Research on Innovation and Entrepreneurship of Higher Vocational Education Based on CiteSpace

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Abstract. Based on the CiteSpace, the core Chinese journals in CNKI general library from 2005 to September 2020 were searched, 2855 papers on innovation and entrepreneurship were obtained and analyzed. The development of innovation and entrepreneurship in Higher Vocational Education in China was objectively analyzed by drawing the knowledge map of the research authors, research institutions and research topics in this field. The results show that the research authors and research institutions form less cooperation, in the research institutions, with the increasing number of coastal economic development zones, vocational education innovation and entrepreneurship research main force to the relatively developed areas of the transfer. Research is carried out on hot issues such as political education, modern apprenticeship system and the integration of dictatorship. It is suggested that we should continue to strengthen the research on the integration of "proprietary" and pay attention to the improvement of the curriculum system and teaching methods according to local conditions. The specific content of innovation and entrepreneurship education should be improved to diversify innovation and entrepreneurship.

1. Introduction

With the rapid development of economy and the changing international situation, the country has gradually attached importance to the innovation and entrepreneurship education of college students, which has gradually become the mainstream direction of higher education research. In October 2005, the General Office of the State Council issued the Decision on the Development of Vocational Education, which put forward the development of vocational education as an important foundation for economic and social development and a strategic focus for educational work. The promulgation of this document has gradually brought vocational education into the public's view. In May 2015, the General Office of the State Council issued the Opinions on The Implementation of the Reform of Innovation and Entrepreneurship in Higher Education Institutions, which promoted the innovation research and reform of the curriculum in colleges and universities, and promoted the improvement of the innovation ability of college students and the change of innovative thinking. In this decade, the number of papers on vocational education innovation and entrepreneurship has increased year by year, and the problem of innovation and entrepreneurship education has been gradually highlighted.

Innovation is the main source of economic development, "mass innovation, entrepreneurship" is the current social and economic growth of the core competitive model.

In recent years, with the advent of the global economy, innovation models are emerging, innovation and entrepreneurship education has gradually been paid attention to by the government, the government has also put forward new requirements for colleges and universities, colleges and
universities in promoting innovation and entrepreneurship education should be integrated with professional education, to promote professionals to innovative professionals. The government has also made a number of targeted work deployment plans, for innovation and entrepreneurship education has done a good job of preparation.

In this paper, CNKI (Knowledge Network) as the platform, with "higher vocational education innovation and entrepreneurship" as the search term for advanced search, Using CiteSpace, developed by Professor Chaomei Chen, to map visual knowledge to study authors, research institutions, research topics, future research directions and trends, and to view current problems at various analysis points. For future researchers in this field of innovation for reference, to promote China's innovation in the field of high-quality, high-level development.

2. Research methods and data sources

Knowledge map is a kind of knowledge database in objective structure, which is used to find some relationship or trend between things. CiteSpace is a scientific knowledge mapping software developed by Professor Chaomei Chen, School of computing and information, Drexel University in 2003 based on Java software. CiteSpace software aims to explore and mine the dynamic process and core literature of scientific research through the analysis of citation space.

This paper uses Citesea (version number: 5.6.R5) to conduct a visual analysis of the paper on vocational education innovation and entrepreneurship from 2005 to 2020 from CNKI, and obtains a total of 2855 valid literature data as shown in Figure 1. Because of the large volume of literature and the relatively scattered research, it is necessary to summarize the collected literature.

![Number of articles (Article 2855)](image)

Figure 1. Article number-A particular year.

3. Research results

3.1. Analysis of research authors

The author is the core of literature academic research, and the amount of the author's text can reflect the depth of his research level. Using Citesea software to map the knowledge of the relevant authors in the literature, the author's volume is analyzed, and then the connection between some documents and literature is known.
As shown in Figure 2, there are 449 nodes in this map, 154 connections, nodes in the map and the frequency of the author appear in direct ratio, the most frequently appeared in the author is Cunjuan Ding (13 times), followed by Kaiming Liu, Jian Wu, Guoqiang Liu, Jiahui Wu (11 times). The number of times more than 10 authors have 5, a total of cited documents network density of 0.0015, of which the author Kaiming Liu, Jian Wu, Guoqiang Liu for the same institution, it shows that the authors of innovation and entrepreneurship research in higher vocational education tend to cooperate with the same school or the same region. It also shows that the college has more research experience in "Innovation and Entrepreneurship" of vocational education, and the research direction tends to be diversified. However, through the connection between the authors can be concluded that the higher vocational colleges "Innovation and Entrepreneurship" education research authors have less cooperation, cross-college research cooperation is basically no, most of the authors for the single text, academic research as a whole is in a decentralized state.

