Research on the application of big data technology in college students' innovation and entrepreneurship guidance service

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Abstract: The concept and mode of innovation and entrepreneurship education are embedded in the research university education system. From the four dimensions of external policy and public opinion environment, internal system module, operation mode and operation mechanism, this paper constructs the framework model of innovation and entrepreneurship education system in research universities. The model not only conforms to the training law of innovation and entrepreneurship talents, but also conforms to the training law of innovation and entrepreneurship talents. At the same time, innovation and entrepreneurship education can also be incorporated into the university education system. It also focuses on the internal system module of innovation and entrepreneurship education and the operation mode of three shift system. It lays a theoretical foundation for the promotion and implementation of the concept of innovation and entrepreneurship education in China. The relevant achievements of the construction of the innovation and entrepreneurship education system are optimized and improved accordingly. After putting it into practice, the innovation and entrepreneurship education level of our universities will be greatly improved.

1. Introduction

Innovation and entrepreneurship education is an educational mode which adapts to the development of knowledge economy with the emergence, development and application of high-technology. aiming at cultivating high-quality talents with innovative and entrepreneurial consciousness, thinking, personality and ability, it guides and helps college students to establish their innovation consciousness through multiple channels such as school, government, enterprise and society, and forms a new education mode A new educational concept and model of innovative thinking, stimulating entrepreneurship, mastering entrepreneurial knowledge and improving innovation and entrepreneurship ability. Innovation is the foundation of entrepreneurship, entrepreneurship is the carrier of innovation, and they are inseparable. Compared with the current international level of innovation and entrepreneurship education, China's practice and accumulation is not enough, and it is still in the initial and pilot stage, especially the lack of deep understanding of the scale, teaching mode and curriculum design of innovation and entrepreneurship education in research universities. There are also many problems in the research team, platform, content and methods, and there are still many problems, and there is no perfect and systematic innovation and entrepreneurship education yet The education mode and evaluation system. Therefore, this paper proposes to use big data technology to serve the innovation and Entrepreneurship of college students. On the basis of the benign structure

system of College Students' innovation and entrepreneurship guidance, this paper designs the application effect evaluation algorithm of guidance, and finally realizes more accurate employment service guidance. Experiments show that this research method can provide some scientific guidance for college students' innovation and entrepreneurship. The specific research process is as follows.

2. College Students' innovation and entrepreneurship guidance service based on data technology

2.1 Benign structure system of College Students' innovation and entrepreneurship guidance

Entrepreneurship education can also be divided into broad sense and narrow sense. According to the narrow definition of entrepreneurship - starting a new enterprise to seek business interests, entrepreneurship education in a narrow sense can be understood as a kind of education to cultivate students' comprehensive abilities in the process of undertaking, enterprise, business activities and planning, so as to make students change from simple job seekers to job creators[1]. Entrepreneurship education, in a broad sense, is to cultivate people with pioneering personality, to carry out the education of enterprising spirit, enterprising spirit, initiative, exploration spirit, adventure spirit and other psychological qualities, as well as independent work ability, technology, social and management skills in the process of entrepreneurship. It has the characteristics of innovative teaching development and stage[2-3]. Spontaneity refers to the coupling of the two and its internal kind. The spontaneity formed in the education model refers to the characteristics and intensity of innovation and entrepreneurship education with the development of society and the development of the country[4-5]. The process of cultivating innovative talents is the superposition of the actual needs of the University and the University. To effectively adjust the main needs of the University, form a benign coupling of mutual benefit and resource sharing between students and employers, can improve the overall level of the innovation and entrepreneurship education system of current research universities, optimize the structure of education system, so as to improve the effectiveness and adaptability of talent training[6]. This is a continuous process of integration and mutual benefit. Through the analysis of the three aspects of demand, it is not difficult to find that the demand of any one of the main body needs the cooperation and coordination of the other two. Higher education mainly plays a role of bond, which is reflected in the society and the educated[7]. Based on this, the author sets the University as a research-oriented university, which can meet the needs of universities, students and society at the same time. The benign coupling system of innovation education and entrepreneurship education is as follows:

