

# Research and Practice on Talents Training Model of Innovation and Entrepreneurship Education in Strategic Emerging Industries under Modern Apprenticeship System: A Case Study of Internet of Things

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**Abstract.** The most direct dilemma facing higher vocational education in developing innovative entrepreneurship education is that time is not enough. It usually takes several years for an innovative entrepreneurship project to be innovative, incubate, and eventually become a commercial one. In view of this problem, this paper puts forward the reform ideas of higher vocational education suitable for Chinese characteristics. Not only should the talent training mode be conducive to the development of innovative entrepreneurship education and real achievements, but also higher vocational education should carry out innovative entrepreneurship education different from undergraduate education.

**Keywords:** Innovation and Entrepreneurship Education; Reform of Talent Training Model.

## 1. Introduction

The goal of innovation and entrepreneurship education is to cultivate talents with basic qualities and personality of entrepreneurship. It is mainly to cultivate students' entrepreneurial consciousness, spirit and ability.

In 1991, the International Conference on Innovative Entrepreneurship Education in Tokyo defined innovative entrepreneurship education in a broad sense as the cultivation of the most innovative personality, including initiative, risk-taking, entrepreneurship, independent working ability, as well as technical, social and management skills. [1]

In 2010, the Ministry of Education pointed out in "Opinions on Vigorously Promoting Innovative Entrepreneurship Education in Colleges and Universities and College Students' Independent Entrepreneurship Work": "It is important for the education system to deepen people's learning and practice the scientific concept of development and serve the construction of an innovative country to carry out innovative entrepreneurship education and actively encourage college students to start their own businesses. Strategic measures are an important way to deepen the reform of higher education teaching and cultivate students' innovative spirit and practical ability, and an important measure to promote employment by entrepreneurship and promote full employment of College graduates. [2]

In China, higher education is divided into many levels. There are undergraduate education and higher vocational education for the national unified college entrance examination. In terms of time spent in school, the disadvantages of Higher Vocational colleges, especially independent ones, are obvious. The length of independent higher vocational education is basically three years, while the length of undergraduate education is at least four years. If we add master's degree and doctor's degree, it will be ten years. In the short three years, students not only learn professional knowledge, but also learn the knowledge of innovation and entrepreneurship. They have the consciousness and ability of innovation and entrepreneurship. Time is not enough. Needless to say, the completion of a series of innovative entrepreneurship projects, from having ideas to demonstrating feasibility, to novelty search, business value research, to project realization and commercial packaging, is often difficult for college students to achieve in only three years. Independent higher vocational students graduated after three years, and the continuity of the project is not guaranteed. Often, as he graduated to work, the project he was responsible for was interrupted. In general, undergraduate colleges and universities

have enough time, five to six years can guarantee a project from creativity to the ultimate commercial realization.

## **2. Solutions**

Innovation and entrepreneurship education should achieve four aspects of education: awareness training, ability enhancement, environmental awareness, practice simulation. Consciousness cultivation is to enlighten students' innovative consciousness and entrepreneurship, to enable them to understand the quality requirements of innovative talents, to understand the concept, elements and characteristics of entrepreneurship, and to enable students to master the basic knowledge needed to carry out entrepreneurship activities. Ability improvement is to analyze and cultivate students' critical thinking, insight, decision-making ability, organizational coordination ability and leadership and other innovative entrepreneurial qualities, so that students have the necessary entrepreneurial ability. Environmental awareness is to guide students to recognize the current business and industry environment, understand business opportunities, grasp business risks, grasp the process of business model development, design strategies and skills. Practice simulation encourages students to experience all aspects of entrepreneurial preparation, including venture market assessment, venture financing, business process and risk management, by writing business plan and carrying out simulated practice activities.

Vocational education is different from general undergraduate education, which pays more attention to serving regional economic development. Therefore, higher vocational education pays attention to industry application, industry demand and the most practical knowledge and technology at present. Effective innovation and entrepreneurship education in higher vocational education must be integrated with professional training. Only in this way can students make more effective use of their professional knowledge for innovation and entrepreneurship. At present, whether it is a traditional major, such as accounting, English, marketing, or a new major, such as cloud computing, big data, whether it is a traditional industry or a new industry, now we must use advanced scientific and technological means to become informative and intelligent. These advanced scientific and technological means often emerge, develop and mature with the emergence, development and maturity of strategic emerging industries in our society. Internet of Things (IOT) is the most important technology. And the innovation in these professional fields is often achieved by adding some advanced technological means to the tradition. Therefore, higher vocational education in innovation and entrepreneurship education can focus on the areas involved in strategic emerging industries. In this way, it can serve not only the related majors in these fields, but also the related majors in other traditional fields.

