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Evaluation and Analysis of the Spirit of Higher Education in the Innovation of Modern Apprentices with Information Technology

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ABSTRACT

The information-based modern apprenticeship system, a unique educational model that fuses traditional apprenticeship with modern vocational education, is bolstered by the power of modern information technology. Its distinctiveness lies in its ability to facilitate remote interaction between apprentices and masters, thereby transcending the temporal and spatial constraints of traditional educational models. This system enhances educational efficiency and quality. This article aims to evaluate and analyze the impact and application of modern apprenticeship innovation in information technology in the spirit of higher education. By delving into the essence and characteristics of an information-based modern apprenticeship system, and aligning it with the principles of higher education spirit, this paper dissects the promoting effect of an information-based modern apprenticeship system on higher education spirit. It also delves into the existing problems and challenges and proposes corresponding suggestions and measures.

Keywords: Personnel Training, Innovation and Entrepreneurship Education System, Modern Apprenticeship, The Evaluation Method of Cole

1. Introduction

With the development of the social economy and the upgrading of the traditional technology industry, modern skilled and innovative talents are seriously needed. However, due to our country's lack of innovation and entrepreneurial ability, it is difficult for college students to find jobs after graduation, and it is difficult for enterprises to recruit high-tech talents. Therefore, given the present situation, some people think that our country should combine the education and

employment systems *to* seek the perfect combination of them and cultivate innovative and entrepreneurial talents with the theoretical basis of modern apprenticeship. Innovation is the discovery, invention, improvement or combination of the theory, method, or technology. Entrepreneurship is the use of the opportunity to integrate innovative ideas and resources to start a new business. Innovation and entrepreneurship education in foreign universities has a long history [1]. As the birthplace of innovation and entrepreneurship education, Professor Terman at Stanford University proposed a combination of industry and academic advice, hoping to cultivate the students' innovative spirit. In 1947, Mace Myles first added the class of entrepreneurship education courses to the MBA [2]. The famous scholar Colin Bohr believes that entrepreneurship education, along with occupation education skills, is one of the third main types of education. American colleges and universities set up professional courses in entrepreneurship education in 1919. All colleges and universities have formed a relatively mature teaching system and teaching mode in entrepreneurship education. Data show that, in 2005, more than 1600 American schools set up 2200 courses related to entrepreneurship, including all aspects of management and entrepreneurship and other aspects of finance [3]. At the same time, based on the comprehensive course and the basic course, the entrepreneurial class has also been added to it. The primary schools in Japan launched "early learning" in 1998 [4] and encouraged children to participate in activities like milk delivery and newspaper work in their free time. This not only allows them to feel about the experience of their parents but also cultivates the ability of the child to innovate entrepreneurially. The research on entrepreneurship education in China started late, so the theoretical system is imperfect. Cao Shengli, an assistant to the president of the Institute of Higher Education in China, pointed out how to cultivate entrepreneurial talents and construct an innovative country. Many domestic colleges and universities have begun to explore the innovation and entrepreneurship education system [5].

Based on the theoretical and research results of the innovation and entrepreneurship education system at home and abroad and relevant theories, this paper explores and studies the education system of innovation and entrepreneurship in universities and colleges based on the modern apprentice system. In the second part, the paper expounds on the problems existing in domestic universities' innovation and entrepreneurial experience and the traditional apprenticeship system. In the third part, the paper expounds on the construction and realisation of the innovation and entrepreneurship system. In the fourth part, the analysis of the data results is obtained by using the education system of the modern apprentice system. Finally, the fifth part summarizes the construction and implementation process of the new type of innovation and entrepreneurship education system.

2. State of the Art

The modernity of the modern apprenticeship is relative to tradition. According to the development of history and the different ways of inheritance, each country has formed its own characteristics of the apprenticeship system. With the development of production technology and craft improvement, traditional apprenticeship has been unable to meet production needs, so countries have formed different modern apprenticeships used for occupation education and training. The cultivation of modern apprenticeship training mode pays more attention to professional skills, so 60% of the time, students are used to training practical skills, while 40% of the time are used to studying professional knowledge [6]. In addition, Germany has developed a standardized modern apprenticeship personnel training model, which includes laws and regulations; Australia regards modern apprenticeship as the new apprentice system. This training model aims to cultivate high-quality talents and combine all kinds of social subjects. It has established training programs and standard training with wide flexibility, diversity and certificates. The UK's modern apprenticeship system was introduced in 1994, and the British Training and Enterprise Council is responsible for it [7]. It mainly includes 16-18-year-old graduates who cannot receive continuing education, showing humanity's unique features. Swiss vocational education also follows the core spirit of the combination of education and training, pays attention to the cultivation of normative process, provides the corresponding reward, pays attention to students' differences, and encourages the development of occupation education under the modern apprenticeship.