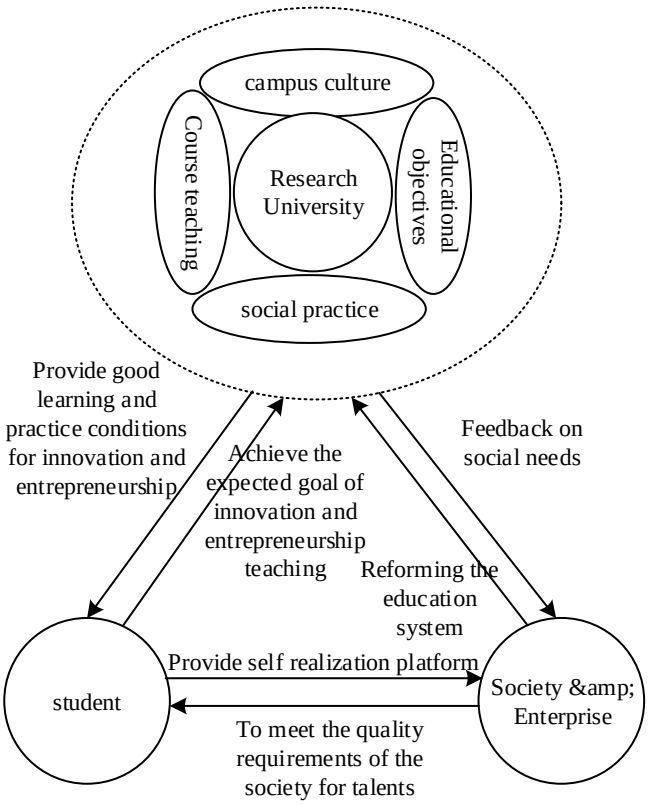

Fig. 1 The benign coupling system architecture of university innovation and Entrepreneurship Education

The figure 1 shows that in the innovation and entrepreneurship education mode of research universities, it reflects the needs and interrelations of the three subjects, and also illustrates the interaction between the subjects from another aspect, so as to construct the coupling mechanism of innovation and entrepreneurship education system[8]. According to the current and long-term economic, political and cultural development strategic objectives of the society, research universities must put forward specific requirements for the cultivation of innovative and entrepreneurial talents, including specialty, type, level and scale. We should make clear the goal of running a school, rely on Ideological and political education, quality education and professional education, and make clear the specific service-oriented and practical social utilitarian goal[9]. Colleges and universities should constantly improve the management level of students, understand their own needs for innovation and entrepreneurship education, and constantly meet the needs of their own physical and mental development.

2.2 Application effect evaluation algorithm of College Students' innovation and entrepreneurship guidance

According to the theory of personalized education, innovation and entrepreneurship education needs to teach students in accordance with their aptitudes according to the actual situation of colleges and universities and the characteristics and conditions of individual students, so as to cultivate talents with distinctive personality, rich creativity and innovative ability for the society, so as to meet the demand for talents in the modernization construction[10-11]. The evolution of innovation and entrepreneurship education at home and abroad shows that universities, institutions, teachers and students have sufficient autonomy is the basis of successful implementation of innovation and entrepreneurship education. People increasingly aware, the centralized type education system in general is not conducive to the implementation of creative education, too centralized system restricts the education

of adjust measures to local conditions and according to their aptitude, thus, at the same time of strengthening the central macroeconomic regulation and control, education management and will be below to local and school running autonomy, to expand the education responsibility and authority, and fully mobilize the enthusiasm and the passion of creative education, strengthening the vitality of school to adapt to the social and economic development will become the innovative undertaking a direction of the reform of education system. Innovation entrepreneurship education is one of the government, school and society organization synergy education systems engineering, involves the education teaching, practice platform, teachers, social support, such as content, so it affected by many factors, in this paper, a comprehensive analysis of the connotation of innovative entrepreneurship education and research results at home and abroad, on the index system construction mainly follow the following principles: strategic goal orientation, system with a lower, after all, comprehensive, objective and scientific, dynamic flexibility and comparable to fuck, comprehensive analysis and research university innovation level and characteristics of entrepreneurship education, Japanese standard, content, structure, etc., BP neural network consists of three parts: input layer, hidden layer and output layer, and the number of units is determined by the actual problem. The activation function of the hidden layer of BP neural network generally adopts Sigmoid function, that is, f(x)=(1+e), while the activation function of the output unit can choose any of the following three functions.

$$f(x)=\left(1+e^{-x}\right)^{-1} \quad (1)$$

$$f(x)=\begin{cases}1, x>0\\0, x\le 0\end{cases} \quad (2)$$

$$f(x)=\begin{cases}1, x>0\\-1, x\le 0\end{cases} \quad (3)$$

Further calculation shows that:

$$net_{jk}=\sum_i w_y o_{ik} \quad (4)$$

$$o_{jk}=f\left(net_{jk}\right) \quad (5)$$

$$E_k=\frac{1}{2}\left(y_k-\overline{y}_k\right)^2 \quad (6)$$

Reverse calculation:

$$\sigma_{jk}=\begin{cases}-\left(y_k-\hat{y}_k\right)f'\left(net_{jk}\right)\\f'\left(net_{jk}\right)\sum_m \sigma_{mk}w_{mj}\end{cases} \quad (7)$$

