



Innovation and Entrepreneurship Education Reform Path of Colleges and Universities Under the Background of Integration Between Industry and Education

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Abstract. This paper summarizes the methods of innovation and entrepreneurship education reform in the United States, Germany, France and the United Kingdom, and analyses the shortcomings of innovation and entrepreneurship education in Chinese universities. We put forward the reform measures of innovation and entrepreneurship education in China under the background of integration between industry and education from four aspects: teachers, entrepreneurial spirit, curriculum system and college-enterprise cooperation. It is expected to provide reference for the innovation and entrepreneurship education reform in Colleges and universities.

Keywords: Innovation and entrepreneurship education · Integration between industry and education · Reform path

1 Introduction

In 2017, general secretary Xi Jinping pointed out in report of the 19th National Congress that we should deepen the integration between industry and education. The State Council issued a number of opinions on promoting the integration between industry and education, which puts forward that talent training in colleges and universities should be oriented to the needs of industry and change to innovation and entrepreneurship. The development of integration between industry and education is to improve the strength of enterprises and industries to participate in the cultivation of innovative and entrepreneurial talents, and to solve the contradiction between talent supply and industrial demand. The opinions provide theoretical guidance and system guarantee for deepening the reform of talent training mode in colleges and universities. In recent years, governments at all levels have vigorously advocated and promoted the integration between industry and education. For colleges and universities, the most important content of the integration between industry and education is to innovate the talent education mechanism and cultivate people with innovative spirit and practical ability through the deep integration of schools and enterprises according to the needs of regional industrial development. This is the core connotation of innovation and entrepreneurship education in Colleges and universities.

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Therefore, under the background of the integration between industry and education, the innovation and entrepreneurship education in Colleges and universities should realize the connotative development and the transformation of talent training mode in the education reform and development. Under the background of “Mass entrepreneurship and innovation”, it is of great significance to apply the achievements of integration between industry and education in innovation and entrepreneurship education.

2 Current Situations of Innovation and Entrepreneurship Education in West Countries

Recently, the employment rate of college students has decreased year by year, and innovative and entrepreneurial employment has become a trend all over the world. Developed countries such as the United States, Germany, the United Kingdom, and France have made great progress in innovation and entrepreneurship education. The experience of innovation and entrepreneurship education in developed countries in the world is summarized as follows:

The United States has pioneered innovation and entrepreneurship education and is always at the forefront of the world. Especially after the 1970s, with the gradual rise of Silicon Valley, innovation and entrepreneurship education in the United States also flourished. Relying on universities with strong scientific research strength such as Stanford University and the University of California, Berkeley, Silicon Valley has integrated science and technology with industry, gradually becoming the kingdom of today’s electronic and computer industry, which has also become a classic case of the integration of industry and education in the United States. The development of Silicon Valley has attracted more people to be committed to innovation and entrepreneurship, and thus promoted the reform of innovation and entrepreneurship education in colleges and universities. Stanford University has established the entrepreneurship research centre and entrepreneurship corner in the university, and developed a complete innovation and entrepreneurship curriculum system. Babson college has formed a three-stage curriculum system to carry out innovation and entrepreneurship education for students in different stages. It adopts the “learning by doing” model in teaching, and students train entrepreneurial ability through the practice of establishing companies [1]. The innovation and entrepreneurship education in the United States is very characteristic. They take the path of interdisciplinary learning, form entrepreneurship groups with students from different disciplines, hold regular seminars, and solve practical problems through cross-integration of different disciplines [2].

Germany has a rich curriculum of innovation and entrepreneurship education, including all aspects of the entrepreneurial process. There are relevant courses for students to learn in the establishment of companies, financial management, policy interpretation and enterprise operation. Innovation and entrepreneurship education in Germany has been developing students’ thinking ability and innovative ideas since childhood. In the middle school stage, students are encouraged to go out of the classroom to carry out social practice and cultivate hands-on ability. At the stage of higher education, the curriculum has the characteristics of interdisciplinary, not only learning the professional knowledge, but also learning interdisciplinary courses to cultivate comprehensive talents. It is

particularly worth mentioning that Germany organically integrates vocational education and entrepreneurship education, highlighting elite education and precision cultivation. Most of the teachers in German universities come from enterprises, and there are special positions of innovation and entrepreneurship professors. Enterprise talents can provide project guidance to students and improve their innovative thinking [3].

French business schools attach great importance to the cultivation of entrepreneurship and teach students how to find business opportunities and new opportunities in enterprises. France has improved the innovation and entrepreneurship curriculum system and teaching methods. In the undergraduate stage, French colleges and universities have set up innovation and entrepreneurship courses to begin a preliminary understanding. In the master stage, innovation and entrepreneurship majors are offered for comprehensive study. In the doctoral stage, innovation and entrepreneurship theory courses are offered for in-depth research. The entrepreneurship courses in French universities include the training of future entrepreneurial skills, such as technical innovation, speech communication and leadership. In terms of teaching methods, innovation and entrepreneurship education in French universities has also been improved, for example, they have adopted the business plan teaching method. Through the training of business plan, the entrepreneurial logic will be fully displayed to students. This is a huge challenge to traditional teaching methods [4].

