Literature Reviews on Innovation and Entrepreneurship Education in China

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College students’ innovation and entrepreneurship education has been widely concerned by the society in recent years. Many important research achievements have been made in the theory and practice of innovation and entrepreneurship. A large number of articles on innovation and entrepreneurship education in China published in academic journals in the past 20 years were analyzed. These documents from different aspects discussed the basic concept of innovation and entrepreneurship education, curriculum setting, teaching syllabus, teacher training, talent training mode, innovative thinking and entrepreneurial ability training. Using literature research method and comparative research method, this paper mainly reviews the literature on the basic connotation of innovation and entrepreneurship education for college students, the reform of talent training mode, cultivation of innovative thinking and entrepreneurial ability, so as to lay a foundation for further research on innovation and entrepreneurship education.

Keywords: innovation and entrepreneurship education, talent training mode, innovative thinking, entrepreneurial ability

Introduction

This paper is about innovation and entrepreneurship in the educational field in China. The educational field not only includes educational level, but also administrative level. The content of this article is shaped primarily for this target audience, that is higher educational institution and persons who work in the fields, and for educational researchers studying them. What we present here can be traced back to the key factors of innovation and entrepreneurship that intersect different levels. According to micro-level interactions among individuals, that is teachers with their students, teaching methods, teaching facilities and so on; from mid-level interactions among groups, that is teacher groups or student groups inside these administrations; and a macro level focuses on exploring in the educational institution from a more comprehensive way, such as dynamic talent training model and cultivating innovative thinking and innovation and entrepreneurship ability.

To carry out innovation and entrepreneurship education for college students is a new stage of education development in China and a powerful exploration of talent training. In recent years, college students have become the most dynamic entrepreneurial group in innovation and entrepreneurship groups. Innovation and entrepreneurship has become an important way for college students to find employment (Ji & Yao, 2017). By
2019, mass innovation spaces, incubators and high-tech enterprises have attracted 1.347 million new college graduates, and one person starting a business can create 9-13 jobs on average (2020 Innovation and Innovation Ecological Upgrade Development Summit).

From the experience of social and economic development, we can see that scientific research, technology and innovative and entrepreneurial talents are the engine of economic innovation and development, and the source of human resources transportation is the universities with world-class level. Many regions in China are in the stage of industrial transformation and upgrading, and the demand for innovative talents with entrepreneurial ability is even increasing (Gu, Cao, & Yang, 2018).

In essence, innovation and entrepreneurship education is a practical education, aiming at cultivating talents with basic qualities of innovation and entrepreneurship, including students in universities, those who plan to start their own businesses, those who have started their own businesses, and those who have started their own businesses successfully. Innovation and entrepreneurship education has three basic characteristics, namely innovation, creativity and practicality. Colleges and universities actively create a good atmosphere of innovation and entrepreneurship education, which can, on the one hand, cultivate students’ innovative and entrepreneurial thinking, and on the other hand, equip students with necessary innovation and entrepreneurship ability. Innovation and entrepreneurship education in universities has been attached great importance to by society, government and academia (Wu & Liu, 2017).

This paper analyzes the basic connotation of innovation and entrepreneurship education for college students, innovation and entrepreneurship education personnel training mode reform, cultivation of innovative thinking and entrepreneurial ability. From these three aspects, this paper reviews the research achievements of innovation and entrepreneurship education for college students.

Research on the Basic Connotation of Innovation and Entrepreneurship Education for College Students

Innovation and entrepreneurship education is a kind of teaching concept and model adapted to the needs of economic society and national development strategy (Ministry of Education, 2010). Before the emergence of the concept of innovation and entrepreneurship education, three concepts: creative education, entrepreneurship education and innovation education, already exist and have been widely used.

In 1869, Galton, a British psychologist and eugenicist, published the book *Hereditary Genius*, which pioneered creative education (Hu, 1994). Modern Chinese creative education thought was put forward in 1917. Tao Xingzhi is not only a master of creative education thought, but also a practitioner of creative education experiment. He combined creative education with life education theory and children’s education thought, and made outstanding contributions in promoting the sinicization and popularization of creative education theory (Wang, 2007). Zhang Wusheng believes that the creation and development of creative education is not limited to the internal education. It is directly related to the change of social ideology and culture, and shares the same breath and destiny with the change of times (Zong, 1999).

