

Research on the integration mode of production and education of machinery specialty in local colleges and universities

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Abstract: With the deepening of the concept of modern education, the integration of production and education has become an important way to improve the quality of teaching and personnel training in colleges and universities. The mode of integration of industry and education can solve many problems existing in the development process of local colleges and universities, such as insufficient teachers, lagging training facilities, and the disconnection between curriculum construction and industry demand, so as to build a new format for the teaching of this major. Therefore, local colleges and universities should combine the actual situation of machinery majors to find a scientific and reasonable integration mode of production and education. This paper analyzes the current situation of talent training and professional teaching of machinery majors in colleges and universities, and puts forward new strategies, such as innovating the integration mode of production and education, jointly building teaching resources between colleges and enterprises, optimizing training conditions between colleges and enterprises, strengthening teaching teams, and strengthening students' comprehensive quality. It is expected to build a new pattern of efficient integration of production and education for machinery majors in local colleges and universities, and cultivate high-quality, high-level and high-quality talents.

Key words: Local colleges and universities; Mechanical specialty; Integration of production and education; strategy

The Ministry of education proposed in the action plan for the innovative development of Higher Vocational Education (2015-2018): "school enterprise cooperation, work study combination." In 2018, the "Notice of the general office of the Ministry of education on announcing the first batch of 'new engineering' research and practice projects" proposed that we should grasp the connotation of the construction of 'new engineering', speed up the cultivation of engineering and technological talents in emerging fields, transform and upgrade traditional engineering majors, and take the initiative to plan talent cultivation in strategic areas in the future. In this context, many colleges and universities follow the national strategy of "made in China 2025" in the training of mechanical professionals, and take the construction of "new engineering" as the support point to carry out the research and exploration of the mode of production and education integration education of mechanical majors. Its purpose is to base on the construction of new engineering and take student output as the guidance, Professional standards and training objectives are established in the form of industry university connection, and colleges and enterprises work together to build an efficient professional teaching system and training base, providing talent and technical support for regional economic and social development and industrial transformation and upgrading.

1. An overview of the education mode of integration of production and education

The integration of production and education is not just about the connection between teaching and production, but to make the two links that have a progressive relationship produce a deep-seated integration, so that they can produce a complementary relationship, build an efficient education system of the integration of production and education, and form a working pattern of close connection between school education and post practice. With the help of the work content of front-line posts, students' professional ability and quality can be trained, and a new win-win situation among schools, enterprises and students can be realized. Courseware, the integration of production and education can unite multiple subjects to jointly realize the value of education. The deep integration of production and education can improve the quality of talent training and make it meet the needs of social and industrial development. Therefore, it is necessary for colleges and universities and front-line professional teachers to pay attention to the construction of a new pattern of integration of production and education. In order to improve the quality of professional personnel training, mechanical majors in colleges and universities should not only use external resources to improve the teaching quality of computer courses, but also let enterprises participate in the process of education and benefit from it.

2. Teaching characteristics and current situation of machinery specialty under the background of integration of production and education

2.1 Main features

The school running characteristics of local colleges and universities are to cultivate high-quality, high-level and high-quality professionals for the development of regional economy, while the mechanical specialty has distinctive characteristics. In recent years, the demand for mechanical professionals in this industry has become increasingly strong. In this context, this puts forward a more severe

test for the teaching of machinery major in local colleges and universities. We should be based on the perspective of the integration of production and education, and combine the characteristics of machinery major with strong directivity to innovate the teaching and talent training mechanism. Around the teaching reform of the integration of theory and practice, we should build a more efficient and high-quality professional teaching mode, and provide students with highly targeted and high-quality teaching mode Personalized professional training. In this way, local college students can strengthen their skills and professional quality and promote the long-term development of their future career through this more comprehensive professional training teaching mode.

