

Reflections on the Construction of the Key Elements of Vocational Education and Training System

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Abstract: Campus education and social training are the two most important functions of vocational colleges. Attaching importance to campus education while neglecting social training is a long-standing problem in vocational colleges. Vigorously developing higher vocational education is an inevitable requirement for the high-quality development of education in China and the ardent expectation of the public. Only through the construction a scientific and efficient education and training system and the deep integration of campus education with social training can the design of complementary resources and the improvement of talent training quality take place. The vocational education and training system contains many elements. This study takes teaching resources, teaching staff, and management mechanism as the main research subject and carries out related research work. Firstly, this paper expounds the policy documents of the Chinese government and emphasizes the importance of vocational education. Secondly, the relevant research results of scholars are reviewed. Thirdly, this paper proposes several specific suggestions for the construction of key elements of the vocational education and training system. Then, the main conclusions and prospects are summarized.

Keywords: Teaching resources; Higher vocational colleges; Campus education; Social training

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1. Introduction

China is a large, but not particularly strong, country in terms of vocational education. Since China's reform and opening-up, higher vocational education has made great progress, and the overall framework of modern vocational education has been fully established. At present, there are 1,418 higher vocational institutions in China. The number of students enrolled in higher vocational institutions has reached 11.34 million, with an employment rate of above 90% six months after graduation. With 580,000 specializations, vocational education covers the main areas of the national economy. In modern manufacturing, strategic emerging industries, and modern services, about 70% of workers come from vocational colleges. In terms of campus size, professional categories, the number of students enrolled, and the size of the teaching staff, China's higher vocational education has made certain achievements ^[1-3]. However, compared with developed countries such as Europe, America, and Japan, the vocational education and training system in China is not sound enough. Compared with the requirements of building a modern economic system and an educational powerhouse, China's vocational education leaves much to be desired. As China enters a new stage of development, the country's industrial upgrading and economic restructuring have accelerated. There is

more demand for technically skilled personnel in various industries. At the same time, enterprise positions have put forward higher requirements for the training of talents in higher vocational institutions. In recent years, the state has intensively issued a series of guiding documents, such as the National Implementation Plan for Vocational Education Reform and the Action Plan for Quality and Excellence in Vocational Education (2020–2023). Not only have they pointed out the direction for the development and reform of vocational education, but they have also provided goals and routes ^[4,5].

The vocational education and training system contains many elements, including talent training programmers, curricula, teaching resources, professional settings, teaching staff, academic degree management, teaching operation management, teaching quality assessment, laboratory and training room construction, finance and auditing, recruitment and employment, student work, and logistical support mechanisms. These elements are interlinked, and they can influence each other. They determine the quality of talent development in vocational education. Among these elements, the most crucial ones are teaching resources, teaching staff, and management mechanism.

2. Research status

Teaching resources, teaching staff, and management mechanism are important factors that support the high-quality development of vocational institutions. Previous scholars have conducted a lot of research work from different dimensions.

According to Luo ^[6], the teaching resources of vocational education had gone through three stages: sharing, teaching assistance, and intelligent learning. She suggested that the teaching resources should improve the standard and certification system. Taking the automobile manufacturing and assembly major as an example, Zhang ^[7] explained the necessity of constructing a professional teaching resource base. He stressed the importance of applying information technology and summarized some experiences in the construction of teaching resources. Hu ^[8], a scholar, took the semiconductor lighting technology major as an example to analyze the problems in the current resource construction process and put forward practical countermeasures. Fan ^[9], on the other hand, took the building materials technology major as an example to analyze the problems in the construction of professional teaching resources. He proposed that vocational colleges should set up professional teams and establish a quality evaluation system for teaching resources. Li ^[10] believes that the construction of shared teaching resources is an important way to improve the quality of talent training in higher vocational education. She studied the objectives and ideas of teaching resource construction by surveying and mapping the engineering technology major. Xin ^[11] believes that the construction of professional resources is the key to the high-quality development of higher vocational colleges. High quality professional resources can improve teaching quality and mobilize teachers' enthusiasm. According to Cui ^[12], an important way to promote the construction and simulation of a team of double qualified teachers is school-enterprise cooperation. In a study, Guo ^[13] claimed that young teachers generally lack practical teaching ability, thereby suggesting colleges and universities to create more opportunities for young teachers' after-school training. By analyzing the school-enterprise cooperation of Guangzhou Railway Vocational and Technical College, Peng ^[14] believes that the construction of a team of double qualified teachers is an important driving force of higher vocational colleges. Zhu ^[15], a scholar, suggests that higher vocational colleges should create a field training mode for professional teacher training and establish an internal and external system for teachers' professional development. Long ^[16], on the other hand, believes that the premise of cultivating high-quality professionals is the construction of professional teachers. In his paper, he suggested that vocational schools should encourage teachers to actively participate in various practical activities in enterprises. The degree system of vocational education at the undergraduate level was analyzed by Wang ^[17] in a study. According to his analysis, he concluded that the establishment of the degree system at the undergraduate level should fully