The concept of entrepreneurship education in China was put forward by Hu Xiaofeng et al. in 1988. They believe that entrepreneurship education is the education that combines creativity and career in the course of life. Entrepreneurship education aims at cultivating a reasonable life. It is necessary to cultivate the basic abilities in three aspects: cultivate living ability, cultivate labor force and give play to creativity (Hu, Yao, & Jin, 1989).
Wu and Liu (2017) believed that entrepreneurship education is to cultivate people’s entrepreneurial consciousness, entrepreneurial thinking, entrepreneurial skills and other comprehensive entrepreneurial qualities so as to finally make the educatees have a certain entrepreneurial ability.

The idea of innovative education was put forward in 1998. Innovative education is an education with the basic value orientation of cultivating people’s innovative spirit and ability. Innovative education can be said to be the development and sublimation of creative education under the new historical conditions. The fundamental goal of innovative education is to carry out comprehensive reform of education, emphasizing integrity, comprehensiveness and systematicness (Wang, 1999). The difference between innovative education and creative education lies in that innovative education is not only the increase or decrease of educational content, but also the repositioning of educational functions. In addition to cultivating divergent thinking in teaching, innovative education pays more attention to the soil suitable for the growth of innovative talents (Wu & Liu, 2017).

Innovation and entrepreneurship are connected in connotation, and they tend to be consistent in essence (Shi, 2016). However, as a new educational concept, innovation and entrepreneurship education is not a simple superposition of innovation education and entrepreneurship education, but a transcendence of innovation and entrepreneurship education in concept and content (Wen, 2012). Innovation and entrepreneurship education aims at cultivating talents with basic entrepreneurial qualities and pioneering personality (Yang, 2011), and takes effective courses as the carrier (Wang, Sheng, & Chen, 2013) to cultivate students’ entrepreneurial consciousness, entrepreneurial spirit and innovative and entrepreneurial ability. Innovation and entrepreneurship education is a multidisciplinary field of study involving pedagogy, psychology, economics, management, sociology and so on. Multidisciplinary and interdisciplinary attribute decides that its research cannot be limited to a single education discipline, otherwise it will easily fall into a narrow environment of education and hinder the sustainable development of innovation and entrepreneurship (Lan, 2020).

Reform of the Training Mode for Innovative and Entrepreneurial Talents in Higher Education

The training of innovative and entrepreneurial talents is a complex and arduous task. It involves all areas of higher education and is also influenced by social factors. Therefore, we must constantly explore the concept of innovative talent training, so as to guide and improve the new mode of innovative and entrepreneurial talent training (Hu, 2012). Innovation and entrepreneurship talent training mode serves innovation and entrepreneurship education, and there is a subordinate relationship between innovation and entrepreneurship education and innovation and entrepreneurship talent training mode. With the development of the times, the training mode of innovative and entrepreneurial talents constantly changes and reflects and determines the development direction of higher education to a certain extent (Wu & Liu, 2017). The teaching content and methods of innovation and entrepreneurship education are determined through the research on the relevant modes of innovation and entrepreneurship talent training.

Through the research on the training mode of innovative and entrepreneurial talents for college students in China, we find it mainly based on theoretical research and case teaching research, and on this basis, the experimental research is carried out to prove the relationship between theory and practice. The traditional talent training model has the following four defects: First, it attaches great importance to employment promotion and ignores the construction of entrepreneurship and innovation system; second, the single standardized teaching
should be emphasized while the flexible learning across majors should be neglected; thirdly, the teaching of logical reasoning should be emphasized, while the cultivation of EQ, team communication and thinking ability should be neglected; fourth, classroom case study is emphasized while personal experience of entrepreneurship and innovation is neglected (Shang & He, 2021).

