Sharing Professional Viewpoint

The Integration of Production and Education for Chinese Talent Training in the Vocational Colleges

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1. Opening

At present, there has been a certain gap between students cultivated by higher education and talents demanded by Chinese society. As time goes by, the social demand for talents is constantly looming large, and how to train talents in colleges and universities has become a current discussion topic that needs to be explored further. In particular, the integration of production and education has been recognized as a practical tool to bridge the gap between higher education practices and industry for the country's economic and social development in settling for an equilibrium state (Yang, 2019;Yuan, 2019). The integration as such is highly valued by the Chinese government, colleges and experts and scholars in cultivating application-oriented talents as an important function of vocational colleges. However, at present, the talent training of vocational colleges and universities does not seem to have a clear guidance for the integration of production and education (Xu, 2018). To the author, it is necessary to assess the value of the integration of production and education embedded in the talent training of vocational colleges. From the perspective of institutional change theory (Luo, 2017), the author would like to see the government providing effective institutional supply in three aspects: (i) improve the system design, (ii) formulate special laws for the integration of industry and education, and (iii) establish special departments for the integration of industry and education. The three aspects are covered in light of the integration of production and education.

2. Integration of Production and Education

The integration of production and education is useful for personnel training in vocational colleges. Through the integration of industry and education, students in vocational colleges can be trained to promote economic and social development and meet the needs of industries and enterprises. Since research on the integration of production and education in vocational colleges in China is rather scarce (Che, 2015; Luo, 2017), the author will look at its connotation and classification, followed by the value issue of the integration of production and education in vocational institutions. The present situation requires clarification in value and the path of value realization.

This paper reports the previous scholars' discussion and conclusions on research into the integration of production and education in vocational colleges, the value change process of domestic education integrated with the talent training practiced in vocational colleges since the founding of New China (Che, 2015; Luo, 2017). According to the current situation and problems of vocational college talent training, the author will identify causes as reported by the stakeholders concerned. This is to give a clear picture of the current state

of attempts of the vocational colleges at the integration of production and education for talent training.

3. Research on Integration of Production and Education

Theoretical research on the integration of production and education includes connotation, value, and function. The internal logic of the development of vocational education prompts vocational colleges to adopt the integration of production and education in personnel training (Zheng, 2019). By sorting out the rational origin of talent training for the integration of production and education at home and abroad, the author found that educational scholars of all countries believe that the inherent particularity of vocational education makes it necessary to conform to the logic of economic development (Yang, 2019; Zheng 2019), that is, to form a closed-loop system for the integration of production and education in three aspects: system mechanism, school-running mode and talent training mode. Yang (2019) pointed out that the realistic demand and proper meaning of vocational education in the new era is to deepen the integration of production and education. Such integration is the inevitable path to promote the sustainable and healthy development of vocational education, and also the key to modernize vocational education. Luo (2017) asserted that the integration of industry and education has the value of enhancing the connotation of the relationship between industry and education in vocational education, respecting the development law of vocational education, helping to establish a vocational education governance system, and providing theoretical basis for multiple school-running subjects.

Yuan (2019) emphasized that the quality of talent training in vocational colleges can get better results through the integration of production and education, and realize students' subjectivity needs derived from the inherent integration value. Xu (2018) positioned students as the most direct beneficiaries among the stakeholders of the industry-education integration. The key to improving the level of integration between industry and education lies in the joint efforts of stakeholders to improve the quality of talent training. Such improvement can be done by constructing practical teaching platform, curriculum system, teaching team and the four-ring linkage and collaborative education management mechanism.

4. The Mode and Approach of Production-Education Integration to Vocational Colleges

Zheng (2019) reported the situation of regional industrial clusters, Guangdong Province using five typical models of the integration of industry and education-- Shenzhen model, Guangzhou model, Shunde model, Pearl River Delta model and park model. These five models have common characteristics, one of which is the park being led and developed by the government. Che (2015) investigated China's vocational education alliance and parks mainly initiated and constructed by the government, partucularly Changzhou Higher vocational Education Park, a typical example of vocational education parks in China, whose organizational elements include government-led, idea-oriented, open and sharing of resources and industry-university-research clusters. Under the leadership of Changzhou Science and Education City Management Committee, Changzhou Higher Vocational Education Park adheres to vocational education as the core, builds a public service platform

for the integration of production and education and collaborative education, and establishes an effective operating mechanism for the service platform.