Correction weight:

$$w_{ij}(t+1)=w_y(t)-\eta\sigma_{jk}o_{tk} \quad (8)$$

Considering the influence of students' personality characteristics, family and school innovation and entrepreneurship environment on the education system, this paper designs the index system and determines the evaluation method[12]. From the perspective of result evaluation and process input, the paper puts forward the evaluation index system structure of innovation and entrepreneurship education, as shown in the figure, and establishes the evaluation index system from four dimensions of innovation and Entrepreneurship Education: government level, university level, social level and 'goods and students level The content of the price.

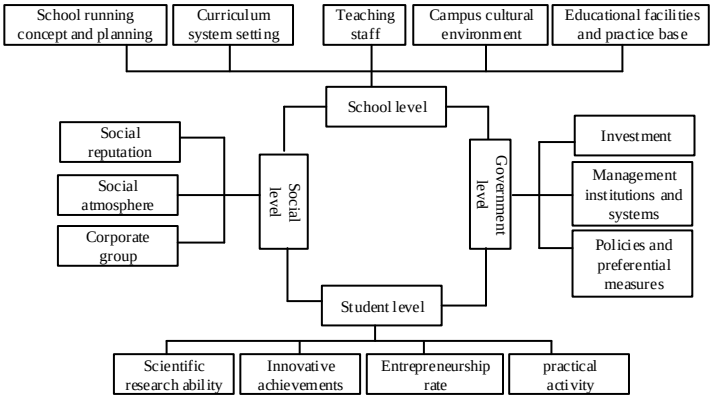

Fig. 2 Structure of evaluation index system of innovation and Entrepreneurship Education

Taking the above evaluation content as the main line, a set of innovation and entrepreneurship education evaluation index system including 5 secondary indicators and 13 tertiary indicators is constructed by using expert survey method.

Tab. 1 University innovation and entrepreneurship education quality evaluation index system

Evaluation system	First level indicators	Secondary indicators	Third level indicators
Research university innovation and entrepreneurship education evaluation index system A	College environment A_1	Soft environment A_{11}	Number of entrepreneurial associations A_{111}
			Number of seminars held A_{112}
			Number of start up competitions A_{113}
			Number of projects for cooperation between schools and enterprises A_{114}
		Hard environment A_{12}	Number of innovation and entrepreneurship centers or similar institutions A_{121}
			Coverage rate of students funded by entrepreneurial activities A_{122}
			The entrepreneurship rate of students after participating in entrepreneurship education course A_{123}
			Opening ratio of incubators and supporting services to students A_{124}
			Number of students received in innovation and entrepreneurship practice base A_{125}
			Transformation rate of innovation achievements A_{126}
	Teaching link A2	Course design A_{31}	Rate of core courses A_{311}
			Class hours of practice courses A_{312}
			Number of students participating in practical courses A_{313}
			Opening rate of interdisciplinary courses A_{314}
			The penetration of entrepreneurial knowledge in the existing curriculum A_{315}
		Teaching method A_{32}	Number of speeches by entrepreneurs A_{321}
			Proportion of business plan, research report and case teaching A_{322}
	Faculty A_3	Teacher background A_{21}	Proportion of teachers with entrepreneurial experience A_{211}
			The proportion of teachers with Entrepreneurship and business management training experience is A_{212}
			Proportion of high education students A_{213}
			Proportion of senior professional titles $A2_{14}$

		Innovation and entrepreneurship A_{22}	Papers cited and adopted by relevant government departments A_{221}
			Proportion of innovation achievement transformation A_{222}
			Teachers go to the business to hang up for A_{223}
			Assessment of innovation and entrepreneurship related knowledge A_{224}

The evaluation mechanism is the core of the value judgment of innovation and entrepreneurship education management in research universities. It needs to systematically collect and sort out the relevant information[13]. Through the improvement of the scientific evaluation index system, we can get the objective and comprehensive evaluation results of social reliability and validity from the two aspects of investment and benefit, which can provide reference for the further improvement and development of innovation and entrepreneurship education system and its good operation Provide the basis.

