

Research on Innovation and Entrepreneurship Education Reform in Universities Based on the Maker Space*

Anling Song

Xi'an Jiaotong University City College
Xi'an, China

Jing Liu

Xi'an Jiaotong University City College
Xi'an, China

Abstract—The development of maker space is an opportunity and challenge for innovation and entrepreneurship education in colleges and universities. The paper investigates the status and problems of university innovation, and explores the innovation education about training concept, curriculum system, faculties and practice platform of innovation and entrepreneurship.

Keywords—maker space; innovation and entrepreneurship; education reform

I. INTRODUCTION

Against the strategic background of "Mass Innovation, Mass Entrepreneurship", the education of innovation and entrepreneurship is the focus of theoretical research and practical exploration of talent cultivation in universities in recent years. There are some training modes. The first is the combination mode of the first classroom and the second classroom represented by Renmin University of China; the second is the knowledge and skills training and practical education model represented by Beihang University; the third is the training model based on the basic quality of innovation education represented by Shanghai Jiao tong University; the fourth is science park training model represented by Tsinghua University and Zhejiang University; the last one is the business school model represented by Yiwu Industrial and Commercial College [1] [2]. However, there are still some problems, such as inadequate understanding of educational concepts, inadequate teaching staff for innovation and entrepreneurship education, and weak practices.

In 2015, Maker Space has come up, which brings new challenges and opportunities to innovation and entrepreneurship. "Guidelines for the Development of Maker Space" pointed out that one of the service functions of Maker Space is to cooperate with colleges and universities to carry out entrepreneurship education and training for college students, and guide college students to start scientific entrepreneurship. As a new service platform for entrepreneurship in the Internet era, the advantages of public space are that it can fully integrate with college students'

entrepreneurship education, change and support the development of College Students' entrepreneurship education, and promote the development of innovation and entrepreneurship education in Colleges and universities [3]. Based on the mode of creating space by all, this paper explores the innovation and entrepreneurship education reform in Colleges and universities from the perspective of the current situation of College Students' entrepreneurship and their ability needs, so as to improve the quality of personnel training in an all-round way.

II. SURVEY ON THE CURRENT SITUATION AND PROBLEMS OF COLLEGE STUDENTS' INNOVATION AND ENTREPRENEURSHIP

Taking university undergraduates as the object of study, the questionnaire method was adopted to understand the basic situation of College Students' entrepreneurship and innovation education, including their own awareness, choice and influencing factors of innovation and entrepreneurship, as well as the current situation of University Entrepreneurship education. A total of 322 valid questionnaires were collected through online and on-site distribution. Through the above survey results, it is found that college students have strong entrepreneurial desire, and their concepts and understanding are in place, but there are also some problems.

Firstly, the proportion of entrepreneurship awareness and entrepreneurship practice is quite different, and the knowledge and ability of entrepreneurship are insufficient. The students have many entrepreneurship ideas, but few really put them into practice. The main reason is that college students lack the ability to start their own businesses, and also lack the preparation for all aspects of entrepreneurship.

Secondly, the field of entrepreneurship is single and the choice is not rational enough. Most of the students who have already started their own businesses and have entrepreneurial intention choose entrepreneurship projects which are mainly limited to the tertiary industry. Although they are combined with software and network high-tech industries, most of them are only service jobs in these industries, with low threshold, low technology content, low innovation and high replicability.

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Thirdly, the external environment is overvalued and their capacity reserves are underestimated. More students attributed the success and obstacles to entrepreneurship to the external factors such as social relations and funds. They had a low estimate of the importance of their ability preparation for entrepreneurship, which made them not pay enough attention to their own learning. In addition, there were also problems of eager to achieve, short-sighted, limited learning content selection and weak overall and long-term concepts.

Fourth, there is less integration with specialty. When choosing entrepreneurship, only a very small number of students combine with their own majors, ignoring the importance of professional knowledge, which is a waste of four years' education resources and time. On the other hand, it also reveals the degree of neglect of professional education among college students, which is also very dangerous in the long run.

Finally, from the university level, entrepreneurial support and guidance is not yet perfect. The curriculum of entrepreneurship has not formed a complete system; entrepreneurship guidance is mainly limited to entrepreneurship competition and SYB training stipulated by the state; the team of entrepreneurship guidance teachers is also limited to in-school tutors, lacking the participation of outside-school enterprise guidance force. Although school tutors have certain knowledge reserve of entrepreneurship education, they lack practical experience of entrepreneurship, so they can not provide effective solutions to the practical difficulties in the process of entrepreneurship.

III. THE IMPACT OF MAKER SPACE ON STUDENTS' INNOVATION AND ENTREPRENEURSHIP

Firstly, Maker Space can provide software and hardware support to the entrepreneurship team. Hardware support mainly includes physical space, which saves the cost of entrepreneurship. Software support mainly includes entrepreneurship mentors, such as university professional instructors and a small number of off-campus enterprise mentors, to provide registration, management and other consultation for entrepreneurship teams.

Secondly, Maker Space is open Information Sharing Platform and is no threshold and boundaries for entrepreneurs. Maker Space also provides all kinds of environmental information and industry information to college students [4].