3.2. Analysis of research institutions

Visual analysis of 2855 articles via Citespace. As shown in Figure 3, the analysis has 379 nodes, 41 connections, and a network density of 0.0006. The closely linked research institutions in the picture are China Youth Daily, China Youth Online, China Youth Political Academy, Beijing Normal University and Beijing University of Science and Technology. However, in terms of the number of connections, the development agencies of innovative and entrepreneurial projects in vocational education have not formed close cooperative relations in general, and the research of institutions is still in a relatively independent state. In addition, the larger the nodes shown in the figure, the greater the number of documents issued by research institutions, Hunan Institute of Arts and Crafts, Changzhou Institute of Information Technology, Yiwu Institute of Industry and Commerce and Jiangsu Institute of Agricultural and Pastoral Science and Technology, and Hunan Institute of Environmental Bio-Vocational Technology in the top five. From the perspective of the region, the institutions with more documents are concentrated in Jiangsu and Zhejiang provinces, indicating that the research on the direction of innovation and entrepreneurship in vocational education in Jiangsu and Zhejiang region is more in-depth. In today's Jiangsu and Zhejiang regions, small and medium-sized enterprises, enterprises need to have excellent skills of vocational and technical personnel, and Jiangsu and Zhejiang region's higher vocational education college talent training direction will be more inclined to the output of technical personnel, in the direction of vocational education innovation is the focus of
research in each Jiangsu and Zhejiang vocational education schools. Economic policy support is an important guarantee for the innovation and development of vocational education in Jiangsu and Zhejiang. Take Zhejiang Province as an example, in Zhejiang Province Science and Technology Leading Group issued the "Zhejiang Province, the whole society research and development investment to enhance the special action plan", and strive to the province's universities, research institutes, the average annual growth of R&D funding of 15% and more than 20%, respectively. Generous policies, small and medium-sized enterprises, coupled with "independent innovation, scientific development" atmosphere, so that vocational education institutions in Zhejiang province have rich conditions for innovative research. It shows that the development of innovation and entrepreneurship in vocational education is positively related to the regional policy and the level of economic development, which is driving the continuous improvement of the level of innovation and entrepreneurship in higher vocational education. It is foreseeable that in the future, innovative talent will flow to areas with good economic development, and these regions will also retain innovative talent through more preferential policies.

3.3. Analysis of research topics

Figure 4 is a key word map for the research of innovation and entrepreneurship in higher vocational education. Keywords are the core expression of an article and the condensation of the academic research of the whole article. Keywords in a period of time by many literature citations, indicating that the keyword in this period of time, the attention gradually become higher, and eventually become a hot word in that time period. The higher the frequency, the greater the centrality, which directly indicates that the keyword is the focus of research in recent years in related fields. Using Citespace software to visualize the keywords contained in the literature from 2005 to 2020, we collate the hotness of the key words focused on by scholars during this time period, and further understand the development trend in this field of research. As shown in Figure 4, this figure is based on a comprehensive analysis of frequency, centrality, year, and keywords. Sorted by frequency from highest to low, it is clear that the key words "higher vocational colleges" are the largest nodes among the key words, followed by "innovation and entrepreneurship education", "innovation and entrepreneurship", "higher vocational", "professional education", "entrepreneurial education", "higher vocational education" and "talent training" are the relatively large hot words of the seven nodes. Among them, "professional education"
is a starting point of innovation and entrepreneurship education research in vocational colleges, is an important means for the country to train more innovative and entrepreneurial talents quickly, the emergence of "Integration of specialty and innovation", this means will be better implemented into practice, for the development of the national innovation cause to provide insuperable impetus. In view of the situation of college students' employment pressure, if higher vocational colleges want to better develop the cause of innovation and entrepreneurship education, they should take students as their own, actively encourage students to participate in all kinds of innovative activities, drive entrepreneurship through innovation, and then alleviate the employment pressure of college students. Therefore, the analysis and research of innovation and entrepreneurship education is to improve college students' cognition of innovation and entrepreneurship, and to facilitate college students' understanding of innovation and entrepreneurship.

Figure 4. Key words map of innovation and entrepreneurship research in Higher Vocational Education.

Figure 5 is a map of the evolutionary timing of keyword frequency through Citespace software, and keywords will begin to appear between 2018 and 2020, as shown in Figure 5. Such as: political education, modern apprenticeships and deep integration, indicating that in 2018 these keywords mention more frequently, with the focus on the discussion of the heat is also relatively high.

