

Theoretical and Practical Teaching of Electronic and Electrical Majors in Higher Vocational Colleges

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Abstract: In recent years, with the development of China's social economy and the progress of science and technology, the society has higher and higher requirements for students majoring in electronics and electrical engineering. Under this background, higher vocational colleges must deeply explore the innovative path of education and teaching activities of electronics and electrical majors, and cultivate a number of high-quality compound talents for the development of the country and society. The combination of theoretical teaching and practical teaching in higher vocational colleges is a necessary means to cultivate talents, but there are some problems in practical teaching that need to be discussed and solved. Therefore, studying the effective methods of theoretical and practical teaching of electronics and electrical majors in higher vocational colleges will be an important task for higher vocational colleges to improve teaching quality and enrich teaching models, and also the basis for improving students' practical ability in higher vocational colleges.

Keywords: Electronics and electrical majors; Theory teaching; Practical teaching

As an important position for training front-line skilled workers, higher vocational colleges are the main window for the national and social talent transmission. However, at present, there are still some problems in the teaching of higher vocational colleges, such as the low cultural quality of students majoring in electronics and electrical engineering, the weak basic knowledge, and the low enthusiasm of students in learning; Some colleges and universities have limited teaching resources for practical courses, and teachers of theoretical courses lack practical experience. This paper takes the courses of electronics and electrical specialty in higher vocational colleges as the research object, analyzes the problems and reasons in theoretical and practical teaching in higher vocational colleges by using case study and literature analysis, and discusses the feasible ways to solve the problems.

1. The significance of theoretical and practical teaching of electronics and electrical majors in higher vocational colleges

It is an important task for the education and teaching of higher vocational colleges to cultivate new electronic and electrical professionals, and the combination of theory and practice teaching is an important direction of professional teaching reform. The major of electronics and electrical engineering is a subject with strong theoretical and practical nature. Students should not only have sufficient theoretical knowledge, but also learn to apply knowledge flexibly and skillfully in practical operation. Only the comprehensive improvement of theoretical knowledge and practical skills can promote the comprehensive development of students, promote the reasonable allocation and utilization of teaching resources such as the faculty of colleges and universities, meet the market demand for employment in the new era, and empower the development of Chinese enterprises. The teaching that combines the theory and practice of cultivating students' professional ability is also called integrated teaching.

1.1 It is beneficial to improve students' practical skills and promote students' all-round development

Carrying out theoretical and practical teaching of electronic and electrical majors in higher vocational colleges can enable

students to understand theoretical knowledge more deeply, improve their practical skills further, and ultimately develop their comprehensive quality. First of all, the contents of electronics and electrical majors are complex, and the knowledge system is relatively large. Only relying on theoretical teaching is not only easy to hit students' interest in learning, but also not conducive to students' comprehensive understanding and practical application of theoretical knowledge. The innovative development of theoretical and practical teaching helps students to test their knowledge mastery through practical teaching activities, so as to supplement and improve according to the deficiencies in practical activities, constantly enrich knowledge reserves and improve practical skills. Secondly, the in-depth development of theoretical and practical teaching activities will also help stimulate students' autonomous learning ability, highlight students' dominant position in learning, strengthen students' reflection on their own learning, and help students form a clear self-awareness. On this basis, enhance the planning and systematization of students' learning, promote students' ability to analyze and solve problems independently, and enable students to comprehensively master professional knowledge from simple to deep.

1.2 It is conducive to improving teachers' teaching ability and enriching teachers' teaching mode

The development of theoretical and practical teaching activities in electronics and electrical majors can also promote teachers to constantly update teaching concepts and contents, optimize teaching models and teaching methods, and cultivate a double-qualified teaching team for the long-term development of higher vocational colleges. The innovation of integrated teaching activities can promote teachers to feed back and sort out problems in teaching according to the current teaching situation, help teachers to formulate reasonable teaching plans and teaching programs for students on the premise of understanding the latest needs of the current market, so as to ensure that students learn the latest theoretical knowledge, and then carry out the latest practical operation, and fundamentally promote students' professional skills to be improved. In addition, in order to achieve better results in theory and practice teaching, teachers will also continuously improve their comprehensive quality, make teaching methods more modern, and adapt to the thinking of students in the new era, so as to meet the diverse needs of students.

