

Research on the Connotation Construction and Characteristic Development of Mechanical Major Groups

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Abstract: Based on the development of regional economy, it is necessary to focus on the connotation construction of the mechanical and professional groups in colleges and even schools, aiming at the misplaced competition and characteristic development of various professions under the professional group system, and the problem of talent cultivation under the professional group system, and constructing a guarantee mechanism for the construction of off-campus practice education bases. We will continue to deepen the integration of production and education, school-enterprise cooperation, and build a multi-level, multi-type, multi-disciplinary talent training system to improve the quality of personnel training.

With the all-round development of China's economy, China has huge demand for skilled personnel who master modern manufacturing technology, especially for the production of first-line mechanical professionals. At present, the quality of applied professional talents in mechanical colleges and universities is not high, and there is a lack of practical application ability, which cannot fully meet the requirements of the society; There are many mechanical engineering talents, and the current teaching software and hardware resources have not met the teaching needs; and there are many similarities in the curriculum, teaching content, and practical projects of various majors in machinery. Therefore, it is especially important to build a mechanical professional group, strengthen the construction of professional group connotation, solve the serious problem of homogenization of professional construction among schools, and take the road of dislocation development and characteristic development.

1. Definition of the Connotation of Mechanical Majors

Major is the basic unit of education or the basic form of education in the higher education institutions (and their corresponding educational institutions) based on the identified training objectives.

The major group is a collection of one or more majors with obvious advantages in Teaching, a strong comprehensive strength as a core major, and several engineering or technical fields or disciplines. The major group is a system based on professional positions, with professional knowledge, technical ability and quality requirements. It is an integrated system involving production, learning, and research, including scientific research conditions, practical teaching resources, overall curriculum structure, and professional faculty.^[2] It is not just a simple concentration of various components, but a system of coordinated development with a clear inner core.

The research and practice of connotation construction and characteristic development of mechanical major groups is based on one or more key disciplines with obvious advantages and strong comprehensive strength in the school machinery major. A group of related or similar majors will be grouped together to coordinate the construction of various professional connotations, highlighting the dislocation development and characteristic development of each component.^[1]

2. Basis and Significance of the Research on the Connotation Construction and Characteristic Development of Mechanical Major Group

On December 10, 2017, the People's Government of Liaoning Province issued the "13th

Five-Year Plan” for the development of education in Liaoning Province. In the 13th Five-Year Plan for the Development of Education in Liaoning Province, the objective requirements for promoting the development of classification characteristics of higher education institutions are put forward. That is to build a guiding policy framework to guide the development of colleges and universities from the “upper level” to the “focus on characteristics” and “focus on connotation”, and to highlight the characteristics of running schools as the core content of the classification development of colleges and universities in Liaoning Province. Guide colleges and universities to define their service orientation, and fully integrate with Liaoning’s industrial upgrading and industrial upgrading. Guide the colleges and universities according to the differences in the main functions of the personnel training and the level of the school level. Different types of colleges and universities determine different school goals and school orientation based on regional economic development, train different types of talents, and solve problems such as serious homogenization of professional settings and unclear professional features. Encourage all colleges and universities to take the road of dislocation competition and characteristic development; Guide colleges and universities to rely on the main disciplines, give full play to their own advantages, and face the key industries and emerging industries in Liaoning Province, and optimize the professional layout of disciplines. Establish a major group with clear hierarchy, reasonable structure, outstanding advantages and distinctive features. In the talent training program, curriculum system, teaching plan and other work, deepen the integration of production and education, school-enterprise cooperation, improve the pertinence of talent training, and build a multi-level, multi-field, and differentiated personnel training system.^[3]

From the “13th Five-Year Plan”, it is not difficult to see the key words like “focus on characteristics”, “focus on connotation”, “dislocation competition, characteristic development” and “major group” in promoting the development of classification characteristics of colleges and universities. According to the “13th Five-Year Plan” for the development of education in Liaoning Province, based on the School of Applied Technology, based on its own teaching position, it is based on the orientation of the school, the project “Research and Practice of Mechanical Major Group Connotation Construction and Characteristic Development” considers the connotation construction of the application technology college and even the mechanical major group of the school, as well as the dislocation competition and characteristic development of majors under the major group. It is necessary to continuously deepen the integration of production and education, school-enterprise cooperation, improve the pertinence of talent training, and build a multi-level, multi-type, multi-field talent training system.^[4]