2.2 Teaching status

1. insufficient integration of theory and Practice

The mechanical specialty has strong practicality. From a professional perspective, the status of theory and practice should be equal in the teaching of this specialty. In the teaching of mechanical specialty in local colleges and universities, the lack of combination of theory and practice is an urgent problem to be solved. On the one hand, in order to consolidate the theoretical basis of students, the practical training courses of mechanical specialty in colleges and universities are carried out; On the other hand, during the training course, in order to enable students to complete the confirmation and integration of the knowledge they have learned in practice, they should correctly apply it in the specific technical operation. However, due to the influence of traditional education, the practical training course of this major has not been paid enough attention, and even the practical training is arranged long after the theory course is explained, which leads to the disconnection between the theory and practice of some students. In other words, there are some problems in the integration of theory and practice of mechanical majors in colleges and universities, such as improper curriculum arrangement and outdated teaching concepts, which not only affect the quality of teaching effect, but also affect the implementation of the integration of production and education.

2. unscientific means of practical teaching

Generally speaking, the teaching reform of mechanical specialty in local colleges and universities is started from the theory course. The purpose is to build a more efficient professional teaching environment by innovating their own teaching ideas, optimizing teaching methods. However, in the process of teaching reform of this major, few teachers realize that some majors that rely on practical teaching need to re practice teaching. Business needs to innovate teaching mode and teaching methods, and the student group has not strengthened the awareness of practical skills training. The scope of professional learning is relatively narrow, and the depth of professional learning is not enough. Therefore, in local colleges and universities, teachers of machinery major should increase the strength of practical teaching, optimize and improve the time teaching system, make it perfect integration with the theoretical teaching system, and implement the integration of production and education in practical teaching.

3. Practice teaching is boring

In terms of content and form, there are still many problems in the talent training mode of mechanical specialty in colleges and universities, such as the lack of rich content leads to the lack of interest in students' professional learning, and the lack of rich form leads to the low participation of students' professional learning. It can be seen that these problems have a more direct impact on college students. That is to say, the content, form and role that college students often contact in the daily learning process are crucial. Schools and teachers have the responsibility to enrich teaching or training content, expand teaching or training methods, and adopt key measures of advancement, scientificity and effectiveness to innovate talent training mode, Collaborative software technology major keeps pace with the times and further improves the education level of local colleges and Universities. Over time, students can naturally form professional learning interest and improve their professional core competitiveness.

3. Practice of production and education integration mode of mechanical specialty

3.1 Implementation of dual drive curriculum reform mode of "integration of production and education" and "skill competition"

In the construction and practice of the teaching mode of the integration of production and education of machinery specialty in local colleges and universities, we should build a dual drive mode, that is, the mode of "integration of production and education" and "skill competition" to form a dual drive curriculum reform, so as to promote the effective improvement of the teaching quality and talent training quality of machinery specialty. In the specific implementation, local colleges and universities should adhere to the purpose of "promoting reform through competition, promoting teaching through competition and improving ability", rely on "mechanical competition", effectively integrate the "integration of production and education" and "skill competition" of their major, and innovate the overall teaching system, such as teaching content, process, form, teaching team, course assessment, etc.

1. construction of teaching team

In order to strengthen the quality of communication between colleges and enterprises, improve the service ability of colleges and enterprises in the process of talent training and the willingness of enterprises to participate, this paper analyzes the actual situation of colleges and enterprises from a practical point of view, and establishes a joint teaching and research office between colleges and enterprises

on the basis of the original teaching and research office. The members of the joint teaching and Research Office are composed of enterprise professionals and professional teaching teams in colleges and universities. They play a connecting role in the integration of industry and education and school enterprise cooperation between schools and enterprises. Based on the mechanical professional competition, the joint teaching and Research Office jointly formulates the corresponding teaching plan, regularly organizes teaching and research activities, such as formulating curriculum standards, master and apprentice standards, and fundamentally innovates the teaching content, methods and assessment according to the actual situation, so that the integration of skill competition and production and education becomes an important branch of the professional teaching system, and promotes the quality of talent cultivation, Achieve a new situation of integration of production and education. In the specific facts, the mechanical specialty in colleges and universities should take the teaching and research section as the core, build a “double tutor” teaching team with the integration of colleges and enterprises, and build a mutual employment and sharing mechanism between colleges and enterprises. For example, the school invites senior managers of enterprises and their own professionals to participate in professional teaching activities in the school. The enterprise can hire key teachers of machinery major in colleges and universities to take a temporary post in the enterprise, exercise their teaching level in the actual work position, and follow the career development path of students (apprentices), Customized education system for students.

