	Select 4 dimensions of 6 dimensions freely, and study 1 course in 4 dimensions respectively (10-12 credits)	2 credits	2 credits	-	At least 20 credits
Technological Management Department		2 credits	-	2 credits	
Bachelor Class of Human Resources and Social Security		2 credits	-	-	
Science, Engineering, Bioscience, Original Science Department, and Electric Resource Department		-	2 credits	2 credits	

Data source: Collected as per the data on the official website of National Tsing Hua University.

2.2 Diversified Studying Channel and Format Have Fully Ensured the Personality and Comprehensive Development of Students

On the basis of exquisite course systems and rich course groups, the school has provided several learning studying channels, including double major, major transfer, minor major, programs. Provided that students can meet the relevant conditions (as shown in Table 4), they can select the

mode to study based on personal demands, guide their professional knowledge to develop in a deeper level, and realize comprehensive development based on keeping personality.

Table 4 Various Studying Channels and Relevant Requirements in National Tsing Hua University

Item	Programs	Minor major	Double major	Major transfer
Format of certificate (letter of certificate)	Issue the certificate of programs	Fill in the name of [minor major] in the degree certificate	The degree certificate will specify the granting of double degree by two departments (classes)	---
Application standard	None	None	The average academic score for the former two semesters shall be above (GPA)3.4, or performance ranking in each semester shall be within 10% of students in the class	---
Time of application	There is no need to apply in advance (advanced application system is only applicable to information media and legal programs)	From the second academic year to the 2nd semester of the fourth academic year, applications shall be made before adding or dropping expiration	From the second academic year to the 2nd semester of the fourth academic year, applications shall be made before adding or dropping expiration	Apply for major transfer before the second academic year starts Before the third academic year starts, it is requested to apply to transfer to grade three of departments with similar nature or grade two of departments with different natures
Class-taking regulations	►At least above 15 credits, which shall be in accordance with program regulations. ►At least 9 credits don't belong to the main major, minor major or other required subjects of the student	It is requested to at least get the lowest graduation course credits of the main department and at least 20 credits of professional (special) compulsory subjects stipulated by the minor major	It is requested to at least get the lowest graduation course credits of the main department as well as the compulsory course credits of all professional (special) compulsory subjects stipulated by the additional department. Graduation credits shall be above 40 credits higher than the lowest graduation credit of the main department or additional department (the higher one shall prevail)	According to regulations of department transfer

Data source: Collected as per the data on the official website of National Tsing Hua University.

Besides, even if schools and departments have also given students the right to “select elective courses independently” in a real sense, in respect of the specialty, and students can select elective courses feely among the rich course categories planned in each semester (some courses will regard the initial study course as the basic requirements), and withdraw within stipulated term, in case of feeling unsatisfied about the course, as long as students can get the credit stipulated by the school, they can flexibly arrange the learning course of each semester. The school even encourages students to study elective courses in other schools that implement “mutual recognition of credit” with the school. Such full autonomy can ensure the personalized development of students and comprehensive development concept. In fact, it is expected to reserve students' personality and creativity essentially, and can best reflect the implementation of innovative and entrepreneurial education.

2.3 Independently Set Innovation and Entrepreneurship Program, and Deepen the Working Depth of Entrepreneurial Education

If it is required to be specific to “innovative and entrepreneurial education”, we should see problems by focusing on “narrow entrepreneurship”. National Tsing Hua University has also especially set “Innovation and Entrepreneurship Program” and “Innovative Design Program”, and directly pointed at “cultivating students' innovation and entrepreneurship spirits, so that they can start a real business after graduation”.

Table 5 Relevant Regulations of National Tsing Hua University about “Innovation and Entrepreneurship Program”

Course type	Sub-class	Compulsory provisions
Basic course	Creativity and Innovation Category Product/service/system design category Entrepreneurship implementation category	At least 9 credits (at least study one of the 3 categories)
Supportive courses	Business management laws category Science/technological literacy category Humanistic society and artistic accomplishment category	At least 6 credits (at least select 2 of the 3 categories)

Data source: Collected as per the data on the official website of National Tsing Hua University.

Table 6 Relevant Regulations of “Innovative Design Program” in National Tsing Hua University

Sorting	Category	Course title	Credit	Course attribute
Core courses (At least 6 credits)	Design class	Overview to Interactive Design	3	Undergraduate Department
		Service Design	3	Research Institute
		Graphic Design	3	Undergraduate Department
		Product Design Performance Techniques	3	Undergraduate Department
	Integration Implementation Category	Product Design and Development	3	Undergraduate Department
		Technology Commercialization Implementation	3	Research Institute
		APP Entrepreneurship and Practical Course	3	Undergraduate Department
	Creativity and Innovation Category	Creativity Cultivation& originality motivation and invention	3	Undergraduate Department

Data source: Collected as per the data on the official website of National Tsing Hua University.

Wherein, the former one is provided with at least 15 credits of learning plans (refer to Table 5) for “basic courses” and “supportive courses”. Besides, the concept of “course groups” is also applied in courses subordinated to each “sub-category”, so that students can be provided with rich and refined courses that can fully dock with professional characteristics, and 72 courses are displayed on the official website of the school. As for the latter one, it also requires at least 15 credits, including at least 6 credits of core courses (refer to Table 6). By contrast, we can see that the latter one has highlighted the concept of establishing the students' capacity to design, innovate and commercialize by cross-field cooperation and implementation, in respect of engineering majored students and ensuring them to be equipped with consumers' demands, marketing, product development, user experience, style model and team cooperation under the background of outburst in the cultural creative industry.

3. Conclusion--Enlightment from National Tsing Hua University

A strict course plan has been made by National Tsing Hua University General Education Center based on “research-oriented” working approaches, in respect of students' foundation and growth. Besides, the concept of “course group” is also applied in full consideration of the professional characteristics and students' personalized demands, and has provided students with dazzling “options”, supplemented by double main major, major transfer, minor transfer, programs and other learning channels, so that students' personality and comprehensive development can be ensured, and innovative and entrepreneurial education can be integrated in the school in all aspects.

In this regard, we should adopt the following approaches in “profession and entrepreneurship integration” of entrepreneurial education in Chinese colleges: Firstly, it is to reinforce course system design. It is requested to reinforce the research on design concept and design thoughts, and improve the correlation and overall efficiency of all course layers from general courses to professional courses, and should especially reinforce guidance and supervision in the academic affairs department. With respect to the revision of talent cultivation plan, it is requested to guide all teaching colleges to “study thoroughly”, and make scientific decisions. Secondly, it is to introduce the concept of “course group”. In respect of the design of course group, it is requested to take professional categories in our school into account, provide students with the resource sharing platform beyond the main major throughout the school, and encourage students to seek for personalized development. Meanwhile, course groups should also exert the effect of guiding students in further study. Thirdly, it is to enrich course categories. This problem is highlighted in our school. We should try our best to change the optional restrictions on the personalized development of students in the current talent cultivation plan, and ensure that students of all majors and categories can have a good development channel by “options” and “choices”.

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