In order to improve the defects of the traditional talent training mode and realize the modern university innovation and entrepreneurship talent training system, different scholars put forward different solutions. Shang Zinan believed that universities should establish a ladder model of business talents training, and realize the integration of entrepreneurship and innovation with quality-oriented education by constructing a systematic and scientific entrepreneurship and innovation curriculum system and training double-qualified teachers. Industrial colleges and experimental classes for innovation and entrepreneurship have been set up to realize the integration of innovation and entrepreneurship education with professional education. Ma and Bai (2015) believed that most universities in China had no special training mechanism for innovative and entrepreneurial talents, and the innovation and entrepreneurship practice platform was not completed enough to enable students to receive effective training. Li and Tan (2021) believed that there was still room for improvement in the construction of cooperation for universities and enterprises and incubating bases for college students. It existed on a certain gap between the relevant professional education and the actual industry, which can not well follow up the current social frontier issues.

Chen Ke (2020) pointed out the innovation and entrepreneurship ideas and the goal of practical education reform should integrate so as to give full play to the advantages of colleges and universities in the integration of industry and education, transformation of scientific and technological achievements, and collaboration between universities and enterprises in scientific research through jointly carrying out entrepreneurial teacher training, skill training, entrepreneurial project incubation and venture capital docking with enterprises. Building an education system for innovation and entrepreneurship based on science and technology and a service platform for entrepreneurship incubation is to improve the quality of university personnel training. In view of the existing problems of innovation and entrepreneurship education in local colleges and universities at the present stage, Lei (2021) proposed to combine teaching practice and form an innovative and entrepreneurial talent training mode of trinity of teaching system, competition system and resource system. This training mode takes building teachers as the core internally, constantly reforming teaching methods and innovating curriculum system; externally it takes calling resources as the core, making full use of regional, practice base resources. Combining internal and external activities helps to improve the innovation and entrepreneurship ability of local college students. Through systematic analysis, Liu, Wang, Zhang, Huang, and Zhao (2020) put forward such measures as strengthening the sending of young teachers for further study, strengthening the cooperation in running schools among universities, incubating innovative experimental platforms, advocating the reform of Internet teaching model, etc., to change the teaching environment and improve the teaching quality. At the same time, professional guidance and lectures are used to provide graduates with guidance on innovation, entrepreneurship and employment, and encourage graduates to actively innovate and start their own businesses so as to realize their social value.

### Cultivation of Innovative Thinking and Entrepreneurial Ability

Innovative thinking is the one breaking through conventional thinking, using novel methods to solve problems; it is the guarantee for students to have creative ability. Creative thinking mainly includes logical
thinking, reverse thinking and imaginative thinking (Zhao, 2018). Xu (2020) believed that the promotion of students’ innovative thinking was the main factor to improve their innovative ability, and the thinking of seeking difference was the core part of cultivating students’ innovative thinking. Students with different thinking can have a unique view of the problem, and can think and explore the problem. He believes that improving students’ interest in innovation can improve students’ ability to solve and explore problems. Only students have high interest in innovation will they pay attention to innovation activities and get satisfaction and sense of achievement in the process of innovation.

The innovative thinking of college students is a one-dimensional structure composed of a variety of psychological cognitive behaviors, including a variety of behaviors such as when I encounter problems, I will subconsciously think more about why it is like this. This provides a clear direction for the cultivation of college students’ innovative thinking and specific methods for the development of the evaluation index system for college students’ innovative thinking (Sheng & Sun, 2020).

The frontier of the course content and the interaction between teachers and students have positive effects on the cultivation of college students’ innovation ability; high-quality scientific research practice and social practice have a certain effect on the cultivation of innovative personality and innovative thinking. Therefore, only when colleges and universities fully understand the growth rules of innovative talents and carry out corresponding innovation in talent training mode in the process of talent training reform can they effectively improve the innovative thinking and ability of college students (Guo & Deng, 2020).