2.3 The realization of College Students' innovation and entrepreneurship guidance

Ideological and political education of College Students' employment is to organize and plan the ideological concept of employment according to specific purposes, and to apply the specific media into the minds of the educated, so as to help to establish or change their rational cognition of employment issues, improve their emotion and emotion towards employment issues and promote the rationalization of their employment motivation[14]. The place where the ideological and political education of college students is related to the guidance of employment is that of the ideological and political education for college students. It is the related field of employment in the ideological and political education. From the perspective of Ideological and political education, it takes the improvement of the ideological and moral level of College Students' employment and the strengthening of employment related quality as the core, and helps students to establish a correct outlook on employment and employment[15].

The effective operation of innovation and entrepreneurship education emphasizes the coordination of all elements and links, and the effective play of the functions and effects of each responsible subject. Foreign scholars have put forward the responsibility supervision construction of innovation and entrepreneurship education, emphasizing the joint effect of state intervention and government responsibility, the joint effect of family school community, corporate social responsibility and the joint effect of political parties, media and other organizations and institutions[18]. The construction of this means of innovation and entrepreneurship education can maximize the responsibility and education subject, and implement the maximum educational effect. First, the state intervention and government responsibility ensure the implementation of unified national leadership, unified planning and unified management of education, legal compulsory guarantee, and formulate relevant systems to provide policy guidance. Second, the combined effect of family school community, the combination of family education and school education, and the education of family community and school community. Third, it emphasizes the social responsibility of enterprises[19].

The open education system is conducive to strengthen the relationship between teachers and students and the society, and the smooth communication between the various parts and links of the education system, and form a learning society and university. At the same time, the unified rigid and rigid education system will inevitably violate the wishes and interests of students, and will not conform to the basic rules and principles of individualized education theory, and will inhibit the personalized development of students, and will not benefit the cultivation and play of their innovation consciousness and entrepreneurial ability, and hinder the development of their innovative and entrepreneurial behaviors. Therefore, in the future, the design of innovation and entrepreneurship education system must deepen the reform of the closed, unified and rigid system formed under the planned economy system, and establish an open, flexible and flexible system consistent with the basic rules of innovation and entrepreneurship education. The structure of stakeholders in the innovation and

entrepreneurship system is as follows:

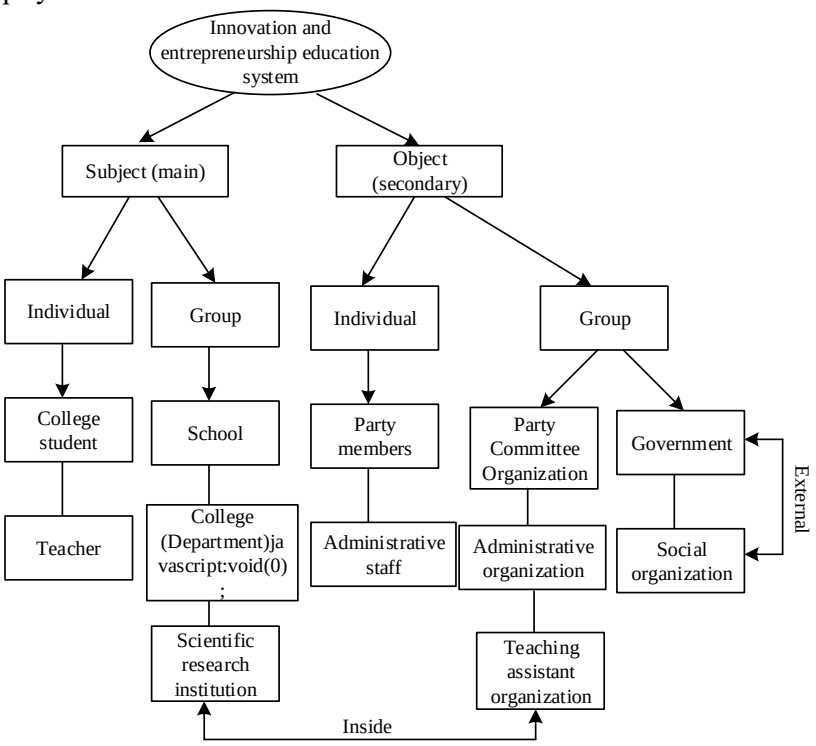

Fig. 3 Innovation and entrepreneurship service architecture

The content of innovation and entrepreneurship education is based on the characteristics of the subject specialty in Colleges and universities and the related specialties, aiming at cultivating students' awareness of innovation and entrepreneurship, innovation and entrepreneurship spirit and innovation and entrepreneurship ability, and is also the basic curriculum system of innovation and entrepreneurship education. The successful cases of innovation and entrepreneurship shall be enriched into the teaching contents in time. Successful entrepreneurs shall be employed as part-time teachers. The fresh experience of entrepreneurship will be rich in the teaching content of innovation and entrepreneurship, and the online education mode shall be involved. The content of innovation and entrepreneurship education shall be supported and perfected in a wide range, multi-angle, hierarchical and targeted way through the Internet. It is different from the general theory repeated research. It takes the cultivation of College Students' entrepreneurial consciousness, the creation spirit, the formation of innovative character and the cultivation of entrepreneurship concept as the goal, and the cultivation of the quality and ability of innovation and Entrepreneurship of college students as the key point of developing ideological and political education in Colleges and universities. It emphasizes the emphasis, the effectiveness and the systematicness and integrity of the content, so as to make the content of the research have the It has the characteristics of focus, pertinence and effectiveness.

3. Analysis of experimental results

The questionnaire was distributed 500 questionnaires, 486 were recovered. After screening, 457 effective questionnaires were collected, accounting for 91.40%. Among the effective questionnaires, 221 questionnaires were among the students, accounting for 48.36% of the total number of effective questionnaires; 107 graduate questionnaires, accounting for 23.41% of the total number of effective questionnaires; 129 teachers' questionnaires, accounting for 28.23% of the total number of effective questionnaires. The structure distribution of samples can be obtained by using Excel for preliminary analysis of data, as shown in table 2.

Tab. 2 Sample structure distribution of questionnaire

category		Number of samples	percentage	total
Gender	male	123	55.66%	221
	female	98	44.34%	
education	undergraduate	129	58.37%	221
	master	92	41.63%	
Professional category	Neo Confucianism	41	18.55%	221
	Engineering and learning	73	33.03%	
	Management	61	27.60%	
	Grammar	27	12.22%	
	agronomy	7	3.17%	
	Medical Science	12	5.43%	

In this survey, 123 men, 55.66% and 98 females, accounting for 44.34%, are male students. Among them, there are 129 undergraduate education, accounting for 58.37%, 92 master degree, 41.63%. In terms of professional category, the number of engineering students is the most, 73, accounting for 33.03%, followed by management, 61, 27.60%, and The number of medical and agricultural students is relatively small, which is 12 and 7 respectively. The distribution of the major categories of the students surveyed in the university is affected by the professional settings in our country: that is, the general colleges and universities have fewer agricultural and medical majors, so the number of the two major categories is relatively small in the subjects of this survey.

The reliability can be understood as the proportion of the real variance of the problem to the actual measured variance. Cronbachalpha coefficient test is a common reliability test method. The consistency level of the questionnaire is investigated by homogeneity test of the measured results. Generally speaking, the higher the reliability of the scale, the more stable the measurement results are. The weight matrix between the input layer and the hidden layer after training is as follows:

$$\begin{pmatrix} 7.1337 & 3.3399 & -20.8042 & -8.9315 & \cdots & -10.2882 & -0.0738 & 8.7458 \\ -4.1993 & 8.3247 & -6.8234 & 4.4815 & \cdots & 6.0269 & 8.4356 & -7.2378 \\ 1.7369 & 12.5193 & 15.1167 & -1.0377 & \cdots & -6.7898 & 7.0640 & 13.3712 \\ \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots & \vdots \\ 16.3487 & 4.7729 & 11.6321 & 10.5627 & \cdots & -7.9842 & -6.4517 & -8.4540 \end{pmatrix} \quad (9)$$

The weight matrix between the hidden layer and the output layer is obtained after the operation.

$$(-0.1142, 0.6277, 0.5791, 0.1269, 0.3461, 0.6273, 0.3429, 0.7621, \$0.2803, 0.5407, 0.5876, 0.6301) \quad (10)$$

Moreover, the accepted reliability scale value of the application effect of innovation and entrepreneurship teaching service is 0.7. The test results are shown in table 3.