3. Research and Practice Content of Connotation Construction and Characteristic Development of Mechanical Major Group

3.1 Research on Connotation Construction of Mechanical Major Groups Adapted to Regional Industrial Structure

The industrial structure is the backbone of local economic development. According to the national or local strategic layout, the industrial structure is different. Different industrial structures have different requirements for talent training specifications. The Institute of Applied Technology is located in Wafangdian City, the birthplace and cradle of China’s bearing industry, and it is also the largest gathering area of bearing industry in China. Wafangdian City was awarded the title of “China Bearing Capital” in 2007, 2012 and 2017. In 2013, it was awarded “National New Industrialization Industry Demonstration Base” by the Ministry of Industry and Information Technology. In 2016, it was identified as “National High-end Equipment Manufacturing (Bearing) Standardization Pilot” by the Ministry of Industry and Information Technology and the Standardization Committee. Its regional industrial structure bearing has obvious economic characteristics. Therefore, based on the regional industrial structure, it is imperative to build a mechanical major group and carry out research on connotation construction, solve the problem of homogenization of professional settings, and take the road of professional development and

dislocation development.

In order to serve the regional economic development, the mechanical major group construction that is compatible with the regional industrial structure must adapt to the regional economic main industry in terms of the discipline layout, school-running goals, and school-running level. Through the research on the relationship between the regional industrial structure and the major group construction and the major group construction research that is compatible with the regional industrial structure, the development of the professional characteristics and the dislocation development under the major group system are highlighted. Therefore, a complete system with industrial structure as the foundation, technology as the core, career as the foundation, professional and technical courses as the content and technical ability as the goal is formed, and the fitness of the major group talent training target and the national and local economic and social development needs are continuously promoted, thereby serving the regional economic development of Liaoning Province.

The research on the mechanical macro group connotation construction which is compatible with the regional industrial structure is mainly based on the regional economic bearing industry structure. It is necessary to fully consider the carrying capacity and talent demand of economic development, set the professional direction with the support of economic supply and highlight the development of professional characteristics and the development of dislocation. In the end, a complete system with the industrial structure as the foundation, the technology as the core, the occupation as the foundation, and the professional and technical courses as the content and technical ability as the goal will be formed.^[7, 8, 9] In the end, as far as possible, the fitness of the major group talent training goals and the needs of national and local economic and social development needs.

3.2 Research on the Co-construction, Co-management and Co-sharing of Off-campus Practice Education Based Suitable for the Connotation Construction of Major Groups

School-enterprise cooperation refers to the cooperation mode between the education department and the industrial department, and the school and the enterprise jointly run schools. It is the cooperation mode adopted by the school to cultivate its own talents in order to seek for its own development, to grasp the quality of education, and to target enterprises. Carrying out school-enterprise cooperation can continuously improve the quality of human capital, continuously improve the quality of education and school-running benefits, and promote the open sharing, complementary advantages, and mutual benefit for the integration of production and education and collaborative innovation. School-enterprise cooperation is the system of cultivating people with morality and an important part of talent cultivation.

The construction of off-campus practice education base is inseparable from the two main schools and enterprises. The construction of off-campus practice education base is also the last mile of talent training. Schools and businesses are two separate social organizations with different ownership departments. The school is committed to cultivating talents, and the company is mainly for profit. Therefore, school-enterprise cooperation is not a cooperation within the system, but a cross-system and cross-departmental cooperation. The boundaries between the two are clear, and the pursuit is different from the goal. However, there is a symbiotic relationship between schools and enterprises. The demand for talents of enterprises needs to be supplied by schools. The quality of talents training in schools needs to be compatible with the development of enterprises, and the correlation between them is relatively strong. As an educational organization, schools must pay attention to social benefits. They must adhere to the direction of socialist education, take cultivating people with morality as the foundation, put talent training in the first place, and cannot use profit as the fundamental purpose; as a profitable organization, enterprises also have social responsibility of cultivating people while pursuing economic benefits. Schools and enterprises can't act only for their own interests, and must also consider bringing benefits to each other.

