

The High-quality Development Path of Vocational Undergraduate Colleges under the Background of Industry-education Integration

Weida Zhang, Ruirui Gao*

School of Law, Politics and Public Administration, Hebei Normal University, Hebei Shijiazhuang 050024

Abstract: In this paper, the four major economic regions and the three starting point types are divided, and the relevant indicators of the internal and external construction of the school are analyzed according to the "vocational undergraduate school setting standards" and "vocational undergraduate specialty setting standards", and the diversified vocational undergraduate education is developed according to the school system.

Keywords: Vocational undergraduate education; Types; Economic regions; Diversity

1. Introduction

At present, the integration of industry and education and innovation-driven has gone beyond the traditional driving factors such as resources, scale, capital and equipment, and has become a key variable in the development of today's vocational colleges. As of September 2021, there have been 32 vocational and technical universities in the pilot of undergraduate vocational schools, including the upgrading of higher vocational colleges, the transfer of independent colleges, and the merger and transfer of higher vocational colleges and independent colleges. However, whether the three vocational undergraduate colleges with different starting points and in different economic belts can effectively combine the local economic level and characteristic industries to carry out the deep integration of production, learning and research, and how to promote the positive development and coordinated development of the integration of production and education has become a topic of concern for scholars.

2. Investigation and Analysis of Vocational Undergraduate Colleges in the Process of Industry-education Integration

2.1 Description of Sample Selection

The author takes three different starting point types and four major economic regions as the dual conditions to limit the sample screening from the 32 vocational undergraduate colleges established in China as of September 30, 2021. The selected schools are shown in Table 2-1.

Table 2-1 List of sample schools

Type	Region	Eastern Region	Central Region	Western Region	Northeast China
Higher Education Institution Upgrade	Shandong				
	Engineering Vocational and Technical University	Nanchang Vocational University		Xi'an Information Vocational University	Liaoning Polytechnic Vocational University
Independent College Conversions	Nanjing				
	University of Technology		-	-	-

Merger of tertiary institutions with independent colleges	Hebei University of Technology	Shanxi Engineering Technology Vocational University	Lanzhou Petrochemical Vocational and Technical University	-
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Source: Modern Higher Vocational and Technical Education Network (formerly China Higher Vocational High School Education Network)

2.2 Internal Construction Survey

In the measurement of the degree of integration of production and education, the main internal factor is the school's investment ability. Therefore, the proportion of full-time teachers with double quality (%), the number of practical teaching positions per student (individual) and the value of teaching and scientific research equipment per student (yuan) are selected as three indicators for investigation. The data are shown in table 2-2.

Table 2-2 Table of teaching resources of selected vocational undergraduate colleges

School name Indicators	Proportion of full-time teachers with double quality (%)	Number of on-campus practical teaching workstations per student (units)	Value of teaching and research instruments and equipment per student (yuan)
Shandong Engineering Vocational and Technical University	55.15	0.35	10052.33
Nanjing University of Technology	92.35	0.84	21496.41
Hebei University of Technology	71.34	1.01	13360.03
Nanchang Vocational University	37.13	0.35	7428.72
Shanxi Engineering Technology Vocational University	56.07	0.52	14750.92
Xi'an Information Vocational University	61.50	2.35	16250
Lanzhou Petrochemical Vocational and Technical University	53.80	0.395	17643.827
Liaoning Polytechnic Vocational University	53.49	No data available	10000

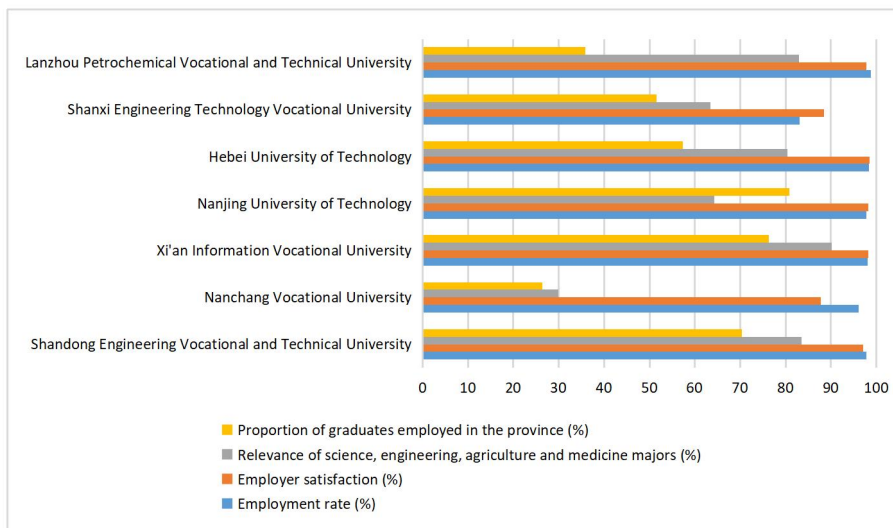
Source: Modern Higher Vocational and Technical Education Network (formerly China Higher Vocational High School Education Network)