If vocational higher education wants to carry out innovation and entrepreneurship education efficiently, both teachers and students should work hard. Because innovation in strategic emerging industries requires continuous learning of new technologies and acquisition of new skills. So it is very necessary for colleges and universities to cooperate in production, teaching and research. For teachers, the cooperation of production, teaching and research can enable teachers to understand the industry dynamics in real time and the new technologies and fields that can be used. It can not only make teachers less detours in innovation, but also make fruitful achievements in the field of scientific research. For students, the cooperation of production, teaching and research can enable students to learn the latest professional knowledge and skills in school, thereby improving the level of innovation ability. At the same time, innovation and entrepreneurship education in Colleges and universities can promote the reform and innovation of industries and enterprises. Industries and enterprises can help teachers and students incubate innovative entrepreneurship projects. In order to further improve the effect of education, modern apprenticeship can be adopted in the cooperation of industry, education and research. It can alternate work and study in schools and enterprises, study and work situations, and school classrooms and enterprise tutors. This is the most appropriate and efficient form of Industry-University-Research cooperation.

In addition to ordinary high school students, secondary vocational students can also participate in Higher Vocational Colleges after taking the skills college entrance examination. Unlike ordinary high school students, they receive secondary vocational education after graduation from junior high school. If they begin to pay attention to innovation and entrepreneurship education at the stage of secondary vocational education, they will have six years after entering higher vocational education. This time is effective for the cultivation of innovation and entrepreneurship education. At present, many higher vocational educations in our country can carry out single entrance examination, recruit secondary vocational students of specific majors, as well as the convergence of secondary and higher vocational education, which is conducive to the development of innovation and entrepreneurship education.

Higher vocational schools should also set up special institutions for cultivating students' innovation and entrepreneurship. In addition to carrying out daily innovative entrepreneurship education, innovative entrepreneurship projects should be managed in accordance with the law and regulations. If a student wants to continue the project after graduation, he should be supported in innovation and entrepreneurship according to relevant regulations. After graduation, if students do not want to continue the project, they should transfer the project according to relevant regulations. In this way, good potential projects can be continued, not abandoned halfway.

### 3. Achieved Results

Developing innovation and entrepreneurship education in strategic emerging industries under the modern apprenticeship system does not add a burden to teachers and students, but adds trouble to schools. On the contrary, colleges and universities can promote learning, teaching and reform by this way. Keep the timeliness, practicability and advancement of teaching knowledge at all times. Keep the practicality and scientific of the skills while learning. After incorporating innovation and entrepreneurship education into the talent training system, the first professional innovation and entrepreneurship training room of a university was built. In the innovation and entrepreneurship contest in schools, many awards have been awarded. Teachers and students of this major have become unavailable team members in other professional innovation and entrepreneurship teams. Awards were also frequently awarded in national design competitions. To obtain multiple patents. More than this, the entrepreneurship rate of graduates of this major has increased by 4%, the employment rate has increased by 6%, and the quality employment rate has increased by 8%.



Fig. 1 Internet of Things Innovation and Entrepreneurship Training Room (2018)

**Table 1. Award-winning situation**

Serial number	Match item	Award-winning situation
1	2018 National University Internet of Things Design Competition (TI Cup) National Final	Third Award
2	2018 National University Internet of Things Design Competition (TI Cup) Central and Southwest China Competition Area	Privilege Award
		Second Award
3	2017 National University Internet of Things Design Competition (TI Cup) Central and Southwest China Competition Area	Second Award
4	2016 National University Mobile Internet (MIAC) Application Development Innovation Competition	Second Award
		Second Award
		Second Award
		Second Award
5	China's "Internet +" College Students' innovation and entrepreneurship contest	Second Award
		Second Award
		Third Award
		Second Award

**4. Summary**

Higher vocational colleges can achieve twice the result with half the effort in developing innovative and entrepreneurial talents in strategic emerging industries under the modern apprenticeship system. Professionals in this industry can benefit not only from related specialties, but also from other fields. Not only schools but also industries and enterprises can benefit. Not only do teachers benefit, but also students benefit.

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