

Research on the Talent Cultivation Mode of Integration of Industry and Education for Electronic Communication Majors

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Abstract: Deepening the integration of industry and education is an important guiding ideology for the development of national vocational education. At present, we are faced with many difficulties in the process of promoting the proposed integration in vocational education, such as the lack of policy support, the insufficient willingness of enterprises to participate, the weak role of the industry and the small amount of funds. In order to overcome the difficulties faced by the proposed integration, the government, industry associations, enterprises, schools and other stakeholders should cooperate with each other to explore measures to deepen the proposed integration. In this context, in order to cooperate with the national deployment of deepening the integration, the communication major has implemented such reform measures as dynamic adjustment of the professional direction structure, deepening the reform of talent training mode, strengthening the construction of part-time teachers' workstations, and providing technical services to enterprises.

1. Introduction

“Several Opinions of General Office of the State Council on Deepening the Integration of Industry and Education” clearly states: “Deepening the integration of industry and education, and promoting the organic connection of education and talent chains with industrial and innovation chains are urgent requirements for promoting the current supply-side structural reform of human resources ^[1]. They are of great significance for comprehensively improving the quality of education, expanding employment and entrepreneurship, promoting economic transformation and upgrading, and fostering new drivers of economic development under the new situation.” Therefore, to further promote the proposed integration in higher vocational education, deepen the reform of higher vocational education, and strengthen school and enterprise cooperation is not only an important link to realize the organic connection of China's education chain, talent chain, industrial chain and innovation chain, but also related to whether the new growth drivers of China's economy can be generated smoothly ^[2].

At present, in many manufacturing jobs in our country, the high-skilled technical personnel are the main group. Therefore, whether our country can lead the world in manufacturing in the future, the key factor is whether we can train several world-class high-skilled technical personnel. With the development of social information, new requirements are put forward for future high-skilled technical talents, that is, on the one hand, they need master professional technology, on the other hand, they need master information technology, and have an international vision ^[3]. Vocational education, as the main output body of highly skilled technical personnel in the market economy environment, should make corresponding countermeasures according to the new pattern, structure and level of our economic development ^[4]. The proposed integration will become the core of vocational education to cope with the economic development of the new era.

To meet the requirements of economic development and industrial transformation and upgrading in the new era, higher vocational colleges and professional groups have made a lot of exploration based on the guiding ideology of national production-education integration ^[5]. For example: the university and enterprise jointly develop a talent training program; Both the university and the enterprise jointly establish a practice base inside and outside the school; Introduce the industry enterprise certification system into the curriculum system ^[6]. However, in the actual process, there are obvious differences in the value orientation of all stakeholders.

2. Difficulties in the process of promoting the integration of industry and education in vocational education

2.1. The proposed integration lacks policy support

In the practice of vocational education, the responsibilities and rights of the stakeholders involved in the integration of production and education are not clear. In the process of industry-education integration, the government has not issued specific laws and regulations on industry-education integration. Only the Labour Law, the Education Law, the Higher Education Law and the Vocational Education Law contain piecemeal expressions dealing with the proposed integration. As a result, many vocational colleges cannot solve the rights and interests of all stakeholders through legal means in the process of cooperation with enterprises. The proposed integration involves the government, vocational colleges and enterprises, which requires the government to assume the role of coordination and clarify the specific division of labor of the three parties through the establishment of relevant systems. However, the government's efforts in this area are limited, resulting in a slow development of the proposed integration.

2.2. Enterprises do not have a strong sense of subjectivity in the proposed integration

In practice, schools are very willing to promote the integration of industry and education. However, in the process of unilateral promotion, schools pay more attention to the needs of talent training of schools, rather than the interests of enterprises. As a result, enterprises have low enthusiasm to participate in the proposed integration. Similarly, some enterprises are encouraged by the government to participate in the proposed integration, but the depth of participation is not enough. The reason is that the interests of enterprises cannot be protected by relevant laws and regulations. Moreover, in the current educational environment, enterprises are always unable to participate in the cultivation of talents as the main body of education. This has led to the mistaken belief that talent training is the responsibility of colleges and universities, and that enterprises themselves have no obligation to train talents, so they just muddle through.

2.3. Trade associations play a weak role in coordinating and guiding the proposed integration

In some countries with developed vocational education, trade associations play a strong coordinating and guiding role. In China, different professional and level of industry association has reached more than 60,000, which can be divided into roughly the national, province, city and county four levels, which has made a huge contribution to the development of the market economy. However, due to their limitations, industry associations cannot keep up with the dramatic changes in national occupational positions in time, so that they cannot update occupational standards in real-time according to the development trend of the market and assist the development of enterprises. However, in the face of the new development environment, the government strengthened its management function through the release of policy documents, but did not give enough authorization to the industry associations. As a result, it is difficult for the industry associations to play a coordinating and guiding role in some fields, thus failing to escort their healthy development.