2. construction of teaching content

The teaching content is also an important part in the construction of the dual drive teaching mode of “integration of production and education” and “skill competition” for machinery majors in local colleges and universities. In practice, teachers can reconstruct the teaching content according to professional standards and competition content. According to the employment direction of this major, such as mechanical design, manufacturing and processing, maintenance of mechanical, electrical, pneumatic, hydraulic and other control equipment; For jobs such as mechanical design engineer, equipment engineer, mechanical process engineer, mechanical R & D Engineer, mechanical equipment engineer, etc., the corresponding teaching contents with strong pertinence are planned based on these two points. Determine what professional skills are needed to support these employment directions and specific positions, how these skills are awarded to students from teaching, and finally make the teaching content conform to professional standards, and the teaching process highly coincide with the working process. After completing these contents, we should also open up the corresponding teaching content plate for the skill competition. The skills competition assessment is the most advanced or high application rate of classic technology. As a teaching anchor, it can enhance students’ professional application ability and promote the effective implementation of the dual drive mode of production and education integration and skill competition, Promote the substantial improvement of students’ professional quality.

3. teaching form reform

“Learning by doing” and “teaching by doing” are carried out alternately. The teaching content of mechanical specialty needs a lot of practical training to complete, so after the teacher explains a knowledge point, he can immediately arrange students to practice, guide students to find their own problems in the actual operation, let students learn to actively think and explore the deep content of professional teaching, and finally the teacher summarizes and refines it, Do a good job of students’ auxiliary work. In practice, students’ completion of each task in practice will be checked by senior masters of the enterprise. Business masters focus on the norms and standards of students’ actual operation, while school teachers assess students’ application ability, and build a new platform for students’ learning.

3.2 Specialty setting closely linked to regional economic development

In the construction of the integration mode of production and education of machinery majors, local colleges and universities should closely follow the regional economic development in terms of specialty setting, investigate the development situation of the manufacturing industry in the region, actively and comprehensively promote the cooperation with relevant enterprises in the field of science and technology, strengthen the docking and integration of technology and industry, and thoroughly implement the integration of production and education, Focus on training talents suitable for the needs of regional economic development. For example, to investigate the relevant manufacturing industries, to have a detailed understanding of some high-end equipment manufacturing bases, robot industrial parks, as well as the packaging, piping, casting, hardware and other manufacturing industries in various counties, and actively explore a new mode of integration of industry and education suitable for the local, so as to promote talents to better complete their studies and obtain employment. Local colleges and universities should pay attention to the status of the integration of production and education, carefully select enterprises with the integration of production and education in the local area, and when integrating with enterprises, they must have the determination of win-win, find the right cooperation point, and try to meet the needs of both sides. After finding a suitable enterprise, the practice base and technology research and development platform should be launched immediately to provide high-quality practice places for teachers and students. Local colleges and universities should also build high-quality training bases in schools to meet the professional practice needs of students at different stages. They can also build technology research and development centers with relevant enterprises to lead professional teaching to the forefront of the industry and expand students’ professional vision. The construction of these platforms is from the perspective of regional economic development. The scientific research and innovation team established by the group of teachers and relevant professionals of enterprises has formed a good situation of mutual benefit and win-win.

3.3 Strengthening the comprehensive quality of professional teachers' team

With the development of the times, colleges and universities should pay attention to the reconstruction of the environment and actively introduce some new teaching equipment and software in order to help students better integrate with the market and master emerging technologies and advanced application ideas when cultivating professional talents under the mode of integration of production and education of machinery majors. In addition, colleges and universities should also pay attention to the construction of high-level teachers' team, so as to build a learning environment with powerful assistance and perfect infrastructure for students, so as to greatly improve the efficiency of talent training of machinery majors.

To sum up, the school running mode of integration of production and education has begun to be popularized in colleges and universities in China, and has achieved good results. The teaching mode of integration of production and education focuses on cultivating students' vocational skills, promoting students' smooth employment, benefiting the development of relevant enterprises, and ultimately promoting the progress of vocational education, contributing to the improvement of local regional economic level.

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