Research on the Development of Undergraduate Vocational Education - Taking Guizhou Vocational Education as an Example

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Abstracts

In terms of law. From an international perspective, developed countries and regions with more successful development of undergraduate level vocational education have a relatively perfect legal system to guarantee it. On the contrary, the status of undergraduate vocational education in the higher education system, the equal legal status of applied technology universities and ordinary undergraduate institutions, and the right to confer undergraduate degrees in specialized vocational colleges have not been clarified. Both higher education legislation and vocational education legislation in China are sub-laws under education law, and the objects of legislation are school education institutions, which is a vertically structured legal system, and there is no legal regulation for different forms of educational institutions and school subjects at the meso level.

Keywords: Undergraduate; Vocational Education; Guizhou; Case Study

Introduction

Since the founding of the country, China's vocational education has flourished and expanded in scale. As of 2021, there are 29,148,400 students enrolled in vocational education, including 13,118,100 students in secondary vocational schools and 16,030,300 students in higher vocational colleges and universities, such a huge scale has effectively supported economic, social and industrial development. While the scale of expansion, we have also found problems. At present, the number of students enrolled in undergraduate vocational education in China is only 129,300, accounting for 0.81% of students enrolled in existing higher vocational colleges. As a new product of social development and vocational education development, undergraduate-level vocational education has a long way to go in the future. Understanding undergraduate-level vocational education is the starting point of our research.

For a long time, vocational education has remained at the specialist level, becoming a level of general education. Compared with undergraduate education, it has become "second-class education", "broken education" and "final education". In June 2014, the State Council promulgated the Decision on Accelerating the Development of Modern Vocational Education, in which it is clearly stated that: "In the future, China will explore the development of higher vocational education at the undergraduate level, build a modern vocational education system that integrates secondary school, college, university and research, and accept students of vocational education at the undergraduate level. students to a certain scale, and actively develop higher vocational education at graduate level." The 2019 National Vocational Education Reform Implementation Plan (hereinafter referred to as VET 20) clearly requires that "by 2022, the teaching conditions of vocational colleges and universities will basically meet the standards, a large number of ordinary undergraduate higher education schools will be

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transformed into application-oriented, and 50 high-level higher vocational schools and 150 backbone majors (clusters) will be built. China's vocational education standard system covering most industries and fields and with international advanced level will be established. Launching pilot vocational education at undergraduate level." The first 15 vocational and technical universities in the country were officially established in that year. As of August 2021, a total of 32 vocational and technical universities were established nationwide. on May 1, 2022, the Law of the People's Republic of China on Vocational Education completed its 25-year revision and was officially implemented. Article 15 states, "Higher vocational school education shall be implemented by higher vocational schools and general higher education schools at the specialist, undergraduate and higher education levels." The legal aspects of vocational education at the undergraduate level were resolved (Douglass, 1991; Kathy et al., 1999)

In 2020, the Ministry of Education and nine other departments issued the "Action Plan for Improving the Quality and Excellence of Vocational Education", in which it is proposed that "the development of undergraduate vocational education is a key part of improving the modern vocational education system, cultivating high- quality and innovative technical and skilled personnel, and unblocking the growth channels of technical and skilled personnel. Steadily promote pilot vocational education at the undergraduate level, and support eligible units for the construction of high-level vocational schools with Chinese characteristics to run undergraduate vocational education programs on a trial basis. Promote the transformation of qualified ordinary undergraduate colleges and universities to application-oriented. According to industrial needs and industry characteristics, appropriately expand the scale of professional degree master's and doctoral training, and promote the development of professional degree postgraduate training mode around the world that is oriented to vocational needs, focused on practical ability training, and combined with industry-university-research-application as a way." This means that the highest level of vocational education, the same as general education, will reach doctoral degree. Meanwhile, multi-path creation of vocational undergraduate education will become the development trend. On January 22nd, 2021, the General Office of the Ministry of Education issued the notice of "Management Measures for Setting Vocational Education Majors at Undergraduate Level (for Trial Implementation)" (Teaching Vocational Education Department [2021] No. 1), "Universities setting vocational education at undergraduate level should closely focus on key areas of national and regional economic and social industrial development. Service industry new industry, new mode, docking new occupations, focusing on the relevant majors of long academic training. This fully reflects the important role of vocational education, especially undergraduate vocational education, in the national economy and regional industrial development." The supporting management system on vocational education at the undergraduate level has been introduced one after another (Prince and Beaver, 2001)