The innovation and entrepreneurship education in British universities is scientific research-oriented. The British government implements the scientific research-oriented policy, creating a strong cultural atmosphere and value-oriented innovation and entrepreneurship education for schools. The improvement of teachers' scientific research ability can not only play a positive role in guiding students, but also give students more professional and comprehensive guidance. British universities pay attention to the formation of school characteristics, and different universities have their own characteristics. For example, Solent University focuses on solving technical problems for enterprises, while South Bank University has some enterprises resident in the university, which has realized the school-enterprise cooperation in cultivating students. British universities attach importance to the role of students' interests in the process of talent cultivation, mainly in the form of innovation and entrepreneurship education in the form of elective courses, which are only prepared for interested people. The innovation and entrepreneurship institutions set up by the university pay close attention to students' interests when recruiting students, and take interest as an important selection criterion [5].

3 Defect of Innovation and Entrepreneurship Education in China

Compared with west countries, China's innovation and entrepreneurship education has some shortcomings, mainly in the following aspects.

3.1 The Shortage of Teaching Staff

Compared with developed countries, China's innovation and entrepreneurship education started relatively late, and the strength of teachers is relatively weak. It is mainly reflected in the following two aspects. First, most of the teachers engaged in innovation

and entrepreneurship education in China are not front-line scientific research personnel. Their theoretical knowledge is not solid enough and they do not understand the current frontier issues of science and technology. They only teach students how to write a business plan and how to start a company from the commercial level. It is not accurate enough to grasp the current hot spots of entrepreneurship in various industries, especially in high-tech enterprises. Secondly, most of the teachers engaged in innovation and entrepreneurship education have no real entrepreneurial experience. They lack certain operational ability and practical experience, and are difficult to cope with various problems in entrepreneurial practice. Especially the teachers related to employment guidance and career planning cannot meet the needs of theoretical teaching because they have not received professional and systematic training. Innovation and entrepreneurship education for college students emphasizes the cultivation of various comprehensive and practical abilities. Teachers need to have enterprise management experience and have a high level of knowledge in entrepreneurship theory to ensure that innovation and entrepreneurship education can be carried out with high quality.

3.2 Inadequate Attention to the Cultivation of Entrepreneurial Spirit

Since 2017, the central government has issued several documents to emphasize the value of entrepreneurial spirit. Entrepreneurial spirit is also regarded by west scholars as an important source of promoting social development. The data shows that the role of entrepreneurial spirit in economic growth is increasing [6]. Many colleges and universities have published textbooks about entrepreneurial spirit, and set up education courses of entrepreneurial spirit [7]. However, at present, the cultivation of entrepreneurial spirit in innovation and entrepreneurship education in China's universities is obviously insufficient. First of all, the cultivation of entrepreneurial spirit has not risen to the ideological level, and the atmosphere for cultivating entrepreneurial spirit needs to be nurtured for a long time. Second, colleges and universities do not pay enough attention to entrepreneurial spirit in the construction of campus culture. They do not highlight the importance of entrepreneurial spirit and cannot guide students. Thirdly, the cultivation of entrepreneurial spirit is a systematic and huge project. At present, most colleges and universities lack sufficient exploration and research on entrepreneurial spirit, and there are no effective measures for how to internalize entrepreneurial spirit into college curricula.

3.3 Unreasonable Curriculum Structure

Nowadays, most colleges and universities set innovation and entrepreneurship education courses as optional courses, and some schools set innovation and entrepreneurship courses as compulsory courses. But these courses are not systematic enough, and the types are not rich enough, so they have little effect. At present, most of the innovation and entrepreneurship education courses for college students' entrepreneurship theory education is not enough, students lack the basic analysis ability. The teaching materials of innovation and entrepreneurship education are more general, lack of professional background and less types. No textbooks have been developed for students with different academic backgrounds. In addition, some colleges and universities set up innovation and

entrepreneurship education courses to select good projects to participate in the competition. Offering courses in order to win awards is against the original intention of the course.

3.4 The College-Enterprise Cooperation is not In-Depth

At present, the resources of innovation and entrepreneurship education in colleges and universities in China are relatively scarce. In developed countries, enterprises enter schools to train students together. There are enough practical projects and teaching contents close to practice. However, both the development of curriculum resources and the construction of practice base in China are insufficient. For example, in the development of curriculum resources, most colleges and universities lack of communication with enterprises, which will inevitably lead to the lack of practicality of innovation and entrepreneurship textbooks. In addition, innovation and entrepreneurship education lacks practical teaching resources, such as practice base. Therefore, under the background of the integration between industry and education, enterprises and schools should build a practical platform to improve the effect of innovation and entrepreneurship education.