consider the current situation of the degree system and the new knowledge system. In another study, Fan ^[18] found that many teachers lack passion when working and perceive that higher vocational education is inferior. He made an in-depth analysis of this problem and found out the factors that affect the enthusiasm of higher vocational education teachers for teaching. Huang ^[19], a scholar, analyzed several problems existing in the incentive mechanism of higher vocational colleges and proposed the idea of building a scientific and effective incentive mechanism to “awaken” teachers’ sense of value and stimulate their passion. Dai ^[20] believes that the cooperation between higher vocational colleges and enterprises lacks an operating mechanism, thus suggesting that higher vocational colleges should attach importance to school-enterprise cooperation and establish a school-enterprise cooperation operation mechanism to stimulate the vitality of the school. Taking the agricultural economic management major as an example, Zhao ^[21] proposed a talent training system oriented by industry demand and the reform of the core curriculum system. With the development of teaching reform and teaching means, significant changes have taken place in the teaching mode. Ji ^[22], a scholar, believes that the question of how to build a diversified evaluation system is an important issue faced by vocational colleges. He proposed the integration of process evaluation with summative evaluation by formulating corresponding evaluation standards.

3. Reflections and suggestions

3.1. Highlight the integration of “education training” in the construction

First of all, in the upgrading of the original teaching resources and the development of new teaching resources, the concept of “vocational education and vocational training are equally important” should be highlighted. Secondly, teachers should fully consider the cognitive laws of learners in the construction of teaching resources. Whether students or employees, the teaching content should be stepwise and suitable for their learning abilities. Third, practicality should also be emphasized in the construction of teaching resources. Taking the typical tasks of enterprises as teaching carriers may attract the interest of students. Last but not least, we should also pay attention to the construction of online teaching resources. At present, the prevalent COVID-19 virus continues to bring challenges to campus education and vocational training.

3.2. Continuously iterate the original teaching resources

Whether it is campus education or external training, the teaching resources that are needed have close associations with the actual demands of the industry. With the continuous iteration and upgrading of enterprise process technology, certain parts of the original teaching resources will no longer meet the requirements of certain jobs. Therefore, teaching resources must be iterated and updated with technological development, so as to meet the dual requirements of campus education and external training. School-enterprise cooperation is an impetus for the upgrading of teaching resources. Schools should actively promote the integration of production and teaching and constantly integrate the new processes, new technologies, and new norms of enterprises into the teaching system by means of regular academic exchanges or by arranging teachers to be involved in enterprise activities.

3.3. Attach importance to the development of teaching resources

Word and PowerPoint, as traditional teaching resources, suppress students’ learning interest and learning initiative. The new form of teaching resources, represented by videos and animations, can attract students’ attention to a great extent and improve the teaching quality. The development of new forms of teaching resources is very time-consuming and effort-consuming. In order to develop them more efficiently, teachers should first perform a demand analysis and determine the specific knowledge points and skills points to be learned. In addition, teachers should pay attention to the diversity of learning design. Many scholars have proven that interactive learning design, task-based learning design, and intelligent promotion design can

improve the teaching quality.

3.4. Formulate incentive measures and systems

The teaching team is an important driving force for higher vocational colleges. The construction of a team of double qualified teachers will not only improve the comprehensive quality of teachers in higher vocational colleges, but also their teaching ability and teaching level. In order to ensure an efficient implementation of the related work, higher vocational colleges must strengthen the construction of a supportive system. It is necessary to establish an effective incentive mechanism, which can improve teachers' enthusiasm and initiative. Teachers should also be encouraged to learn on the production lines of enterprises. Only when teachers can master the latest techniques and incorporate them into their teaching content, then the quality of teaching can be improved.

3.5. Use various skill competitions to improve teachers' ability

Skills competition is an important part of the vocational education system. It plays an important guiding role in the reform of vocational education. In higher vocational colleges, teachers can resort to integrate the contents of competition works into classroom teaching. This will help stimulate students' interest in learning. When students are interested in the teaching content, they will naturally take the initiative to learn, thus imperceptibly improving the quality of teaching. Teachers also need to think carefully about how to integrate these skills competition works into the teaching system in an appropriate manner. This process improves teachers' teaching ability and encourages students to participate in skill competitions.