In the history of our country, traditional apprenticeship education has been the main mode of

The training modes of the common apprentice system in our country are shown in Figure 1.

Figure 1. The teaching mode of the modern apprentice system in our country

vocational education for a long time. A teacher for a day is a father for a lifetime, and this sentence is good terrain for early apprenticeship. However, there are many old vulgar stereotypes, such as the apprentice apprenticeship, which cannot obtain remuneration, social status and personal dignity. After the founding of the new China, the reform and opening up of China began to explore explore the modern apprenticeship [8]. China's modern apprenticeship is defined as the target of training the necessary theoretical knowledge and strong practical skills of high-quality and skilled personnel. Under the government's guidance, higher vocational colleges and the employing units mainly use teachers to drive apprentice training and cultivate talented people in the practice teaching link. The use of school-enterprise cooperation is the general guiding ideology of higher vocational education in the future in our country. Schools have developed innovative entrepreneurship education training to break through the shackles of tradition, according to the requirements of the enterprise of the personnel training and combined with their situations. Although they have achieved certain results, there are still many problems in innovation and entrepreneurship education in colleges and universities. University teachers' awareness of the importance of innovation and entrepreneurship education is weak, and at present, most of the domestic university teachers' teaching aspects lack the cultivation of student's creative thinking and do not put the classroom theory and actual business together. The innovation and entrepreneurship curriculum system lacks the harmony of the professional curriculum system, so most universities regard the course as a required course of the Ministry of Education instead of focusing on the actual training of students' innovative skills. Therefore, they cannot fully stimulate the enthusiasm and ability of teachers and students. The management mode of the innovation and entrepreneurship education teaching is lagging behind because the Entrepreneurship Education Steering Committee did not fully play its role, so the management is lagging. The security system of innovation and entrepreneurship education is not perfect, so the government's policy and financial support can greatly stimulate students' enthusiasm for innovation and entrepreneurship, so the education system will have a good effect. Therefore, it should be further studied in exploring the education system of the innovation and entrepreneurship of the university in the future.

3. Methodology

3.1. The Construction of the Innovation and Entrepreneurship System in Colleges and Universities

Innovation and entrepreneurship education courses are the main ways to implement innovation and entrepreneurship education in colleges and universities. Innovation and entrepreneurship education is included in the talent training program, and the innovation and entrepreneurship education curriculum system can improve the students' practical abilities. Curriculum design is very important, so all students must be innovative and entrepreneurial. It is a good choice for all students to choose the corresponding curriculum module and take it as a general course to join the professional training program. In addition, innovation and entrepreneurship education are integrated into professional education. The specific organizational structure of innovation and entrepreneurship is shown in Figure 2 below. The school's innovation and entrepreneurial man-agement centre can reach the Innovation and Entrepreneurship Practice Association and the Innovation and Entrepreneurship Education Centre of teacher development through management. Through the cultivation of special social teachers, the ability to innovate and entrepreneurship in education can be improved [9]. In drawing lessons from the experience of other countries, China's colleges and universities have explored a new model of education. Pre-store refers to the practice of entrepreneurship training, micro-enterprises, social service, and participation in the training simulation. Cooperation with enterprises can cultivate students' practical experiences and innovation abilities. It has real workplace experience and reality training to strengthen combat skills, improve entrepreneurial ability, and cultivate innovative consciousness after school. It refers to classroom studying, including professional and technical training in the first and second classes so that students can make a systematic and theoretical study and accumulate professional knowledge. Thus, the students' humanistic connotations and theories of knowledge can be expanded and cultivated [10]. In the process of innovation and entrepreneurship education in colleges and universities, knowledge teaching and skills training are equally important, so combining the two together is the key to the success or failure of the innovation and entrepreneurship education model. In this kind of education mode, combining theory and practice can make students learn, apply, and practice. At the same time, colleges and universities have integrated professional education, quality education innovation, and entrepreneurship education, and the cultivation of innovative and practical ability has infiltrated the whole talent training process.