In April 2021, the National Vocational Education Conference was held in Beijing. General Secretary Xi Jinping gave an important instruction emphasizing, "Build a number of high-level vocational colleges and majors, promote the integration of vocational and general education, enhance the adaptability of vocational education, accelerate the construction of a modern vocational education system, and train more high-quality technical and skilled personnel, skilled craftsmen, and great craftsmen." Premier Li Keqiang gave instructions that "strengthen the construction of vocational school teachers and school conditions, optimize and improve teaching materials and teaching methods, explore the apprenticeship system with Chinese characteristics, focus on the cultivation of students' craftsmanship and habits of

excellence, and strive to train hundreds of millions of high- quality technical and skilled personnel." General Secretary and the Premier's important instructions, instructions, has become an important opportunity for the development of vocational education, undergraduate level vocational education as a high-level construction direction of vocational institutions has become the goal of many institutions to move forward. 2021 October, the General Office of the CPC Central Committee, the General Office of the State Council issued the "Opinions on Promoting the High-Quality Development of Modern Vocational Education", the views stressed: "By By 2025, the type of vocational education will be more distinctive, the modern vocational education system will be basically built, and the construction of a skill- based society will be comprehensively promoted. The pattern of schooling will be more optimized, the conditions of schooling will be greatly improved, the enrollment scale of vocational undergraduate education will not be less than 10% of the enrollment scale of higher vocational education, and the attractiveness and quality of vocational education will be significantly improved. By 2035, the overall level of vocational education will be at the forefront of the world, and a skill- based society will be basically built. The social status of technically skilled personnel is significantly enhanced, the supply of vocational education is highly matched with the needs of economic and social development, and its role in the overall construction of a modern socialist country is significantly enhanced." Encourage applied undergraduate schools to carry out the hierarchical penetration of vocational undergraduate education. Gradually realize mutual selection of courses and mutual recognition of credits at all stages of vocational education (Roger, 2004).

The emergence and development of undergraduate-level vocational education fully reflects the demands of social development, economic construction, urgent industrial needs and people's urgency, and is the inevitable result of the joint action of external and internal demands, and the upgrading of vocational education as a type of education in the educational structure. At present, undergraduate vocational education is in its initial stage, which will also lead to some specific problems. There are bound to be certain controversies and operational adjustments and improvements in both the development and the satisfaction of the demands of all parties. Undergraduate-level vocational education should be studied in depth while gaining attention. In this study, we will analyze the development of undergraduate-level vocational education in depth and solve the problem of consensus and recognition. It also focuses on the core issue of "how to develop undergraduate vocational education". The study will try to establish a theoretical foundation on the foundation, frontier and development expectations of undergraduate vocational education, which can provide valuable references for policy makers and practitioners (Douglass, 1991).

Current status of the study

In this study, the China Knowledge Network (CNKI) digital library was used as the source of data, and the subject search was set as the search condition, with "undergraduate vocational education" and "technical undergraduate" as the key search terms, and the search time was set as From January 1996 to January 2022, a total of 799 documents were obtained. Through reading and analyzing each article, 181 articles were removed from the list of irrelevant newspapers and reviews, and 618 articles were finally obtained and exported in Refworks format. For the analysis of the literature, Citespace software was used to visualize and analyze the obtained samples, and the version of the software used was 5.7.R3.SE.

After the combing of the literature, the detailed statistics of the publication time of the papers were conducted (Figure 2). From the trend of the literature research, before 2010, there were fewer researches for undergraduate level vocational education, which were very scattered in the selection of research topics and did not form a systematization. The Decision of the State Council on Accelerating the Development of Modern Vocational Education promulgated by the state in 2014 became a watershed in the research, and the research on undergraduate vocational education began to explore the feasibility and development based on theoretical level in this period. The feasibility and development of undergraduate vocational education were discussed at the theoretical level. With the introduction of policies related to the establishment and development of undergraduate vocational education, the research trend began to decline from 2015 to 2017. After 2019, with the gradual clarification of policy guidelines, the operation of undergraduate vocational education has gradually become clear, and pilot work has actually been carried out, and research on undergraduate vocational education has again increased in response to the practical problems and solutions encountered. However, there is still a directional tendency of studying policies and interpreting policies in the research, and there is no systematic and independent thinking, which also causes the direction of the research to be focused.

Analysis for literature publishers

The literature publishers are the authors of the retrieved literature who have more in-depth research in this research area. Based on the analysis of the literature statistics, we found that there are currently 685 published authors in the field of vocational education research at the undergraduate level (counting up to the third author). According to Derek John de Solla Price's theory, N=0. 749√ Nmax, authors with N or more publications in this field are the core literature publishers of this research. Substituting the collected author data into 0.749/13≈4 (the total number of publications by scholars with the highest number of publications in this field is 13, as shown in Figure 3), we therefore conclude that the number of publications in the field of undergraduate level vocational education with greater than or equal to 4 publications are the core authors of the current research in this field. The statistics yielded a total of 114 core authors, accounting for 16.64% of the total number of authors. The number of publications by these 114 authors is 234, which accounts for 37.86% of the total number of publications. The network density analysis of collaboration among authors through Citespace yielded a density of 0.0014, indicating that there is little research collaboration among authors, which, to some extent, is a problem that limits the depth of research on undergraduate level vocational education.