2.4. Insufficient financial support in the process of promoting the proposed integration

The proposed integration not only means that schools and enterprises jointly design talent training programs and develop teaching courses, but also means the construction of practice bases simulating the actual job environment and joint product research and development and design laboratories, which involves a large amount of investment. With the development of today's society, the cycle of new technology applications and new product development is getting shorter and shorter. Therefore, it is becoming more and more difficult to train highly skilled talents needed by modern society. Meanwhile, the update of teaching resources needed for talent training will also be faster and faster, which also requires a large amount of investment of funds. Based on the above reasons, the proposed integration in vocational education only depends on the government's funding investment is far from meeting the needs. For enterprises, because the government has not formulated specific laws and regulations to protect their due rights and interests, they are reluctant to inject a large amount of funds into the practice of integrating industry and education. Therefore, it has become the top priority to discuss how to ensure the stable investment integration funds.

3. Reform measures to integrate industry and education in vocational education

3.1. Integrate the proposed integration into local development strategies and plans, and provide adequate policy support

The new era of socialism with Chinese characteristics has proposed new demands for vocational education, the core of which is to realize the integration of production and education. The local economy progress is inseparable from the development of vocational education. In order to make vocational education better serve the local economy, the government has the responsibility and obligation to integrate the work idea of integrating vocational education with industry and education into the local development strategic planning, and formulate supporting policies and relevant regulations. Specifically, local governments should jointly urge the central government to amend the Vocational Education Law of the People's Republic of China to improve the system and mechanism of enterprises as the main body of vocational education at the national institutional level. Local governments shall formulate operational school-enterprise cooperation management measures with local characteristics according to local characteristics, and clarify the respective responsibilities and rights of each subject.

3.2. Explore the combination of interests of both schools and enterprises, and stimulate the enthusiasm of enterprises to participate in the proposed integration

There is always a problem of inconsistent interests between higher vocational colleges and enterprises in the cooperation. How to solve this problem is the key to the sustainability of school-enterprise cooperation. To this end, it is necessary to build a basic framework for the proposed integration in vocational education through the mutual exchange of resources between schools and enterprises, the mutual integration of R&D and production, and mutual assistance in personnel training. At the same time, vocational colleges should analyze their own situation, find the combination of interests with enterprises, correct their own shortcomings according to the combination of interests, and design a win-win cooperation plan with enterprises to stimulate the enthusiasm of enterprises to participate in the integration of vocational education, production and education.

The specific approach is that colleges should track the local industrial characteristics in real-time, constantly revise the talent training program, and cultivate the talents needed or urgently needed by enterprises. By taking advantage of scientific research, colleges and universities promote the transformation of scientific research into enterprise production through the proposed integration, solve the technological innovation problems for enterprises, improve the technical level of their products, and thus enhance the social reputation and industry influence of enterprises. Universities utilizes the advantages of teachers and sites to provide services for the lifelong learning of enterprise employees and make contributions to the improvement of the comprehensive strength of enterprises.

3.3. Increase the authority of trade associations and give play to their coordinating and guiding role in the proposed integration

The development experience and concept of vocational education in Germany, Switzerland and other countries provide a valuable reference for the development of vocational education, and the function of relevant trade associations can be used as a reference. For example, in Germany, all the students jointly trained by the university and enterprise have to participate in the assessment organized by the industry association, and only the students who pass the assessment can get the professional qualification certification. In addition, the industry association should be the main participant in the development of the industry curriculum.

Therefore, the government should draw lessons from the successful experience of the developed countries to establish a relevant policy system conforming to our vocational education environment and establish the coordinating guidance function of industrial associations. The specific approach is to bring vocational education and training guidance, industry competence specification, and vocational qualification program design into the functional scope of the industry, and the industry association is responsible for formulating the coordination and guidance program related to the proposed integration in vocational education as soon as possible. The government grants certain authority to industry associations to organize enterprise representatives, university personnel and other stakeholders to establish school-enterprise cooperation committees to coordinate and deal with school-enterprise cooperation issues. The trade association shall organize relevant stakeholders to formulate professional qualification standards, skill level standards and other relevant guidance contents.

3.4. Raise funds through multiple ways to provide adequate financial support for the proposed integration

The integration of production and education in vocational education needs a lot of financial support, so the colleges need to raise funds in many ways, and establish a perfect fund raising mechanism. First, the government should assume corresponding social responsibilities, allocate special funds for the proposed integration in vocational education, and specify the proportion of annual increase of special funds to ensure the smooth progress of the proposed integration in vocational education. Secondly, the government should formulate corresponding policies to support colleges and universities to cooperate with enterprises with resources such as teachers, technology, management and space, so as to establish a talent cultivation environment integrating school-enterprise vocational education and production-education. Third, enterprises can provide support in terms of equipment investment, internship positions, grants, scholarships, etc., and the government can provide preferential policies and support in terms of personnel, finance, taxation and finance to these enterprises that support the proposed integration.