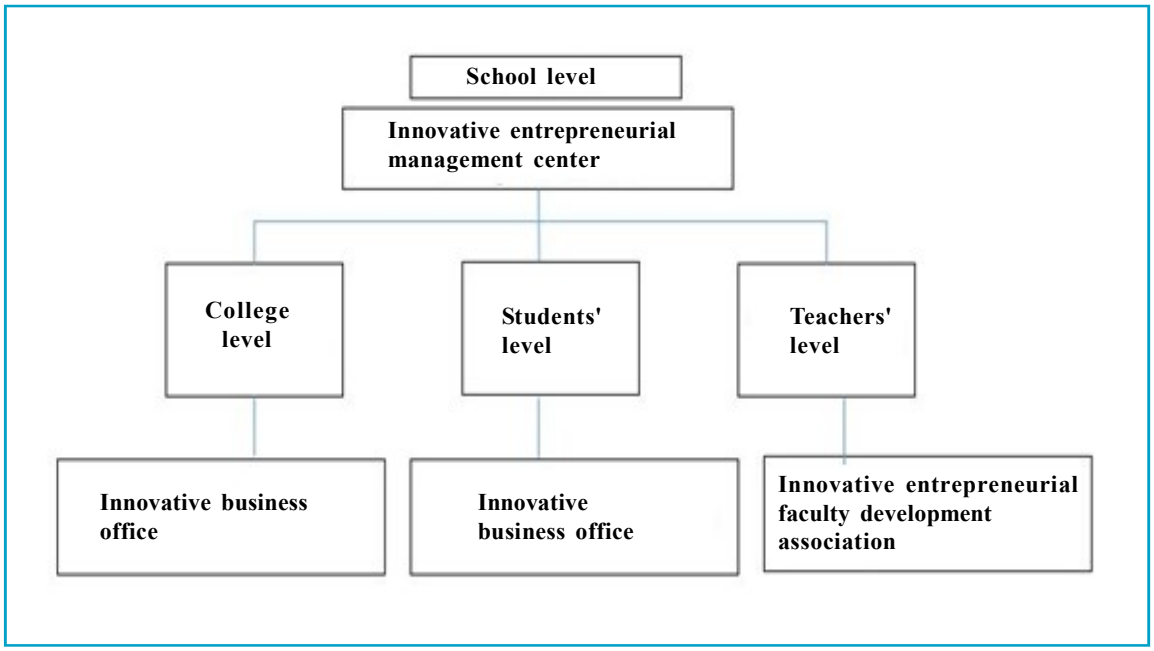

Figure 2. The concrete structure of the innovation and entrepreneurship system in colleges and universities

3.2. The Realization of the Innovation and Entrepreneurship System

It is equally important to carry out specific and feasible realistic paths according to the established innovation and entrepreneurship education framework. China's talent market urgently needs highly qualified professional talents, so the talent training mode of modern apprenticeship has the important task of improving the quality of higher vocational education. The traditional class can do the direct training, but they lack practical training, so the class teaching and mentoring teaching system should be combined to protect the student's operation abilities and innovation abilities. Students are not required to have too much theoretical knowledge, but the necessary content must be mastered. As the training mode of modern apprenticeship, the key to education and training, practical skills, and students' correct world outlook, outlook on life and values should be paid attention to. They should have a good personality and certain abilities to innovate it. As a traditional innovation and entrepreneurship education system reform, the students have more than 2 teachers. They use different teaching and training methods to make it easier for students to accept different learning contents, which is conducive to improving the comprehensive quality of higher vocational college students [11]. In teaching, vocational school teachers use teaching and experimental methods to make students understand the theoretical principles more intuitively. At the same time, some students who can work independently to complete the technical position of the apprentice will be given a certain salary. Taking the work and vacation systems for the trainee established by Holland and Switzerland as references, the minimum standards for the treatment of the apprentice were formulated. This is a win-win strategy for reducing students' economic pressure and the need for talent. From the overall perspective, the current university innovation and entrepreneurship course selection system is shown in Figure 3.