4 Reform Measures of Innovation and Entrepreneurship Education in Colleges and Universities Under the Background of Industry Education Integration

4.1 Improve the Level of Teachers

First of all, teachers' innovation and entrepreneurship education ability can be improved through a variety of project-based activities. For example, teachers are encouraged to participate in innovation and entrepreneurship training, to participate in innovation and entrepreneurship projects, to engage in part-time business to obtain entrepreneurial experience, and to participate in innovation and entrepreneurship practice. Through the participation of various innovation and entrepreneurship activities, teachers have improved their ability of innovation and entrepreneurship education. Secondly, we should encourage the front-line researchers with entrepreneurial experience to offer innovation and entrepreneurship education courses. Some scientific researchers in colleges and universities have succeeded in starting companies by relying on technological innovation. These teachers should be the main force of innovation and entrepreneurship education, because they have both profound knowledge and successful experience of entrepreneurship, which can convince students. Finally, the government should actively encourage enterprises to participate in the construction of teaching staff of innovation and entrepreneurship education. Some incentive measures should be proposed to attract experts and entrepreneurs in enterprises to participate in the innovation and entrepreneurship practice of colleges and universities. Experts with frontier knowledge can guide students to carry out more innovation and entrepreneurship practice activities by explaining their own successful cases. In this way, the innovation and entrepreneurship education in Colleges and universities can be synchronized with the current production practice.

4.2 Cultivate Entrepreneurial Spirit

The spirit of a university will have an important impact on the life of students. Integrating entrepreneurial spirit into the concept of running a school and the construction of campus culture can create an atmosphere that respects entrepreneurs and loves innovation and entrepreneurship, and has a strong supporting role in cultivating future enterprise furniture. In addition, the tenacity, integrity and other good qualities of entrepreneurs in the process of entrepreneurship coincide with China's socialist core values. Therefore, innovation and entrepreneurship education in colleges and universities should actively integrate entrepreneurial spirit into the ideological and political construction of the curriculum, and let entrepreneurial spirit enter the classroom. Not only the education of entrepreneurial spirit should be highlighted in the innovation and entrepreneurship curriculum, but also the entrepreneurial spirit should be closely combined with the professional curriculum to achieve the effect of moistening things silently.

4.3 Optimize the Curriculum System

Innovation and entrepreneurship curriculum system is the basis of talent training, which can let students play the main role. Therefore, in the process of creating the curriculum system, we should innovate the course content, curriculum organization and teaching methods. This measure can link innovation and entrepreneurship courses with professional courses, and link innovation and entrepreneurship practice and knowledge and skills. Colleges and universities can set up innovation and entrepreneurship courses in different levels. To understand the knowledge of innovation and entrepreneurship and realize the enlightenment of innovation and entrepreneurship education, the basic courses of innovation and entrepreneurship can be opened to all students. In order to carry out the innovation and entrepreneurship knowledge learning according to the students' professional background, broaden the entrepreneurial ideas, and improve the students' innovation ability in the professional field, the innovation and entrepreneurship professional courses are set up. In order to further let students experience and apply the knowledge in books, and let students evaluate their innovation and entrepreneurship ability in practice, so as to better understand and analyse themselves, we can set up entrepreneurship practice course. Entrepreneurship practice course is an effective extension of theoretical courses.

4.4 Deepen College-Enterprise Cooperation

Faced with the new demand for the integration of industry and education, colleges and universities need to further deepen the college-enterprise cooperation in innovation and entrepreneurship education. First, both schools and enterprises can conduct technical cooperation. Universities carry out horizontal research projects according to the technological needs of enterprises, and the members of the research group are mainly innovative and entrepreneurial students. Students master knowledge and exercise practical ability through the research of horizontal projects. Through the training of enterprise horizontal projects, students' knowledge and skills perfectly match the needs of enterprises, and

can become the reserve talents of enterprises, which also solves the employment problem. Secondly, enterprises can build laboratories and innovation and entrepreneurship practice bases with universities. Both sides jointly provide R&D equipment. Through the optimal allocation of resources, it can not only promote the cultivation of innovative and entrepreneurial talents in universities, but also provide solid support for enterprise R&D. Finally, when carrying out innovation and entrepreneurship education, colleges and universities must aim at regional economic planning, grasp the current trend of regional economic development and select appropriate enterprises. Colleges and universities should also have the awareness of serving local enterprises, and make dynamic adjustments in the formulation of talent training plans and the training mode of innovative and entrepreneurial talents according to the needs of local enterprises.

5 Conclusion

This paper summarizes the characteristics of innovation and entrepreneurship education in developed countries, and analyses the shortcomings of innovation and entrepreneurship education in China. In the context of the integration between industry and education, colleges and universities should vigorously cooperate with enterprises in terms of teachers' level, curriculum system and college-enterprise cooperation. We put forward four effective measures, hoping to provide reference for the reform of innovation and entrepreneurship education in Chinese universities.

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