Ma (2019) studied the "Belt and Road" vocational education alliance in promoting the internationalization of vocational education in China and solving the problem of insufficient Sino-foreign cooperation in running schools. Song & Yan (2016) discussed the construction of vocational education alliance and parks in China on a full scale that the effect is not ideal in actual practice. There are some problems, particularly differences in coordination and organization culture, obstacles in the governance of educational management institutions and teacher exchanges, lack of Chinese-foreign cooperation in running schools, and the convergence of specialties in higher vocational education parks. In handling these problems, scholars have proposed solutions from different theoretical and practical perspectives; for example, the establishment of teacher sharing management and operation system, the optimization of the career path structure of teachers in colleges and universities, and the standardization of the management of teacher sharing process to solve the problem of teacher exchange barriers.

Laine (2015) proposed that in order to promote the integration of vocational, industry and education, colleges and universities should connect majors with industries according to their own characteristics, organize industries based on the missions of colleges and universities, and provide internship platforms and bases for personnel training and teacher training, as well as internship opportunities for students. Siegel & Waldman (2003) and Brodkey (2005) explained that enterprises' willingness will affect their cooperation objectives and enthusiasm, and short-term profit-making enterprises are less interested in the integration of industry and education. In order to improve the level of integration between industry and education, it is necessary for colleges and universities to increase cooperation with long-term profitable enterprises. Santoro & Chakrabarti (2002) and Chang (2006) proposed from their empirical research results that the teaching conditions of vocational colleges themselves would affect the integration of production and education. Differences in understanding of professional curriculum, teachers and policy implementation will affect their views on the integration of industry and education, and in turn impact the implementation of the desired integration. In all situations, colleges and universities should impart the right knowledge and clear understanding of the integration of production and education to be implemented in specific vocational education contexts.

5. Integration of Production and Education Training of Talents in Vocational Colleges

Wu & Huang (2014) clarified positioning of application-oriented undergraduate talents as the premise of clear training goals. Compared with academic talents, applied undergraduate talents should have distinct applied research ability and technical knowledge and skills. Compared with employment-oriented skilled talents, application-oriented undergraduate talents should have more comprehensive and profound professional theoretical knowledge and good cultural literacy, and need to have more profound basic education and follow-up development motivation and ability. In the formulation of talent training quality standards, trainers must refer to the needs of social and economic development and the needs of industry development for talents, and design in three aspects: knowledge and skills, ability and emotion, attitude and values. The establishment of quality

standards for application-oriented undergraduate talents training requires the participation of multiple subjects. Enterprises are to participate in the process of formulating the training goals and programs for application-oriented undergraduate talents. Only in this way, trainers can help application-oriented undergraduate talents master the knowledge and ability in line with the requirements of enterprises, apply profound theoretical knowledge to the actual working environment, and maintain innovation in the practice process. The application-oriented undergraduate talent training mode focuses on the combination of production, learning and research, and the training course content. Those teachers who train talents need to possess professional ethics, excellent teaching ability, scientific research ability and engineering practice ability. Tang, Zhou & Zhang (2019) emphasized that the key to success in application-oriented undergraduate talent training lies in the integration of essential elements: professional structure and industrial structure, professional standards and career requirements, teaching resources and industrial resources, campus culture and corporate culture. Zhang (2018) cautioned that applied undergraduate talents need to adapt themselves to the general trend of artificial intelligence work via a well-established modern apprenticeship training model selected by the host vocational colleges.

6. Reflection

From the previous studies on the integration of production and education for Chinese talent training in the vocational colleges, we can see that the Chinese vocational colleges have been well aware of the significance of the industry-education connection. It is necessary that enterprises and vocational colleges share their goals in nurturing and developing talents for the country's social and economic development in the long run. In principle, such production-education integration has been well recognized by the stakeholders concerned—educational institutions, enterprises and government authorities.

As seen in the literature from 2005-2019, both enterprises and vocational colleges requested the full role of the government in its commitment to the integration of production and education for talents training regarding a clear-cut policy, funding, and outcome follow-ups. As stated earlier, the author would like to see the government providing effective institutional supply in three aspects: (i) improve the system design, (ii) formulate special laws for the integration of industry and education, and (iii) establish special departments for the integration of industry and education. These are what all parties concerned need to voice their urgency to the government for a specific action plan and concrete outcome indicators.

It should be noted that scholars and researchers involved in the trend of the production-education integration for talent training in vocational colleges, the role of AI has projected itself for attention of trainers involved in the curriculum design, process learning, internship specifications and outcome evaluation. With an optimistic viewpoint on China's economic competitiveness, the author expects that leaders in Chinese vocational education can reach out to target enterprises to make the production-education integration as a major agenda for the high quality of college talent training in this decade and beyond.

7. The Author

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