3.3.1. The education of thinking and politics is the basis of promoting the innovation and entrepreneurship education of college students.

In 2018, the Ministry of Education in "On accelerating the construction of high-level undergraduate education to improve the overall ability to improve talent training" and "New Education 40" clearly requires that ideological and political education throughout the whole process of high-level undergraduate education, and promote innovation and entrepreneurship education and professional education, ideological and political education closely combined. The ideological and political theory course of colleges and universities bears the task of socialist ideological education for college students, which has distinct political character, and the integration of ideological and political education as an educational discipline that establishes the correct ideology and ideas of college students in higher vocational colleges and universities is a trend. The education of thinking and politics and the education of innovation and entrepreneurship are the needs of the times. Under the wave of "mass innovation and entrepreneurship", from the perspective of the country's cultural strategy and educational reform,
ideological and political education should conform to the theme of innovation and entrepreneurship, which has distinct characteristics of the times. From the national level, the close combination of ideological and political education and innovation and entrepreneurship education meets the requirements of the country's high-level talents, and high-level talents, not only have a wealth of professional knowledge and skilled operational ability, but also should have lofty ideals and unremitting spirit. From the school level, the coordinated development of thinking and political education and innovation and entrepreneurship education is an important measure to help the training of talents in higher vocational colleges and accelerate the construction of first-class education in higher vocational colleges. The education of thinking and politics and the education of innovation and entrepreneurship have similar requirements for the cultivation of talents. Ideological education starts from the ideological level, including helping students to establish a correct and scientific view of career choice, employment and entrepreneurship, as well as cultivating students in the face of difficulties, never give up the tenacity. And innovation and entrepreneurship education also requires students to have a high psychological quality of entrepreneurship. The values conveyed by ideological and political education are precisely applicable to the requirements of the psychological quality required for innovative entrepreneurship education. Higher vocational colleges should guide students to eliminate the confusion of negative employment psychology through ideological and political education, and cultivate students' excellent moral character, so that students understand that in the future work do not do things to the detriment of self-interest, to do a moral and responsible professional.

The education of thought and government and the education of innovation and entrepreneurship play a mutual role in practical activities. The "Internet Plus" College Student Innovation and Entrepreneurship Competition "Young Red Dreaming Tour" track is required to participate in the competition. At the same time, it is innovative, effective and sustainable in promoting the economic and social development of old revolutionary areas, poor areas and urban and rural communities. This competition requires that the innovative way of thinking and politics education and innovative entrepreneurship education should be combined with the red ideal belief in the form of innovation and entrepreneurship competition, so that college students can make better use of what they have learned and improve their ability to solve practical problems. At the same time, improve the ability of students to innovate and start a business, but also ideological and political education into practice, and with a certain degree of effectiveness.

3.3.2. Modern apprenticeship system has become the main mode of higher vocational education.
Modern apprenticeship system is a teaching mode combined with the concept of modern vocational education. At present, "modern apprenticeship system" is one of the important forms of talent training, in vocational education, social training and other aspects have a wide range of applications.

Modern apprenticeships are better than traditional apprenticeships. First of all, the modern apprenticeship system under the "apprenticeship" is not only to follow the industry's predecessors to learn things, but also a student in school. Second, in the direction of learning, modern apprenticeship system requires more, not only skilled skills, but also the development of the theory can be linked to the actual technical personnel. Third, in the study schedule, half of the time spent by students under modern apprenticeships is spent in business training and the other half in school on theoretical knowledge. In conclusion, teaching under the modern apprenticeship system will be more flexible, and the teaching requirements for students will be correspondingly improved. These flexible teaching system and strict talent training system will enable students to have a certain employment advantage in the new social environment and the increasingly tense employment situation.

The integration of production and education creates a modern apprenticeship system. Under the modern apprenticeship system, the school teachers focus on the basic theory education of students, and the business teachers focus on the cultivation of students' skills and professional attitudes, which combines professional knowledge with the mode of integration of production and education, which is the general direction of modern apprenticeship training. This is the same as the idea that innovation
and entrepreneurship education should be carried out "in combination with specialty". The integration model of industry and education re-combines the theory of professional knowledge that was originally broken apart with the practice of practical work, and the education of innovation and entrepreneurship is also the education based on practice. Obviously, the characteristics of the integration of modern apprenticeships are also highly in line with the objectives of innovation and entrepreneurship education. At the same time, the innovation and entrepreneurship education of higher vocational colleges can make this talent training model more innovative and targeted, relying on the development of modern apprenticeship model.