Cultivating students’ correct outlook on employment and entrepreneurship can enhance students’ ability of employment and entrepreneurship. It can improve their ability and level of serving local economic and social development through establishing college students’ entrepreneurship and employment association, releasing quality information on employment and entrepreneurship, mobilizing students’ enthusiasm for employment and entrepreneurship, listening to students’ ideas, and supervising students to earnestly learn professional knowledge in daily study. By giving play to the role of diversified information, the problem of information blockage in employment and entrepreneurship can be solved (Zhou, 2020).

Universities should further establish and improve the cooperation mechanism between universities and enterprises jointly implemented by both sides. The cooperation forms, rights and responsibilities of both parties, process supervision and other contents in the cooperation process between the university and the enterprise should be defined in the form of agreements, so as to reduce the friction in the cooperation process and promote the smooth progress of the training of innovative and entrepreneurial talents in the cooperation between the university and the enterprise (Hu, 2017). Colleges and universities should expand the scope of cooperation units between universities and enterprises, not only limited to universities and enterprises around the city. At the same time colleges and universities should try to cooperate and communicate with enterprises outside the city, province and foreign countries. Students with demand for innovation and entrepreneurship should be arranged to study in enterprises to broaden their horizons and accumulate experience, which is very beneficial to students’ future innovation and entrepreneurship activities. Colleges and universities can also increase cooperation with township enterprises. To view cooperation from a strategic perspective, it is necessary to conduct research in villages and towns, appropriately increase the enrollment of rural students, encourage students to study in township enterprises, and cultivate students’ innovative thinking in practice (Hu, 2017).
Generally, college students start their own businesses in two stages: during the university period and after graduation. In May 2015, The Implementation Opinions on Deepening the Reform of Innovation and Entrepreneurship Education in Colleges and Universities was issued by the General Office of the State Council of PRC, which made a systematic design and comprehensive deployment at the national level (Liu, 2015).

Entrepreneurship development is now central to many government policies for building a knowledge-driven economy and an entrepreneurial culture. Clearly, the role of education is important in building entrepreneurial capability in tomorrow’s entrepreneurs and leaders (Hannon, 2006). For college students, starting a business has become a way for them to realize their personal value. The increase in the entrepreneurial rate and survival rate of college students’ self-employment has largely improved the employment rate (Wang, 2015). Entrepreneurship can reasonably distribute labor, reduce the economic gap between social classes, enhance the overall economic strength, and it is the healthiest and most suitable method for China’s economic development and social stability. The purpose of carrying out innovation and entrepreneurship education is to cultivate students’ ability of innovation and entrepreneurship, so that students can increase their sense of independence, self-reliance and self-improvement in the sense of hardship in employment. Exploring how to organically combine social demand, university resources and teachers and students is needed by society in order to cultivate innovative and entrepreneurial talents. With the rapid development of the fifth-generation communication technology, communication will move forward from the people-centered 4G era to the thing-centered 5G era. Combining the characteristics of Internet of things application technology, innovation and entrepreneurship ability will be cultivated and activated in a targeted way (Fu & Li, 2021).

The cultivation of entrepreneurial ability is inseparable from the cultivation of creativity. Creativity and curiosity are innate; creativity needs to be nurtured. The perfect integration of art and technology is the expression of artistic creativity. What distinguishes creativity from general ability is its novelty and uniqueness. Creativity includes the synthesis of knowledge, the cultivation of intelligence and the sound development of personality. Creativity is a capacity; there are several ways to foster creativity: First, to stimulate the thirst for knowledge and curiosity to develop keen observation and rich imagination, especially creative imagination, and to cultivate the ability to make changes and discover new problems or new relationship. Second, to pay attention to the fluency of thinking, flexibility and uniqueness. Third, to cultivate the thinking of seeking difference and seeking consensus.

Conclusions and Final Remarks

Based on some recent literature, we have learned from the present study about three main areas of study on the topic of innovation and entrepreneurship education. These areas are of course not to be considered as the definitive framework on this subject, but we hope that they can serve as guidelines to a better understanding of the three aspects: namely, the basic connotation of innovation and entrepreneurship education, innovation and entrepreneurship education personnel training mode reform, cultivation of innovative thinking and entrepreneurial ability.