4. Exploration of talent training Mode under the background of integration of industry and education in communication majors

4.1. Dynamically adjust the structure of the major direction according to the needs of local social development

From the perspective of colleges and universities, the integration of production and education refers to the effective integration of talent training objectives and employment needs of enterprises, the combination of teaching activities and production activities in the teaching link, and the combination of students' professional learning and work practice, so as to efficiently cultivate high-skilled talents required by enterprises. Therefore, the professional direction structure of communication majors needs to be adjusted in real time by tracking the demand for industrial talents. Only in this way can we ensure that the talents cultivated are the talents needed by the market.

At present, with the transformation and replacement of traffic services to voice services, the future demand for network traffic-bearing capacity will grow rapidly, and there are urgent upgrading and replacement demands in the access network, transmission network, data center and other fields. In the field of communication equipment, Huawei and ZTE have become the world's No. 1 companies and maintain high growth every year. In terms of upstream optical fiber and cable, optical devices, raw materials and other fields, there is still a technological gap between domestic and foreign manufacturers, and they are increasing research and development to achieve domestic substitution. At present, it has made achievements in the fields of optical fiber and cable, optical device and Marine cable. From the government planning level, the development of cloud computing and the Internet of Things and other applications, and the provision of network and information security will be the focus of construction. To sum up, the current orientation of communication majors should be adjusted to mobile communication, Internet of Things, smart enterprise network, cloud computing and other directions, so as to better provide more realistic services for the talents needs of the local communication industry.

4.2. Deepen the reform of the talent training model of "full co-education and alternate stages"

A communication high-skill talent training committee composed of stakeholders such as communications Administration, colleges, enterprises and industry associations shall be established.

Its function is to formulate the talent training program for communication major, determine the curriculum system, compile the teaching syllabus, and supervise the implementation effect of the talent training program in the whole teaching process, so as to provide a basis for the modification of the talent training program. In the process of talent training, theory teaching and practice teaching should be carried out alternately, that is, theory should be completed in the traditional classroom, while practice should be completed in schools and enterprises respectively. Therefore, the school should establish a practice base simulating the real environment of the enterprise to meet the practical needs of students in the school, and the enterprise needs to provide students with real posts for practice. In the implementation process of this model, the interests of colleges, enterprises and students have been satisfied. Colleges and universities not only cultivate talents needed by the industry, but also gain social reputation. Companies gain much-needed talent while reducing labor costs. Students get jobs while improving their professional skills.

4.3. Strengthen the construction of part-time teachers' workstations and effectively implement school-enterprise collaborative education

Part-time teachers mainly undertake the teaching tasks of professional courses and practical teaching. It is necessary to strengthen the construction of part-time teachers mainly composed of professional and technical personnel and highly skilled personnel. The specific approach is to explore and innovate the employment and management system of part-time teachers actively. Improve part-time teacher training system, management incentive system, teaching archives management system, teaching quality monitoring and evaluation system and other aspects. Establish the selection and elimination system of part-time teachers; Strengthen the training of teaching rules and methods of vocational education for part-time teachers. Absorb part-time teachers to join the activities of the professional teaching and research section, and take whether the part-time teachers participate in the teaching and research activities as one of the assessment objectives of the part-time teachers. For excellent part-time teachers to carry out professional training, such as teaching observation, teaching business training, joint curriculum construction and teaching research.

4.4. Set up an R&D workstation to provide technical services to enterprises

To give full play to the intellectual advantages of college teachers, set up research and development workstations in cooperative enterprises, as for the common problems existing in the field of communication technology, joint communication enterprises to carry out technical breakthroughs, to solve major technical problems for enterprises. At the same time, it can also rely on enterprise research and development workstation to provide enterprises with conventional services, such as technical consultation, commissioned technology development, characterization testing and analysis, patent achievements timely transformation and other services. In addition, R&D stations can cultivate some students who still own the capacity to learn, thus broadening their career range.

5. Conclusions

To meet the requirements of economic progress and industrial transformation and upgrading in the new era, higher vocational colleges and professional groups have made a lot of exploration based on the guiding ideology of national production-education integration. At present, we are faced with many difficulties in the process of promoting the proposed integration in vocational education, such as the lack of policy support, the insufficient willingness of enterprises to

participate, the weak role of the industry and the small amount of funds. To overcome the difficulties faced by the proposed integration, the government, industry associations, enterprises, schools and other stakeholders should cooperate with each other to explore measures to deepen the proposed integration. In this context, in order to cooperate with the national deployment of deepening the proposed integration, the communication major has implemented such reform measures as dynamic adjustment of the professional direction structure, deepening the reform of talent training mode, strengthening the construction of part-time teachers' workstations, and providing technical services to enterprises.

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