3.6. Strengthen school-enterprise cooperation

Enterprises are the receiving units of talents who are cultivated by schools. It is important for schools and enterprises to cooperate to set up majors and develop relevant curriculum systems according to the demands of the job market. It is also necessary to increase personnel exchanges between schools and enterprises. On the one hand, skilled workers from enterprises should "come in." Advancing enterprise training classes to higher vocational colleges and arranging enterprise managers or skilled workers to serve as part-time teachers would be beneficial. On the other hand, school teachers should "go out." Schools should encourage their own teachers to practice and learn new technologies in enterprises.

3.7. Strengthen the training of teachers

The improvement of teaching cannot be separated from a high-level and professional team of teachers. In order to create such a team of teachers, schools should strengthen their training efforts, especially for young teachers. The training should have targeted contents; otherwise, there will be a poor training effect. On the one hand, the organizer can find out what teachers require in their training through questionnaires and other forms. On the other hand, the organizer should communicate more with enterprises and focus on the latest technologies that these enterprises are using. In addition to training, various forms of teaching and research activities should also be considered. School leaders should encourage teachers (especially young teachers) to boldly carry out curriculum reform and innovate teaching models.

3.8. Establish the "credit bank" system

At present, campus teaching and social training in most vocational colleges are managed separately. The two data are not shared, resulting in repeated learning. For example, an employee from an automobile company desires to obtain a certificate in advanced stamping through social training. Although he had already learned about stamping in school, he would be taught again in social training. Therefore, the establishment of the "credit bank" system is an important measure. The lack of corporate and social

awareness of the “credit bank” system reflects the lack of publicity from vocational schools. Schools and enterprises should strengthen their cooperation in terms of the “credit bank” system and form a consensus.

4. Conclusions

Higher vocational education is an important part of China’s education system. Vigorously developing vocational education is the requirement of national economic development and the ardent expectation of the public. The phenomenon where campus education receives more attention and social training less has long existed in vocational colleges. Vocational colleges should focus on the construction of a scientific and efficient education and training system. Only through the deep integration of campus education with external training can the design of complementary resources and the improvement of talent training quality take place.

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Disclosure statement

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Author contributions

S.W. and Z.F. conceived the idea of the study and wrote the first draft of the paper, while X.Z. revised the article’s format.

References

- [1] Wang S, 2019, Significance, Characteristics and Implementation Measures of the Implementation Plan of National Vocational Education Reform. *Journal of Shijiazhuang Vocational and Technical College*, 31(3): 4–10. <https://doi.org/10.3969/j.issn.1009-4873.2019.03.002>
- [2] Cheng Y, Wu R, 2021, Analysis and Research on the Current Situation of Higher Vocational Education based on Bibliometric. *The Guide of Science & Education*, 2021(8): 1-3. <https://doi.org/10.16400/j.cnki.kjdkz.2021.03.001>
- [3] Xu Y, 2014, Analysis on the Current Situation and Development Trend of Higher Vocational Education in China. *China Chemical Trade*, 2014(15): 257. <https://doi.org/10.3969/j.issn.1674-5167.2014.15.233>
- [4] Liu K, 2019, Defining the Strategic Position of Vocational Education and Promoting the Connotative Development of Vocational Education. *Communication of Vocational Education*, 2019(3): 17–22. <https://doi.org/10.3969/j.issn.1674-7747.2019.03.004>
- [5] Yang Q, 2021, The Action Plan of “Improving Quality and Training Excellence” is Implemented to Improve the Level of Private Vocational Education. *Journal of Guangdong Agricultural and Commercial Vocational and Technical College*, 37(2): 48–51. <https://doi.org/10.3969/j.issn.1009-931X.2021.02.012>
- [6] Luo Y, 2022, The Development Course and Construction Path of the Professional Teaching Resource Database of Vocational Education. *Hebei Vocational Education*, 6(2): 16–19. <https://doi.org/10.3969/j.issn.1672-8963.2022.02.003>