Thirdly, the development of Maker space in Colleges and universities puts forward higher requirements for college students' innovation and entrepreneurship ability. Maker space covers a wide range of knowledge, including finance, law, management, electronics, information and other fields. High-quality comprehensive entrepreneurs with technology and business knowledge are essential [5]. Students need more complete and comprehensive knowledge and ability structure, master modern information processing technology and modern information processing technology.

IV. CONSTRUCTION OF INNOVATION AND ENTREPRENEURSHIP EDUCATION SYSTEM BASED ON MAKER SPACE

A. Innovation and Entrepreneurship Education Talents Training Idea: Creating Innovation and Entrepreneurship Culture Atmosphere

The following steps should be followed: firstly, strengthen top-level design, organize in place, standardize management, and incorporate innovation and entrepreneurship education into talent training programs; secondly, formulate the relevant policy, encourage college students to participate in innovation and entrepreneurship activities; finally, create entrepreneurial models and strengthen demonstration and leadership.

B. Construction of Innovation and Entrepreneurship Education Training Course System

1) *Optimizing the compound knowledge structure system of talents*: The curriculum can be divided into three parts: entrepreneurship basic course, entrepreneurship knowledge course, entrepreneurship ability course. The basic courses of entrepreneurship mainly cultivate students' entrepreneurial awareness, such as entrepreneurial thinking, career planning of College students, etc. The courses of entrepreneurship mainly teach the basic knowledge needed for entrepreneurship and lay a solid foundation for future entrepreneurship activities, such as entrepreneurship foundation, entrepreneurship financing, venture capital, financial management, small and medium-sized enterprise management, information collection and analysis, etc. The ability course of entrepreneurship teach the knowledge about communication skills and market development skills, including theoretical knowledge and practical knowledge, such as market research, various entrepreneurship report writing, case analysis, entrepreneurship training, simulation entrepreneurship.

2) *Enriching the forms of entrepreneurship education with the goal of practice training*: Adopting diversified forms of entrepreneurship education and pay attention to the cultivation of practical ability. In-school education can be combined with out-of-school education, which includes traditional classroom, practical training, competition, entrepreneurship training in the school and education includes enterprise visits, on-the-job internships outside school.

3) *Rational planning of innovation and entrepreneurship education time*: College students at different stages show obvious differences in their awareness and needs of entrepreneurship. In freshman year, it is necessary to offer basic courses of entrepreneurship and establish a correct concept of entrepreneurship; in sophomore year, it is necessary to offer courses with a wide range of knowledge; in junior year, it is necessary to offer courses of entrepreneurship knowledge. The fourth year mainly offers entrepreneurship courses, such as the

compilation of entrepreneurship plan, Market Research and training.

4) *Strengthening the construction of entrepreneurial teachers*: On the one hand, the existing team of entrepreneurship mentors should be planned, and encourage them to participate in the practice of entrepreneurship in industries and enterprises. On the other hand, it is of great importance to introducing maker space for entrepreneurship, the entrepreneurs, and successful entrepreneurs outside school, venture capitalists and other business entrepreneurship mentors join to provide guidance.

C. *Constructing the Service Ecosystem of Maker Space in Colleges and Universities*

1) *Maker space provides platform for innovation and entrepreneurship*: Maker space provides workplace for college students' innovation and entrepreneurship education, and provides research and development funds for excellent innovation projects. Setting up a business simulation training area in Maker space, integrating the original training platform of the school, using the experimental training system, to build a business experience platform for students to simulate the whole process of business entrepreneurship, so that students can experience the whole process of Business Entrepreneurship with low cost and fast, reduce the risk of students' real business entrepreneurship, and improve students' awareness in business activities.

2) *Maker space provides education resources guarantee*: On the one hand, Maker space can integrate the resources of libraries, Maker space and various teaching departments, provide entrepreneurship-related education and training for college students, such as enterprise registration, financial and taxation laws, and consultation of various kinds of puzzles in the process of enterprise operation, so that students can deeply understand and grasp the practical difficulties and problems encountered in the process of entrepreneurship. On the other hand, Maker space holds regular training seminars on industry, specialty and entrepreneurship counseling to provide free entrepreneurship counseling services for college students, so that students can timely understand the industry and entrepreneurship trends.

3) *Maker Space Provides Resources for Innovation and Entrepreneurship*: Maker Space can connect with the outside world according their own convenient channels, and integrate external resources for link matching, and. Provide some entrepreneurship resources, such as industrial resources, venture capitalists and other external resources that help the growth of enterprises; organize innovative entrepreneurship contest , unite external resources, invite entrepreneurs to guide and incubate excellent projects, and promote the transformation of innovative entrepreneurship education achievements.

V. CONCLUSION

In the era of "double creation", innovation and entrepreneurship education is an important part of college

education and personnel training. In order to make full use of the opportunities and advantages of Maker Space in Colleges and universities, it is essential set up the concept of training innovative and entrepreneurship talents, optimize the curriculum system of innovation and entrepreneurship, strengthen the innovative and entrepreneurship teachers and innovative and entrepreneurship practice platform. Actively promote the construction of public space in Colleges and universities to cultivate more creative College students.

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