Analysis based on literature research keywords

The keywords extracted from the whole article are both the subject and the center of the study. The 618 valid samples retrieved were analyzed by Citespace software, and the time partition was selected as 1996-2022, the time interval was set to "1", the node type was selected as " keyword", "top30" as the selection criterion, "Putting sliced networks" and "Minimum Spanning Tree" as the algorithms. Minimum Spanning Tree". We obtained 447 nodes and 943 links to generate the keyword co-occurrence map (shown in Fig. 3), and the larger nodes represent the higher frequency and number of keywords.

The key words and word frequencies and mediation degrees were analyzed, and nodes with mediation degrees greater than 0.1 indicated that they were important in the study. In the current sample, the nodes with intermediation degree greater than 0. 1 are: higher vocational

education (0. 39), undergraduate level (0.35), vocational education (0.21), higher vocational education (0. 19), undergraduate level vocational education (0. 16), and modern vocational education system (0.10) in order of their values (see Table 1 for details). It can be found that these key words have become hot issues of scholars' attention and research in recent years. They are analyzed from the internal and external perspectives of the research on vocational education at the undergraduate level, respectively.

From the perspective of research within undergraduate level vocational education, talent cultivation mode and talent cultivation goals are the most focused research areas of scholars' attention. According to Kathy et al. (1999), society needs both research-oriented talents who discover and study objective laws and application-oriented talents who apply objective laws and scientific principles to transform the world to create direct benefits for human society. These two types of talents should each have their own focus in terms of training specifications. Applied talents are relative to the research talents who know the world, and they belong to the type of talents who transform the world and take on the important task of transforming academic research results into social production practices and creating material or immaterial forms with practical value for human society. Therefore, according to the transformation process of academic research results, the applied talents are divided into three categories according to the occupation type: engineering applied talents, skill applied talents and technical applied talents. Douglass (1991) proposed that the goal of talent cultivation in higher vocational education at undergraduate level should be "to cultivate senior technical application talents with strong technical theoretical foundation, practical skills and application ability, and serve in the front line of production, construction and management, i.e. to cultivate technical engineers or field engineers", and clarified that talent cultivation should have "This is the prerequisite and condition for the construction of talent training mode.

From the perspective of research external to undergraduate level vocational education, the necessity of developing undergraduate level vocational education is a hot issue of research. Scott (1995), in their article "A Pilot Study on the Significance and Strategies of Developing Technical Bachelor's Degree in China at Present", point out the necessity of developing undergraduate-level vocational and technical education to cultivate technically applied talents in the context of economic and social development, and discuss the important strategic significance of developing undergraduate-level vocational and technical education from three aspects: the demand of technological development, the need for humanized education, and the international trend of competing for education targets. Prince and Beaver (2001) proposed that the large shortage of senior application-oriented technical talents has become the main "bottleneck" restricting the industrial restructuring and technological structure upgrading. To meet this demand, it is an inevitable trend for China's higher vocational education to extend to higher levels and it is imperative to develop undergraduate vocational education. Roger (2004) proposed that with the continuous improvement of technology level and the increasing number of high- tech jobs, the requirements for job competence are also increasing, so vocational education at the specialized level can no longer meet the needs, and vocational education at the undergraduate level should be developed.

A Review of Research on Undergraduate Level Vocational Education (i) Research on the need to develop undergraduate level vocational education

1. It contributes to the integrity of vocational education as a type of education in its own system framework. A complete vocational education system requires effective articulation and coherence among its internal elements. Prince and Beaver (2001) proposes: undergraduate vocational education has unique value in the vocational education system, and the modern vocational education system is complete only when undergraduate vocational education and professional master education exist in the vocational education system. Douglass (1991) proposed that the trial implementation of undergraduate vocational education will open up the pathway for students to rise and make the path of upward development more accessible. Roger (2004) proposes that the development of technical education at undergraduate level will certainly enhance the cohesion and attractiveness of vocational education and help the vocational education system improve itself. Kathy et al. (1999) proposed that the country has actively explored the establishment of professional degree system in recent years and connected it with professional master's degree to promote the construction of modern vocational education system at the institutional level.