1.3 It is beneficial to improve the teaching system of higher vocational education and improve the quality of classroom teaching

The theoretical and practical teaching of electronic and electrical majors in higher vocational colleges can promote the further improvement of the teaching system in colleges and universities, and improve the teaching quality and effect. On the one hand, it can improve the attention of higher vocational colleges to the training of students' practical skills. According to the characteristics of students and the acceptance of students, and in combination with the professional suggestions of teachers, it can reasonably set the curriculum content, so as to make the proportion of theoretical and practical teaching more scientific. On the other hand, it can also speed up the establishment of the corresponding assessment system, enable students to devote more energy to teaching activities, and enable teachers to continuously strengthen their sense of responsibility and professional ethics, so as to promote the quality of theoretical and practical teaching courses with the cooperation of teachers and students.

1.4 It is conducive to meeting the market demand for employment and achieving the goal of talent training

For electronics and electrical majors, their future employment prospects are very broad. However, enterprises have increasingly high requirements for talents' practical skills. Students' innovative ability, creative ability and practical ability are important factors for enterprises to investigate talents. Therefore, the development of theoretical and practical teaching can promote students to continuously strengthen their professional skills in practice, test their knowledge mastery, help cultivate students' subjective initiative, and promote the diffusion of students' innovative thinking, which will improve students' competitiveness in the employment environment and meet the actual employment needs of enterprises.

2. Shortcomings in the education and teaching of electronic and electrical majors in higher vocational colleges

In carrying out teaching activities in higher vocational colleges, not only students' cultural courses should be taken into account, but also students' professional courses should be involved. The practical skills of electronic and electrical majors are very strong, so theoretical teaching and practical teaching should be highly coordinated in teaching. However, there are some problems and challenges in the teaching of colleges and universities at present, which are mainly manifested in the insufficient

strength of teachers, the single and backward teaching methods, the lack of awareness of enterprise subject and the imperfect teaching system of colleges and universities.

2.1 The faculty of colleges and universities is insufficient, and the motivation of integrated teaching is insufficient

Due to the rapid development of higher vocational colleges, the number of students has been increasing in recent years, and the scope of professional courses has also been constantly expanding. It is difficult for the professional teachers of colleges to keep up with it. Especially, the theoretical and practical teaching content of electronic and electrical majors needs to be updated and adjusted with the requirements of the times and the development of enterprises, which puts forward higher requirements for higher vocational teachers. However, at present, the number of teachers in vocational schools is limited, and it is difficult to meet the theoretical and practical teaching needs of students. There are also some teachers who are inexperienced. Although they have a high academic level, they lack the actual working experience of enterprises, and their hands-on operation ability is not enough to carry out systematic teaching activities, which directly leads to the difficulty in the smooth implementation of integrated teaching.

2.2 The teaching mode of teachers is single, and the effect of integrated teaching is not obvious

The training of professionals in electronics and electronics is an important support for the sustainable development of China's electronics industry. The teaching content involved is relatively abstract and boring for students. Therefore, the traditional teaching mode is difficult to arouse students' enthusiasm for learning and is not conducive to the development of students' independent learning activities. Teachers still use the teaching mode of teaching by words and deeds in the teaching process. The form of cramming leads to students' inattention in the classroom, and the lack of students' subjective status is also not conducive to the cultivation of students' innovative thinking and practical ability. In the process of teaching, teachers neglect the interactive discussion with students, and have little guidance for students' practical teaching, which leads to the gradual alienation of the relationship between teachers and students. Teachers cannot grasp the learning dynamics of students, and it is difficult to find the problems of teaching reform, which directly affects the process of teaching reform^[1].

2.3 The enterprise lacks the subject consciousness and the integrated teaching foundation is not solid

The training of students majoring in electronics and electrical majors aims at the employment needs of enterprises. There is a link between enterprises and higher vocational education in talent transfer. Therefore, enterprises are important participants in the reform of professional teaching. However, at present, some enterprises lack the awareness of the main responsibility, the enthusiasm to participate in the integrated teaching reform of higher vocational education is not high, and there are also some formal participation phenomena, leading to the lack of practical learning platform for students, and the lack of substantive improvement of students' practical skills, which is not conducive to the overall improvement of students' comprehensive quality. At the same time, enterprises failed to participate in the development of teaching plans and the implementation of teaching programs in higher vocational colleges, resulting in the failure of information sharing between higher vocational colleges and enterprises, and the failure of targeted implementation of professional curriculum teaching content and teaching methods.

2.4 The teaching system of colleges and universities is imperfect, and integrated teaching lacks support

At present, the teaching system of some higher vocational colleges is not perfect, coupled with the weak basic knowledge of students majoring in electronics and electricity, the lack of confidence in the development of integrated teaching activities, and the lack of learning attitude and ideological status, leading to the weak foundation of integrated teaching. On the one hand, colleges and universities have not paid enough attention to integrated teaching, failed to provide students with corresponding practice bases, and have not actively carried out mass entrepreneurship and innovation education to improve students' hands-on operation ability, and failed to update and supplement professional teaching content in time. On the other hand, the assessment and evaluation system is not perfect, which fails to integrate the performance of students in their daily practice into their final assessment, resulting in the lack of practical motivation of students.