Schools and enterprises cooperate to promote modern apprenticeships. In the Decision of the State Council on Speeding Up the Development of Modern Vocational Education, it is pointed out that "the pilot of modern apprenticeship system with joint enrollment and joint training of schools and enterprises shall be carried out, support policies should be improved, and the integration of schools and enterprises should be promoted to educate people". The introduction of this policy, so that more and more vocational colleges are willing to try this new talent development program. For schools, the integration of professional theoretical knowledge with practical work of the educational approach, can make the school in the direction of higher vocational education personnel training further.

For enterprises, saving the cost of pre-job training of human and material resources; For students, it is more for the future employment to save time, can be faster employment.

The talent training scheme of modern apprenticeship system is suitable for the rapid development of economy and the teaching mode which combines education with practice. As students under the modern apprenticeship system, they can get better in it.

3.3.3. Integration to promote innovation and entrepreneurship education and professional education.

In the Document of the Ministry of Education's Action Plan for the Innovation and Development of Higher Vocational Education (2015-2018), it is clearly stated that innovation and entrepreneurship education should be strengthened and the organic integration of professional education and innovation and entrepreneurship education should be promoted. Therefore, the integration of professional education and innovation and entrepreneurship education is an important choice for higher vocational colleges to promote the development of innovation and entrepreneurship education.

Professional education and innovation and entrepreneurship education are consistent in the cultivation of talents. Professional education highlights the professional nature, it is specialized education and skills education carrier, by the school professional teachers, with the help of specialized teaching activities, the training of professional personnel. Innovation and entrepreneurship education is designed to help students improve their ability to innovate and start their own businesses, and to cultivate students' innovative and entrepreneurial spirit. As the talents trained by vocational education, professional knowledge and superb skills are essential, in addition to adapting to the needs of social development of innovative entrepreneurial ability and innovative entrepreneurial spirit is an indispensable part. The consistency of the two in the cultivation of talents allows the two to integrate deeply, the concept of innovation and entrepreneurship throughout the whole process of professional education personnel training. For example, every school now basically opened a "innovation and entrepreneurship foundation" curriculum, the purpose is to lead students on the basis of the professional courses learned to open up new ideas, and combined with the basis of professional courses for practical training, internship and other practical training.

Professional education and innovative entrepreneurship education are suitable for the students of higher vocational colleges and universities. Many students who choose higher vocational education are helpless, the quality of students is not as good as ordinary undergraduate colleges, learning enthusiasm and self-control are relatively poor. If it is obviously not wise to add innovative entrepreneurship education courses or professional courses, only by integrating innovation and entrepreneurship education with professional education, showing innovation and entrepreneurship in professional education, and covering professional content in innovation and entrepreneurship, should it be the focus of consideration of teaching courses and personnel training in vocational colleges.
4. Conclusion
In this paper, using the software of citespace 5.6.R5, the paper on vocational education innovation and entrepreneurship from 2005 to 2020 is analyzed from CNKI, and the research authors, research institutions and research topics are drawn. Based on citespace's research on vocational education innovation and entrepreneurship, it is concluded that the Chinese literature in China is less focused, the research perspective is relatively single, the cooperation between research institutions is less, the academic exchange between the author groups is less, the research of scholars in this field is relatively scattered, and the core research team and leading figures are lacking.

The country's prosperity can not be separated from the development of innovation, unswervingly implement the innovation-driven development strategy, depends on the country's innovation and entrepreneurship education attention, but also depends on innovative talent in the field of continuous in-depth research. In the research of vocational education innovation and entrepreneurship, ideological and political education has gradually been taken more seriously. In the training of innovative talents, we should not only focus on the reserve of knowledge and the application of skills, but also pay more attention to the simultaneous development of innovation and thought. Higher vocational colleges should be committed to cultivating moral and responsible professional talents.

For the modern apprenticeship system, the future needs the government to improve the guidance of the policy, actively build academic exchange platform in various fields, so that students, schools, enterprises between the three to get more opportunities for mutual exchange, make up for each other, promote each other, improve and promote the modern apprenticeship system continue to develop. The development of "Integration of specialty and innovation" is also particularly important, according to local conditions, the professional curriculum and innovation and entrepreneurship education organic integration, so that students in the professional knowledge to understand innovation, in innovation to deepen professional knowledge, and actively promote the promotion and organization of various types of innovation and entrepreneurship competition, promote the mature and steady development of innovation and entrepreneurship education for college students, and thus promote the steady and rapid development of social economy.

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