

# Research on the Cultivation Model of Innovation and Entrepreneurship Ability and Literacy for Private College Students Based on the Integration of Industry and Education

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**Abstract:** Innovation and entrepreneurship in private colleges are lacking in both concept and practice. The existing innovation and entrepreneurship are limited to a small number of general education courses and innovation and entrepreneurship competitions. Most college students lack innovation and entrepreneurship awareness, innovation and entrepreneurship environment, experienced teacher guidance, and market perspective. Building a deep cooperation mechanism between schools and enterprises can cultivate the innovation and entrepreneurship abilities and qualities of college students. This article studies the model of "three collaborations" between colleges and enterprises to jointly cultivate college students' innovation and entrepreneurship abilities and literacy in the context of industry education integration.

## 1. Introduction

With the rapid development of higher education in China, the partnership between colleges and enterprises has become the most important talent cultivation mode in colleges. Deep cooperation between schools and enterprises, integrating innovation and entrepreneurship education throughout the entire curriculum system, including embedding innovation and entrepreneurship education in general courses, professional courses, and practical courses, has become a development trend. [1] The flexible mechanism of private colleges makes it easier to achieve deep cooperation between colleges and enterprises. Deep cooperation with enterprises can promote the cultivation of innovation and entrepreneurship abilities and qualities among students in private universities. [2] The two-way interactive school enterprise cooperative education model allows students to have a close contact with corporate culture and cultivate the quality of responsibility and pursuit of excellence, and guide college students to enhance their innovation and entrepreneurial advantages. [3-4]. Deep cooperation between schools and enterprises aims to open new courses that reflect industry and disciplinary trends, emphasizing the cultivation of students' innovation and entrepreneurship abilities, utilizing and leveraging the advantages of industry education integration, and cultivating students' core abilities [5]. Innovation and entrepreneurship education not only promotes employment, but also aims to help students adapt to the rapid development of the times. It is necessary to do a good job in innovation and entrepreneurship education. However, there are many problems with innovation and entrepreneurship education in private universities, and deep cooperation between schools and enterprises is expected to improve the current situation.

## 2. The Current Situation and Existing Problems of Innovation and Entrepreneurship among Private College Students

### 2.1 Lack of innovation and entrepreneurship education concept

Many Private Colleges have insufficient understanding of the importance, complexity, and practicality of innovation and entrepreneurship education, neglecting the cultivation of students' innovative awareness, thinking, and ability. Therefore, the college students are not highly innovative and cannot adapt to the needs of the talent market, especially the new economy and new

technology, their ability to start their own businesses is also insufficient.

## **2.2 Lack of innovation and entrepreneurship education teaching system**

Currently, many Private Colleges only consider innovation and entrepreneurship education as an elective course or extracurricular expansion course for college students in a certain year or academic year [6]. Most universities mainly focus on the employment of college students in their curriculum system, without fully considering the importance of cultivating their innovation and entrepreneurship abilities in the new era, and therefore have not included them in the main teaching system.

## **2.3 Lack of innovation and entrepreneurship education environment and condition**

At present, many Private Colleges only carry out sporadic activities with innovative and entrepreneurial education characteristics, without forming a systematic, orderly, and large-scale campus activity environment. Lack of innovation and entrepreneurship laboratories, and no one can help students when they encounter innovation and entrepreneurship problems. [7].

## **2.4 Lack of guidance from experienced technical teachers**

Teachers in private universities have heavy teaching tasks and a large workload, lacking the time and energy to specifically guide students in innovation and entrepreneurship, and lacking experience in guiding innovation and entrepreneurship. Currently limited guidance courses on innovation and entrepreneurship, lack active guidance on students' values of innovation and entrepreneurship. [8]

# **3. The Importance of Cultivating College Students' Innovative and Entrepreneurial Ability through deep cooperation between private colleges and enterprises**

Firstly, private universities must serve the local economy and social development. If they are separated from enterprises, they will lose the link with the local economy. Colleges should clarify the talent requirements of the industry from enterprises, in order to cultivate talents who meet the needs. Enterprises need to obtain talents from universities that meet the needs of their positions. With the development of new economy and new technology, there is a huge talent gap in artificial intelligence, Big data, robots and other industries, but the colleges lack corresponding majors, and it is relatively backward in talent training of new engineering fields and new liberal arts fields. Secondly, private colleges face many difficulties in cultivating innovative and entrepreneurial talents, including a lack of market awareness and vision, outdated innovation and entrepreneurship concepts, lack of platforms, and shortage of experienced teachers. They need to rely on the power of enterprises to jointly cultivate them. Enterprises have natural advantages in cultivating innovative and entrepreneurial talents, such as entrepreneurial mentors, innovative technologies, and market awareness. Thirdly, the educational mechanism of private universities is flexible, allowing for mixed ownership with enterprises, allowing them to participate in in-depth education and promoting their enthusiasm for education. For a long time, it has been difficult to deepen cooperation between enterprises and universities. Enterprises investing in enterprise teachers and equipment have high costs and low profits, therefore, their enthusiasm for cooperation is not high. The new form of mixed ownership in cooperative education has increased the investment cost of enterprises, visible expected benefits, and greatly increased cooperation enthusiasm.