The research on the countermeasures for the construction of co-construction and sharing of off-campus practice education bases needs to break through the limitations of economic theory research. Starting from the perspective of sociology, starting from the theory of social partnership,

using literature analysis and investigation and interviewing methods to carry out research, fully consider the resource sharing problem between the school and the enterprise, and establish a close partnership sharing based on cooperative brands. In addition, it is necessary to refine the effectiveness-oriented distribution of partner responsibility and responsibility, implement universal selection of two-way flow of school-enterprise resources, and promote long-term co-ordination of school-enterprise practice bases in off-campus practice to promote co-construction and shared cooperative education model is formed and operates effectively.

3.3 Research on the Integration of Production, Study and Research in Mechanical Major Groups

The integration of production, education and research is to give full play to the talent resources of the school, integrate with research resources such as enterprises and scientific research institutions, and give full play to the unique advantages of all parties in personnel training, product development and scientific research and so on. It is necessary to carry out cross-system and inter-departmental cooperation in accordance with the laws of the market to form a community of destiny. By combining the schools with the main mission of talent cultivation and the enterprises and scientific research institutions directly engaged in product production and research and development, students are allowed to produce and teach. In the process of scientific research, it acquires practical experience and practical ability, and forms an educational form that forms a system of knowledge transfer, knowledge digestion, and knowledge transfer and knowledge production. The integrated development of industry, university and research is conducive to fundamentally solving the problem of the disconnection between the quality of school personnel training and the society's demand for talents. It is necessary to implement the reform of the supply side structure of talent cultivation, narrow the gap between supply and demand of the quality of personnel training and training of schools, enterprises and scientific research institutions, enhance the social adaptability and core competitiveness of students, and give full play to the ability of universities to base themselves on the region, docking industries and serving the society. The integrated development of industry, university and research is the development trend and important measure for the reform of the school-running model.

The mechanical macro group production, research and research integration development is essentially deep-level school-enterprise cooperation. It is the integration of production, learning and research that is established through the establishment of a sound cooperation mechanism. It relies on the close cooperation between the school and the industry and the enterprise to build a teaching and research platform or engineering training center. It is necessary to carry out all-round cooperation activities of teachers, students and enterprise technology R&D personnel in teaching and training, scientific research and technology development, and achieve the goal of complementing each other, learning from each other, and benefiting each other to achieve mutual benefit for schools, enterprises, students and scientific research institutions.

The integration of production, research and research in mechanical major group needs to solve the problems of weak scientific research level of some college teachers, weak application of technical skills, low participation of enterprises and insufficient policy support and ties of local governments. It is necessary to seek to strengthen overall coordination and coordination under the leadership of government departments, provide bridges between schools and enterprises, and provide institutional guarantees and policy support, and encourage enterprises and schools to carry out exchanges and cooperation through special subsidies and tax reductions. Government, schools, enterprises and scientific research institutions are the community of destiny. The integration of industry, academia and research needs to improve the framework of school-enterprise cooperation system. And it is also to make innovation to the integrated operation mechanism of production, learning and research. To realize all-round docking and integration, it is to realize the integration of production and education between schools and enterprises, resource integration and cultural integration, and realize the full docking of teachers and engineers, students and employees, scientific research projects and production projects. It is necessary to mobilize the enthusiasm of all

parties through the integration of production, education and research of mechanical major groups, and to maximize the effectiveness of multi-party cooperation, so that the output of scientific research has a weight, and the level of talent cultivation is high.

It can be seen that it is necessary to base on the regional economic development, deepen the understanding of the major group, do a good job in the study of the mechanical macro group connotation construction that is compatible with the regional industrial structure, and the countermeasures for the co-construction and sharing of the off-campus practice education base that adapts to the major group connotation construction and mechanical major group production, research and research integration development research work. This is an important measure for universities to improve their core competitiveness. This is conducive to the survival and development of colleges and universities, and helps to implement the fundamental tasks of cultivating people with morality.

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