The innovation and entrepreneurship education courses are embedded in the talent training program, which can help grasp the development of innovation and entrepreneurship education from the source. Combined with the actual situation of our country's higher educationsystem, innovation and entrepreneurship education have been established. The practice teaching system of the "basic skill training—professional skill training—production practice training—science and technology innovation training" has been improved. Smooth running and scientific organization structure guarantee sustainable innovation and entrepreneurship education development in colleges and universities. So, we should optimize the education system of innovation and entrepreneurship according to the changes in the times and the actual situation. At the same time, we should use the assessment to guide the student's development.

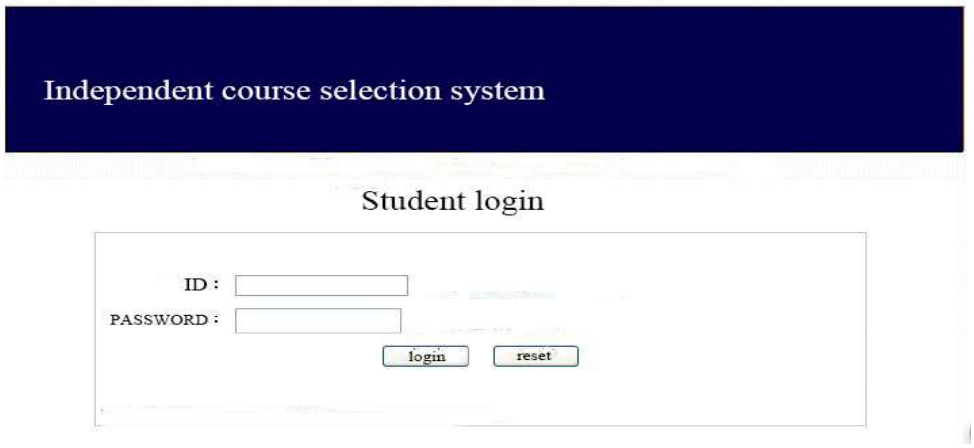

Figure 3. The course interface of the students in the innovation and entrepreneurship of the university

3.3. Evaluation Model of the Modern Apprenticeship

Modern apprenticeship is an education system that combines the education of vocational colleges with the professional training of enterprise employees. It is helpful to realize the abutment of the professional setting and industrial demand, the course content and professional standards, the teaching process and production process, the graduation and professional qualification certifi-

cates, and the vocational education and lifelong learning. For the evaluation of the system, we use Kirkpatrick's four-level evaluation model because it is the world's most widely used tool for training evaluation, so it is effective for evaluating the learning effect, and it provides a scientific way for measuring. The evaluation steps are shown in Figure 3 below. The assessment of the learning effect should be divided into four layers: the reaction layer, learning layer, behaviour evaluation and outcome level, and they are used to evaluate the degree of satisfaction, students' knowledge and skills and evaluation of working processes and key performances [12]. The main evaluation elements of the school certification are shown in Figure 4 below. The reaction layer is the opinion on the teaching contents, teachers, teaching methods and personal gains, mainly collected by the questionnaire. The learning level mainly evaluates the knowledge and skills of the apprentice. The examination of all kinds of courses in vocational colleges, the testing of enterprise skills training, and the examination of professional skills are all ways to evaluate the learning level. The behavior layer mainly evaluates the standardization of the working process of the apprentice, the knowledge of the main points of knowledge, as well as skills and job requirements of the understanding of the situation. This is a process evaluation based on the performance of the apprentice. Performance evaluation is the evaluation of the apprenticeship results, and it will examine the overall performance of the apprenticeship process, which mainly regards the key indicators of enterprise KPI as the assessment criteria [13]. This model can fit modern apprenticeship education characteristics well and can be effectively and comprehensively evaluated from the perspectives of the apprentice, schools, enterprise organization, etc. In addition, introducing the apprentice into the evaluation system can strengthen their sense of ownership, and putting the enterprises into the evaluation scope helps arouse enterprises' enthusiasm to participate in the training. The overall operation of the mode is simple, and it is easy to implement.