Innovation is an extremely complex psychological process. It is a new layout pattern combining thought and practice, and an activity that can bring new value to resources. Innovation emphasizes pioneering and originality, including technology innovation, product innovation, brand innovation, management innovation, organization innovation, marketing innovation, knowledge innovation, channel innovation and so on.
Entrepreneurship is a process of seizing market opportunities and successfully obtaining benefits by using innovative products or services. The core of entrepreneurship is innovation. Innovation and entrepreneurship education aims at cultivating talents with basic entrepreneurial qualities and pioneering personality. The education is not only focused on cultivating students’ entrepreneurial consciousness, innovative spirit and innovative and entrepreneurial ability, but also aimed at the whole society, aiming at those who plan to start their own businesses, have started their own businesses, and have started their own businesses successfully. The training of innovative thinking and entrepreneurial ability should be carried out in different stages and layers.

Scientific and reasonable testing methods and modes must be adopted in the reform of talent training mode, which is an important measure to ensure the quality of teaching (Gong, Li, & Hu, 2016). Innovation and entrepreneurship education focuses on cultivating students’ practical ability and innovative spirit, which cannot be assessed by traditional teaching methods. To carry out innovation and entrepreneurship education is not to let all students start their own businesses, but to strengthen students’ practical ability, social responsibility and professional ethics. With students as the center and learning output as the driving force, it promotes the improvement of teaching and learning effectiveness through process evaluation and outcome evaluation and mutual evaluation between teachers and students (Cao, Liu, Lu, Zhu, & Yang, 2021). In addition, it is generally held in the educational circle that teaching and research are mutually beneficial, and innovative teaching behavior will promote the output of scientific research (Bao & Du, 2017). The latest research progress at home and abroad should be properly added into the course teaching, so as to broaden students’ horizons, improve students’ interest in practical teaching, reverse the tendency of students to emphasize theory over practice, cultivate students’ ability to find and solve problems, and promote the development of teachers’ scientific research (Cao et al., 2021).

Creative thinking is inseparable from the accumulation and application of knowledge. The level of a person’s cognitive and thinking ability is based on how much knowledge he has mastered. The level of cognitive ability has an important impact on the development of innovative thinking. American educational psychologist Ausubel who based on his assumptions about the organization of discipline and cognitive structure, believed that the organization of knowledge in curricula and textbooks should be similar to the way that people organize knowledge in their cognitive structure (Shao, 1997). Tao Xingzhi pointed that “education can’t create anything, but it can inspire children’s creativity to engage in the creative work” (Wen, 2013). This fully shows that education plays an important role in the optimization of students’ cognitive structure and the development of innovative thinking.

Entrepreneurial consciousness, thinking, knowledge and practical ability are the focus of the cultivation of entrepreneurial ability. Based on the principle of “open sharing and resource optimization” and through the training path of “demand-oriented—environment introduction—knowledge exploration—project practice”, the ability chain of “thinking—quality—knowledge—practice” for graduate students’ innovation and entrepreneurship is constructed. Demand orientation is the starting point and the end point of the cultivation of entrepreneurial ability and a strong campus cultural atmosphere of innovation and entrepreneurship is the premise of the cultivation of entrepreneurial ability. The systematic learning of entrepreneurial knowledge system is the foundation of the cultivation of entrepreneurial ability, and the practice based on competition and real projects is the core of the cultivation of entrepreneurial ability (Y. Chen, 2020).

College students’ innovation and entrepreneurship has become a new way of employment, and has been deeply concerned by the society and the government. Through sorting out the research literature in recent years,
it can be seen that the government attaches great importance to innovation and entrepreneurship education for college students, as well as the public and scholars’ attention to it. Although there are a lot of related papers and the trend of increasing year by year, most of them are not deep enough. The author believes that the research on innovation and entrepreneurship of college students is a long-term problem. Despite the stage achievements have been made, the cultivation of innovation and entrepreneurship education still needs to be improved in many aspects.

References