- [7] Zhang G, 2019, Research on the Construction of Digital Resources for Learning and Teaching in Higher Vocational Education for Automobile Manufacturing and Assembly Technology Specialty. *Journal of Xiangyang Vocational and Technical College*, 18(4): 29–31 + 38. <https://doi.org/10.3969/j.issn.2095-6584.2019.04.008>
- [8] Hu H, Lai L, Liang L, et al., 2022, Research on the Construction and Application of Teaching Resource Bank of Higher Vocational Education. *University Education*, 2022(6): 139–141. <https://doi.org/10.3969/j.issn.2095-3437.2022.06.043>
- [9] Fang J, Zuo M, 2021, The Quality Control of the Construction of the Professional Teaching Resource Database of Vocational Education--Taking the Teaching Resource Database of Building Materials Engineering Technology as an Example. *Journal of Wuhan Polytechnic*, 20(4): 27–31. <https://doi.org/10.19899/j.cnki.42-1669/Z.2021.04.004>
- [10] Li M, Zhang D, Lv C, 2011, Construction and Realization of Teaching Resources in Professional Surveying and Mapping Engineering. *Value Engineering*, 30(29): 172–173. <https://doi.org/10.3969/j.issn.1006-4311.2011.29.118>
- [11] Xin M, 2020, Research on the Construction of Teaching Resources Library Major in Higher Vocational Colleges. *Future and Development*, 44(12): 105–108. <https://doi.org/10.3969/j.issn.1003-0166.2020.12.018>
- [12] Cui L, 2008, Discussing the Role of Higher Education Institutions in School-enterprise Cooperation in Training Double Qualified Teachers. *Continue Education Research*, 2008(12): 82–83. <https://doi.org/10.3969/j.issn.1009-4156.2008.12.033>
- [13] Guo Z, 2007, Measures to Increase the Proportion of “Double Qualified” Teachers. *Vocational and Technical Education*, 2007(29): 54 + 84. <https://doi.org/10.3969/j.issn.1008-3219.2007.29.027>
- [14] Peng H, 2017, Exploration and Practice of Building a Higher Vocational “Double Qualified” Teacher Training System through School-Enterprise Cooperation--Guangzhou Railway Vocational and Technical College as an Example. *Southern Journal of Vocational Education*, 7(06): 80–85. <https://doi.org/10.3969/j.issn.2095-073X.2017.06.016>
- [15] Zhuang X, 2022, Professional Development of Teachers in Vocational Institutions: Connotation Characteristics, Stages and Realization Paths. *China Higher Education Research*, 2022(04): 97–102. <https://doi.org/10.16298/j.cnki.1004-3667.2022.04.15>
- [16] Long J, Weng W, Chen J, 2022, Research on the Path of Professional Development of Teachers in Vocational Colleges based on the Integration of Industry and Education. *Continuing Education Research*, 2022(11): 42–46. <https://doi.org/10.3969/j.issn.1009-4156.2022.11.009>
- [17] Wang D, Li Y, 2022. Academic Thinking on Degree System Construction of Vocational Education at Undergraduate Level. *Journal of Higher Education Management*, 16(4): 75–84. <https://doi.org/10.13316/j.cnki.jhem.20220615.008>
- [18] Fan L, Jiao Y, Li L, et al., 2015, A Preliminary Analysis about Factors Affecting Teachers' Working Enthusiasm in Higher Vocational Schools. *Journal of Tianjin Vocational Institutes*, 2015(7): 111–113 + 128. <https://doi.org/10.3969/j.issn.1673-582X.2015.07.025>
- [19] Huang H, Mei H, 2020, Thoughts on Promoting Teachers' Enthusiasm in Higher Vocational Colleges by Means of Motivation Theory. *Journal of Hubei Vocational-Technical College*, 23(2): 44–47. <https://doi.org/10.16347/j.cnki.cn42-1742/z.2020.02.010>
- [20] Dai X, 2022, The Current Situation and Path of School-Enterprise Cooperation in Higher Vocational Colleges from the Perspective of Industry-University-Research Integration. *Journal of Qilu Normal*

University, 37(3): 7–11 + 19. <https://doi.org/10.3969/j.issn.1008-2816.2022.03.002>

- [21] Zao D, Nie H, 2021, Study on the Construction of Talent Training Mode and Curriculum System of “Learning, Working, Service and Innovation” in Agricultural Economic Management Specialty in Higher Vocational Colleges. *Journal of Heilongjiang Vocational Institute of Ecological Engineering*, 34(6): 140–142. <https://doi.org/10.3969/j.issn.1674-6341.2021.06.036>
- [22] Ji M, 2022, On Construction and Application of Multiple Evaluation System in English Teaching in Vocational Colleges. *Vocational Education Research in Xinjiang*, 13(1): 26–29. <https://doi.org/10.3969/j.issn.1674-8689.2022.01.006>

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