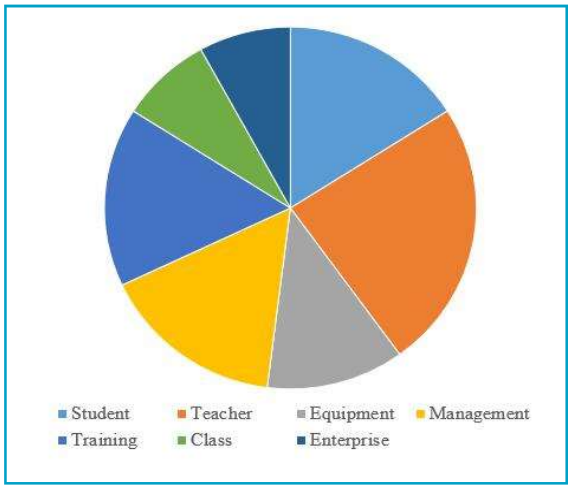

Figure 4. Factors of student evaluation in the school

4. Result Analysis and Discussion

In this paper, we implement the innovation and entrepreneurship education system based on a modern apprentice system in a college, and the data analysis and feasibility study will be carried out on its actual uses. The college is an educational institution whose main subjects are management science and economics. It now has a foreign languages institute, school of management, school of innovation and entrepreneurship education, economics department, accounting department, law department, department of computer science and engineering, faculty of humanities, art design department, the education department, the ideological and political theory course in the department of physical education, the CNA education center of continuing education those teaching units [14]. Since 2012, the institute has begun to actively build the innovation and entrepreneurship system in colleges and universities and has taught students the basic knowledge of innovation and entrepreneurship. The

situation of the innovation and entrepreneurship courses offered in Table 1. It makes students understand the innovation principle and carries out a series of innovative entrepreneurial skills training and simulation training courses. At the same time, it encourages graduates to start a business with the inclination of school policies.

Semester	*Entrepreneurship Foundation Course*	*Simulated training course*	*Entrepreneurship training course*	*Employment Guidance Course*
The first half of 2012	*6*	*9*	*18*	*2*
The latter half of 2012	*14*	*15*	*10*	*3*
The first half of 2013	*5*	*13*	*18*	*3*
The latter half of 2013	*4*	*12*	*12*	*2*
Total	***29***	***49***	***58***	***10***

Table 1. The situation of the school to start the course of innovation and Entrepreneurship

After a questionnaire survey of 350 students in the school, we learned about the current situation and prospects of the innovation and entrepreneurship education of students in different grades. Samples are satisfied with the necessity of the innovation and entrepreneurship education curriculum and the importance and support of these 3 aspects. From a cognitive perspective, the students are recognized as satisfied with the innovative entrepreneurship education topics, but the proportion of the choice of courses is only 70%. The selected courses are basically the introductory courses of entrepreneurship, but 30% of people still did not make a choice. As a result, we can find that the modern apprenticeship personnel training mechanism has a positive effect on the cultivation of innovative entrepreneurial talents, and it has qualified personnel training innovation and entrepreneurship. Students can become highly skilled talents with practical operation and skill training, so flexible conditions are required to cultivate innovative talents. This enables students to conduct theoretical study and practical operations in targeted and purposeful ways [15]. In addition, the modern apprenticeship system has a positive effect on the construction of the curriculum system, the improvement of teaching methods, the reform of personnel training mode, the evaluation of the teaching system, and so on. However, what cannot be ignored is that creative education faculty and teaching methods in our country's colleges and universities still need improvement.

5. Conclusions

With the advent of the new economic era represented by the information society and knowledge economy, a new type of talent with an innovative spirit of entrepreneurship has become an important factor in the core competitiveness of enterprises. Traditional colleges and universities lack the theoretical and practical training mode of innovation, so they cannot meet the needs of high-tech talents. Therefore, aiming at this phenomenon, the education system of innovation and entrepreneurship based on the modern apprentice system was discussed in this paper. After describing the current situation and problems of the development of the education system and the traditional apprenticeship system of entrepreneurship and innovation in colleges and universities, the construction and the realistic path of the innovation and entrepreneurship education system in colleges and universities based on modern apprentice system and the evaluation method were described in detail.

Finally, through its practical applications in the school field, the system can achieve a certain purpose for innovation and entrepreneurship training, which has a positive role in the curriculum system construction, teaching methods, improvements of the talent training mode reform, and the teaching evaluation system. However, the course's innovation and practice abilities still need improvement. The management model of innovation and entrepreneurship education teaching lags because the guiding committee of college students' innovation and entrepreneurship education has not fully played its role. The guarantee system of innovation and entrepreneurship education is still not perfect, so it should be improved in further study in the future.

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