## **4. Constructing a deep cooperation mechanism through the "three collaborations" of private colleges and enterprises to enhance the innovation and entrepreneurship abilities of college students**

### **4.1 Building a Course System for Innovation and Entrepreneurship for College Students through Deep Collaboration between Schools and Enterprises**

The colleges and enterprises jointly build an innovation and entrepreneurship curriculum system,

integrating innovation and entrepreneurship courses into traditional disciplinary and professional curriculum systems. Based on extensive research and research by companies familiar with the market, talent needs for innovation and entrepreneurship are proposed. Both colleges and enterprises propose corresponding courses based on the knowledge, abilities, and literacy required by talent needs, and design a series of courses to achieve training goals. College-enterprise cooperation adheres to the principle of "joint cultivation of talents, joint management of processes, shared responsibility, and shared achievements", fully leveraging the power of enterprises, optimizing resource allocation, and cultivating high-quality talents for social and economic development.

The innovation and entrepreneurship curriculum system includes innovation and entrepreneurship general courses, innovation and entrepreneurship professional courses, innovation project training, and innovation and entrepreneurship subject competitions. [9]Among them, the main purpose of the innovation and entrepreneurship general course is to cultivate students' innovation spirit and new entrepreneurial awareness, such as "Innovation and Entrepreneurship", "Entrepreneurship Operation Simulation", and "Professional Literacy". Through advanced cases of innovation and entrepreneurship, it integrates the innovation and entrepreneurship culture of enterprises, guiding students to pay attention to the market's courage to innovate, cultivate team spirit, and perseverance.

The main purpose of innovation and entrepreneurship courses is to cultivate students' innovation and entrepreneurship abilities in existing professional fields. One is to integrate innovation and entrepreneurship elements into the core courses of various majors. Explore and enrich innovation and entrepreneurship education resources for various professional courses, integrate elements such as innovation and entrepreneurship knowledge, ability, awareness, and spirit into professional courses, and strengthen innovation and entrepreneurship education. The second is to offer 1-2 specialized courses in innovation and entrepreneurship. Based on the cutting-edge knowledge of the discipline in this major, innovation and entrepreneurship courses are offered around the latest technologies and development trends in the industry, such as "Innovative Process Design" and "Current Situation and Development Trends of Robot Technology". Combined with case teaching in this major, this course helps students inspire innovation and entrepreneurship thinking from professional knowledge and guide professional practice with innovation and entrepreneurship thinking.

Innovation project training is a form of project training that helps students put innovation and entrepreneurship concepts into practice. There are rich cases of innovation and entrepreneurship in enterprises, and student training is organized based on projects, with concentrated training and output results. For example, Wuchang Shouyi University and Chinasoft International Group jointly built majors to convert enterprise projects into educational resources, allowing students to undergo practical training, with good results. Each year, 1-2 new training and innovation projects can also be added based on hot market products to attract students to participate in innovation research.

The innovation and entrepreneurship competition is an effective supplement to the innovation and entrepreneurship curriculum system, with strong guidance and can verify the effectiveness of the innovation and entrepreneurship curriculum system. For example, universities and students attach great importance to the innovation and entrepreneurship competition represented by the "Internet +" innovation and entrepreneurship competition, which has a wide range of participation and high standards. The competition can be used as a starting point to design innovation and entrepreneurship training courses.

#### **4.2 Colleges and enterprises collaborate to establish innovation laboratories**

Colleges provide venues, enterprises provide equipment, and jointly establish innovation laboratories. The traditional way of establishing a laboratory is that colleges purchase equipment from enterprises. Due to the lack of understanding of the performance and usage methods of enterprise equipment, the utilization rate of some equipment is not high, and the matching degree between equipment and courses is not high enough.

The colleges and enterprise jointly establish an innovation laboratory, where the colleges and enterprise design a talent training framework based on market talent needs, establish a knowledge ability quality training model, and launch a practical course system. According to the requirements of practical courses for cultivating students' practical abilities, suitable equipment is purchased to maximize the value of equipment.

These devices are not necessarily existing in the market, but are designed and customized by enterprises based on the needs of cultivating students' practical abilities. For example, in the field of robotics engineering, students need to understand the internal structure of robots. Enterprises need to make self-made equipment, decompose the internal structure, and display the internal structure. Students can then disassemble and assemble them by hand.

The deep cooperation between colleges and enterprises in building student innovation laboratories not only allows students to customize equipment for free disassembly and assembly, encourages students to boldly start and explore, but also simulates the construction of real production lines in enterprises, making students familiar with the real production environment of the enterprise and avoiding disconnection between students' experimental environment and the real environment.