3. The effective path of theoretical teaching and practical teaching innovation for electronics and electrical majors in higher vocational colleges

The innovative way to carry out the integrated teaching of electronic and electrical majors in higher vocational colleges

needs to improve the teaching system of higher vocational colleges, strengthen the construction of teachers, promote the innovation of teaching models and teaching methods, carry out school-enterprise cooperation, and achieve targeted training and transmission of talents.

3.1 Strengthen the faculty of colleges and improve the comprehensive quality of teachers

Higher vocational teachers should correct their teaching attitude, not only update their teaching concepts, but also strengthen their ability of theoretical teaching and practical teaching. On the one hand, teachers need to understand the current social employment needs and the development trend of the electronic industry, and integrate this into the integrated teaching to ensure that students have access to the latest teaching content, and on the basis, ensure that the teaching content keeps pace with the times. On the other hand, on the basis of school-enterprise cooperation, colleges and universities send their teachers to participate in the specific operation of the electronic industry, promote teachers to improve their work experience and strengthen their hands-on operation ability in participating in enterprise operation, which will help teachers' teaching ability to be further enhanced, and enable teachers to transmit theoretical and practical teaching content to students more coherently.

3.2 Enrich the teaching mode of teachers and meet the overall needs of students

The enrichment of teachers' teaching modes and the diversification of teaching methods are the key to enhance students' learning interest. Teachers should abandon the original traditional teaching methods and carry out more colorful teaching activities. The teacher uses the project-driven teaching method to arrange teaching projects for students according to teaching needs, so as to promote students to carry out teaching activities independently. Students complete phased project tasks by consulting materials and carrying out practical experiments. The teacher only plays the role of guidance and recording, and finally checks the students' achievements through the discussion and report in the classroom. In this process, it can not only improve students' initiative to learn, It can also strengthen students' practical skills, strengthen the communication between teachers and students and students, and really promote the smooth progress of integrated teaching. In addition, teachers can also make use of module teaching method, situational teaching method, etc. to make teaching methods more modern and promote teaching effects to the maximum extent ^[2].

3.3 Strengthen the sense of responsibility of enterprises and deepen the collaborative education between schools and enterprises

Enterprises need to strengthen their sense of responsibility and actively participate in the integrated teaching reform of electronic and electrical majors in higher vocational colleges. On the one hand, enterprises should actively participate in the formulation of professional teaching plans, integrate the specific requirements of enterprises' employment needs and professional positions into the teaching plan, realize information sharing between schools and enterprises, and lay a good foundation for the implementation of integrated teaching plans. On the other hand, enterprises should also actively participate in the practical skills training of higher vocational students, provide talent guidance, and help students solve practical difficulties; Provide students with practice opportunities in enterprises, cooperate with higher vocational colleges to build practice bases, and urge students to carry out a large number of practical activities; Participate in students' entrepreneurship and innovation teaching, help students participate in entrepreneurship competitions, provide technical and financial assistance for students, and improve students' innovation awareness and creativity.

3.4 Improve the teaching system of colleges and universities and strengthen students' practical ability

Improve the teaching system of professional teaching in higher vocational colleges and ensure the smooth implementation of the top-down integrated teaching plan. First of all, improve the leadership organization mechanism and strengthen the construction of rules and regulations to provide the guidance of top-level design for integrated teaching. Secondly, ensure the reasonable distribution and effective use of teaching resources, build an information sharing platform, and ensure the sharing of teaching information in the school. We should also strengthen teacher training, improve teachers' comprehensive quality, and urge teachers to use modern teaching methods to carry out teaching; Strengthen publicity and guidance, help students establish correct learning and career outlook, and enhance students' learning enthusiasm. Finally, it is also necessary to improve the assessment and evaluation mechanism, and ensure the comprehensiveness of student assessment by integrating the completion of students' daily projects and the implementation of internship practice into the assessment. It is also necessary to add student self-evaluation, other teachers and enterprises' evaluation, and ensure the diversification of the evaluation subjects and the diversification of evaluation forms ^[3].

4. Conclusion

To sum up, the integrated teaching of theory and practice of electronics and electrical majors in higher vocational colleges has a long way to go, and needs to attract the attention of all parties. In the context of improving the teaching level of teachers, improving the teaching system of colleges and universities, and deepening the cooperation between schools and enterprises, students' comprehensive skills can be improved in multiple ways, and high-quality talent transmission can accelerate the development of enterprises.

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