In general, the teachers, training venues and equipment investment of the eight representative schools selected by the author are very different, indicating that the construction level of vocational undergraduate colleges in China is uneven. Specifically, in terms of the proportion of full-time teachers with double-qualified teachers, Nanjing Polytechnic University has reached 92.35%, while Nanchang Vocational University has only 37.13%, and it is far lower than the proportion of "double-qualified" teachers required by the Ministry of Education, which is not less than 50%. In terms of the number of practical teaching positions per student, except for Liaoning Polytechnic Vocational University, Xi'an Information Vocational University and Hebei Industrial Vocational and Technical University have more than one person, and the rest of the schools need 2-3 people for a group of practical learning, which will affect the teaching effect of teachers and the degree of internalization of students' knowledge. In terms of the input of teaching and scientific research equipment per student, 8 schools all meet the requirements of 5000 yuan / student in the comprehensive higher vocational colleges (junior colleges) stipulated in the No.2 regulation of the Ministry of Education and Research , of which 87.5% of the schools can reach 10000 yuan and above.

2.3 External Construction Survey

The external factors that are mainly investigated when measuring the degree of integration of industry and education are the output capacity of schools and the support of enterprises and governments. Therefore, this paper chooses the employment rate (%), employer satisfaction (%) and the relevance of science, engineering, agriculture and medicine (%) and the proportion of graduates' employment in the province (%) to investigate seven vocational undergraduate colleges in China (Liaoning Polytechnic Vocational University has no data at present). The data are shown in Figure 2-1.

Figure 2-1 Scorecard for selected vocational undergraduate colleges



Source: Modern Higher Vocational and Technical Education Network (formerly China Higher Vocational High School Education Network)

Overall, in terms of employment rate and employer satisfaction, the employment rate and employer satisfaction of these seven representative schools are relatively high, reaching more than 80% and most of them are more than 95%, indicating that China 's vocational undergraduate colleges have initially had the ability to cultivate high-quality and high-level workers, and their majors can match the employment needs of local enterprises. In terms of the relevance of science, engineering, agriculture and medicine, nearly half of the schools do not exceed 65%, which proves that the talent training of vocational undergraduate colleges in China is slightly deviated from the demand for talents in emerging industries and modern industries, and the ability to serve the leading industries is weak. It is necessary to add and revoke majors according to the local actual situation. In terms of the proportion of graduates' employment in the province, the data of the seven schools are very different. Among them, Nanjing Polytechnic University can reach more than 80%, while Nanchang Vocational University is only 26.33%, which means that the training of talents in some provinces can not meet the requirements of serving local economic and social development. Although China is expanding the enrollment of vocational undergraduate colleges every year, the training of talents in many areas is ineffective and cannot serve the local areas, which will not only waste teaching resources, but also lead to the outflow of talents.

3. Gathering Multiple Strengths to Implement a Portfolio Development Strategy

3.1 Strengthening the School's Own Capacity and Consolidating the Foundation for Development

First of all, strengthen the construction of double-qualified teachers. it is necessary to increase the number of double-qualified teachers and cultivate a group of teachers with both theoretical and practical experience.

Secondly, pay attention to the construction of practical teaching. We should actively seek the government and enterprises to invest in funds and technology for vocational colleges, and increase the construction and development of laboratories and training bases.

3.2 Focus on External Synergy and Sound Development Mechanism

First of all, increase government support. The government takes the lead in building a community with a shared future for the integration of production and education in local vocational education to establish a resource sharing platform, and carries out unified planning and deployment under the situation of comprehensive research and judgment of economic and social development.

Secondly, industry and enterprise guidance should be strengthened. The local industry association should unite the government and

higher vocational colleges to establish a council to build an open regional industry-city-education integration practice base.

References

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