According to the innovation and entrepreneurship process, establish a laboratory or training base to help students hone their willpower, master innovation and entrepreneurship knowledge and methods through perception, experience, experimentation, and practice, enhance their ability to analyze and solve problems, enhance innovation and entrepreneurship behavior and psychological qualities, and learn division of labor and cooperation. [10]

And use the laboratory as an incubator to guide students to carry out innovative research based on the hot topics, pain points, and difficulties of the subject and major, conduct market research, engage in product development and design for industry, industry, and enterprise needs, form specific plans, and guide them to conduct project road-shows to obtain financing opportunities.

### **4.3 Colleges and enterprises collaborate to train innovation and entrepreneurship mentors, Strengthen value guidance and ability enhancement**

Teachers are the guides for students' learning. The task of higher education is to cultivate high-level talents with a sense of social responsibility, innovative spirit, and practical ability, develop science, technology, and culture, and promote socialist modernization construction. [11]

Private college teachers need to have a deep understanding and practice of the value leadership of innovation and entrepreneurship. The innovation and entrepreneurship curriculum should prioritize the cultivation of a sense of social responsibility, guide students to pay attention to the national and regional economy, social development, people's happiness, and national prosperity, guide students to establish correct worldviews, life views, and values, and make students clear why innovation and entrepreneurship are necessary.

Guide students to stand from the perspective of humanity and think about the most urgent issues that humanity needs to solve, such as climate change, environmental pollution, etc; From the perspective of the country, study the practical and long-term development issues that the country urgently needs to solve, such as education equity, medical security, poverty relief, etc; From a regional perspective, delve into how to serve regional economic and social development. Cultivate students to solve problems from a historical and developmental perspective. Help students to establish a sense of mission and responsibility, forming excellent qualities of integrity, positivity, perseverance, idealism, ambition, and courage to take on responsibilities.

Private college teachers also need to have a deep understanding and practice of the ability innovation and entrepreneurship. Teachers of innovation and entrepreneurship education in private colleges lack enterprise experience, and their abilities and qualities need to be improved. Many teachers engaged in innovation and entrepreneurship education in private universities lack experience in enterprise production and management, and many entrepreneurship course teachers are held by counselors and other administrative personnel. The professional structure is unreasonable, and innovation and entrepreneurship courses are not valued, making it difficult to

achieve the expected results.

Enterprises have abundant human resources in entrepreneurship, and colleges have deep cooperation with enterprises to build a human resource pool for enterprise innovation and entrepreneurship, and to strengthen the joint training of innovation and entrepreneurship mentors and students.

We can also invite outstanding entrepreneurs, outstanding entrepreneurial alumni, outstanding entrepreneurial talents from society, judges of national innovation and entrepreneurship competitions, and mentors of innovation and entrepreneurship projects to share our experiences in the form of thematic modules.

## 5. Conclusions

Private colleges have been for one-third of the national universities, and their graduates are an important resource for promoting regional economic development. However, private colleges still have many problems in innovation and entrepreneurship education, such as lack of innovation and entrepreneurship concepts, lack of curriculum system, lack of environment and atmosphere, and lack of experienced innovation and entrepreneurship mentors. Deep cooperation between colleges and enterprises is a favorable way for private colleges to deepen innovation and entrepreneurship education, and also a necessary path for private colleges to serve local economic and social development. Due to the flexibility of the institutional mechanism of private universities, mixed ownership colleges can be jointly established with enterprises, greatly enhancing the enthusiasm of enterprises to participate in innovation and entrepreneurship education, and providing the possibility for deep cooperation between schools and enterprises.

This article innovatively proposes the "three collaborations" between colleges and enterprises to jointly promote innovation and entrepreneurship education based on the practical situation of private colleges. We jointly build an innovation and entrepreneurship curriculum system, and on the basis of the existing formal innovation and entrepreneurship general courses, deepen cooperation between colleges and enterprises to jointly build innovation and entrepreneurship professional courses and practical courses, and promote the in-depth development of practical courses through innovation and entrepreneurship competitions. At the same time, it is proposed that colleges and enterprises jointly build innovation and entrepreneurship training bases and jointly cultivate innovation and entrepreneurship mentors.

We hope that private colleges will attach importance to the cultivation of students' innovation and entrepreneurship abilities, improve their employment competitiveness and innovation and entrepreneurship abilities, and through deep cooperation with enterprises, jointly build a knowledge-ability-literacy model for innovation and entrepreneurship talents, and put it into practice to jointly cultivate innovation and entrepreneurship talents that meet the needs of economic and social development.

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3) Industry-University Cooperative Education Project of Ministry of Education: "Research on the construction of off-campus practice Base based on the cultivation of students' Innovation and Entrepreneurship ability."(220505181305244)

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