2. It helps to meet the demand for senior technical talents for economic development and technological innovation. From the domestic perspective, China has proposed "Made in China 2025", new infrastructure and other national action plans of strategic planning. The aim is to comprehensively improve the competitiveness of manufacturing industry, and the comprehensive improvement of manufacturing industry needs a large number of high-level innovative technical skill talents. Kathy et al. (1999) proposed that the original senior technical talents only through the natural growth mode cannot meet the requirements of economic development, and the shortage of senior applied technical talents provides a broad development space for the development of undergraduate vocational education in China. Scott (1995) proposed that the technical bachelor's degree can meet the demand for high-level technical talents in the strategy of building an innovative country. Roger (2004) proposed that, from an international perspective, according to the background of undergraduate vocational education in Germany, Japan, Britain and Taiwan, the emergence and development of undergraduate vocational education is an inevitable requirement for the evolution of industrial structure from labor-intensive industries to capital- and technology-intensive industries. Prince and Beaver (2001) proposes that in order to meet the needs of technological innovation, the speed of developing technical undergraduate programs in developed countries is much higher than that of technical specialists, which is the common development trend of technical education in developed countries and regions in recent years. No matter from the perspective of domestic economic and technological development needs or from the perspective of international experience and development trend in recent years, the development of undergraduate level vocational education can help meet the demand for senior technical talents for economic development and technological innovation.

3. It helps to meet the demand of individuals who receive vocational education to receive higher level education. The upward mobility of higher vocational students is limited, and the ratio of "college to university" is low, and the graduation from college becomes the "end" for most people who choose vocational education. In recent years, as some private undergraduate colleges and universities are included in the state's "college to college" work, effectively expanding the acceptance of "college to college" students, the Ministry of Education press conference in February 2022, the proportion of college students to college has reached

20%. However, students only have one chance to take the exam in the year of graduation, and the increase in employment and other pressures has led to an increase in the number of applications year by year, both in terms of students' demand for further education and the development of economic and social needs are far from being satisfied. Prince and Beaver (2001) suggested that the vocational education limited to the specialist level has caused the students and parents not to recognize the higher vocational education, and it is urgent to solve the problem of the identity of the higher vocational "specialist" level. Chen Baohua suggested that vocational education at the specialist level cannot meet people's demand for higher level education. Nie Wei proposed that many high quality students of vocational education have gone to Taiwan or abroad to receive higher vocational education and seek for more development space. If we provide a higher platform for them to seek higher education, we can not only reduce the loss of education resources and talents, but also improve the attractiveness of vocational education. Roger (2004) proposed that: the expansion of higher vocational education at the level, extending to undergraduate and even postgraduate levels, and the diversification of higher vocational education levels not only reflect the requirements of the law of external relations of education, but also better meet the enrollment needs of individuals, which has become the trend of the development of higher vocational education in the world. Developing vocational education at undergraduate level and building a modern vocational education system from secondary school to professional doctorate can help meet the needs of individuals receiving vocational education to receive higher level education. In the above analysis, the current research of scholars in China on the necessity of undergraduate level vocational education is rich and comprehensive. Future research can be conducted in terms of the advantages of developing undergraduate-level vocational education for vocational education itself. For example, developing undergraduate vocational education is conducive to enhancing the attractiveness of vocational education; being able to obtain a bachelor's degree after graduation will make some students choose vocational education when filling in professional colleges and universities in the college entrance examination. It can also be analyzed from the perspective of the relationship between vocational education and general education: is the development of undergraduate level vocational education conducive to the equality of vocational education and general education? Therefore, different research perspectives on the necessity of developing undergraduate- level vocational education are still under further analysis and exploration.

Conclusion

Past scholars' research on the curriculum system of undergraduate level vocational education has been mainly from two aspects. Based on the current problems of China's undergraduate vocational education curriculum system, some scholars show that China's undergraduate vocational education curriculum system has weak employment-led functions and insufficient specific curriculum standards. Based on the above actual situation, China should adhere to the type education orientation of vocational education in terms of curriculum concept and build a curriculum model that aligns professional skills with jobs in undergraduate vocational education. The curriculum model dovetailing with jobs has the characteristics of clear curriculum standards, curriculum content breaking through the disciplinary structure, curriculum tasks in the form of projects and tasks, in-depth cooperation between schools and enterprises in curriculum management, and complete curriculum functions. Some scholars

have studied the curriculum systems of undergraduate vocational education in Germany, Japan, Taiwan and other developed countries and regions and summarized their characteristics to provide reference for the setting of undergraduate vocational education curriculum in China. For example, some scholars have studied the curriculum system of undergraduate vocational education in Taiwan and suggested that its curriculum is characterized by diversified development of curriculum themes, implementation of curriculum focusing on the progressive development of students' abilities, and flexible and diverse curriculum. Other scholars have studied the curriculum system of undergraduate vocational education at the Berlin University of Technology and Economic and Applied Sciences and concluded that the curriculum system of undergraduate vocational education in China should have a competency-based modular curriculum, change the traditional course delivery method, and introduce a common curriculum accreditation standard for assessment.

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