Tab. 3 Reliability analysis results of questionnaire

Type of questionnaire	attribute	Coefficient α
Questionnaire for students in school	Entrepreneurial intention	0.752
	influence factor	0.749
	Severity	0.848
	Resource allocation	0.814
	Mode of implementation	0.727
	Encouragement and support	0.917
Graduate questionnaire	Entrepreneurial intention	0.838
	influence factor	0.794
	Severity	0.774
	Resource allocation	0.809
	Mode of implementation	0.864
	Encouragement and support	0.927

Teacher questionnaire	Entrepreneurial intention	0.739
	influence factor	0.853
	Severity	0.864
	Resource allocation	0.893
	Mode of implementation	0.853
	Encouragement and support	0.741

According to the results, we can see that the reliability of each part of the three questionnaires is higher than 0.7, which indicates that the reliability and consistency of the questionnaire are higher, and the design of the questionnaire is ideal. This paper investigates the relevant personnel of University on the understanding and orientation of innovation and entrepreneurship education. The results are shown in figure 4.

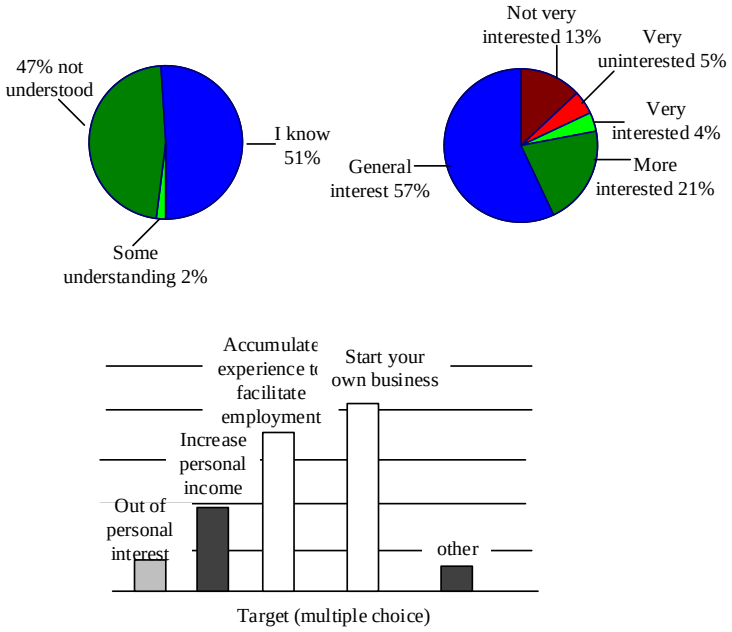

Fig. 4 Statistics of questionnaire survey results

The above survey results show that the University attaches more and more importance to innovation and entrepreneurship education, which makes the departments and teachers and students of the University have improved their understanding of it. However, there is still some misunderstanding about the strategic significance and internal meaning of the University. For example, in the survey, most people have completely separated innovation and entrepreneurship education from traditional classroom knowledge transfer, and they are regarded as two completely independent systems: some people think it is an elite education for a few people, which is not suitable for mass education; some people simply understand it as a kind of technical training, creative skills or entrepreneurship ability training, It is also suggested that this skill can only be improved in the work practice of entering the society, and doubt the effectiveness of the skill in the classroom teaching on Campus: it has not been paid attention to in action, Some departments and personnel only deal with it as a daily task form. The lack of understanding leads to the difficulty of integrating the innovation and entrepreneurship education concept into the original curriculum teaching system, which is not conducive to the institutionalization and systematic construction, and hinders its further promotion and popularization. Overall, teachers and students in the school have a great demand for innovation and entrepreneurship education, and they are eager to understand its connotation and objectives.

4. Conclusions

Through the establishment of a variety of interactive content, activities to strengthen the communication between teachers and students, understanding and cooperation and exchange between students. Using multi-faceted interpersonal interaction environment and relatively equal learning relationship to inspire and guide students' innovative and entrepreneurial thinking. Innovation and entrepreneurship education is often understood as the education of "cultivating entrepreneurs" and "solving employment problems". University Innovation and entrepreneurship education is a complex system engineering involving the whole society. It is not only a simple education problem of developing disciplines and curriculum system, but also a comprehensive education problem of cultivating students' Socialized consciousness and behavior and improving students' basic quality and ability. Therefore, in order to cultivate students' sense of great employment through the guidance of system view and new education view, universities must build a broader innovation and entrepreneurship education system on the two levels of internal and external linkage and education service support. In the construction of innovation and entrepreneurship education system, we should adapt to the objective needs of the development of the times, social change and the requirements of higher education. Therefore, we must adjust the traditional university education system and mode, inherit the advantages and break through its "pure scientific" research. Regardless of social needs and service function deviation, a new university education system is designed, which integrates new technology, new education innovation, new system, new management and new humanistic concept. From innovation and entrepreneurship education to innovation and entrepreneurship service, and then to innovation and entrepreneurship support, a systematic and complete scientific system is formed.

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