

Talking about the Application of Project-driven Method in the Teaching of “High Frequency Electronic Circuit ”

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Abstract : As a highly practical professional course, “High Frequency Electronic Circuits ” cannot meet the students’ learning requirements by traditional teaching methods. Therefore, it is necessary to actively update teaching methods and apply the project-driven method to curriculum teaching. Based on this, this paper starts with the connotation of the project-driven teaching method, and discusses its application in the teaching of “High Frequency Electronic Circuits” for reference.

Keywords : Project-driven Method; High-frequency Electronic Circuit; Teaching; Application

“High-frequency Electronic Circuits” is a compulsory course for students majoring in electronic information in higher vocational colleges. Because this course is highly specialized, it has relatively high learning requirements for students. How to let students understand and master course knowledge and skills, and how to cultivate students’ professional practical ability within the limited classroom teaching time are the key issues that teachers should consider.

1. The connotation of project-driven teaching method

The project-driven method is to use actual projects to synthesize teaching content and goals, and under the guidance of teachers, use a variety of methods to inspire students to analyze, think, and discuss the objective facts and problems reflected in the project, so that students know what I want to accomplish. Project-driven teaching method focuses on the integration of theory and practice. It does not only emphasize the learning of theoretical knowledge, but guides students to construct knowledge when completing specific tasks, and perceive practical work problems in the learning of classroom knowledge. In order to complete the corresponding task, students will actively study, master the knowledge and skills related to the task, and improve their ability and level in analyzing and solving problems.

2. The application of project-driven method in the teaching of “High Frequency Electronic Circuit”

Now many higher vocational colleges in China have set up the “High Frequency Electronic Circuit” course, but due to the strong professionalism of this course, it is difficult for students to learn. If traditional teaching methods are used and a lot of time is spent on explaining theoretical knowledge, it is difficult to arouse students’ interest in learning and to activate students’ thinking. Therefore, there is an urgent need to use the project-driven teaching method to implement teaching.

2.1 Selection of projects

The selection of projects should be adapted to the students’ learning needs and the mastery of knowledge, and the degree of difficulty should be moderate, so that students can use knowledge in real situations, constantly explore new knowledge, and strengthen students’ understanding of knowledge. In addition, the selected projects are as far as possible can be completed in stages.

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If all the projects are displayed in front of the students at the beginning, the students will be full of doubts, increase their learning pressure, and affect the development of teaching work. However, if the project is divided into several sub-projects, so that each sub-project has coherence, and gradually complete all projects from simple to complex, it is more conducive to students' understanding and acceptance, and also adapts to students' cognitive laws. The items in "High Frequency Electronic Circuit" are arranged according to this rule. For example, from LC frequency selection network-high frequency small signal amplifier-mixing circuit design, etc., are superimposed layer by layer according to the difficulty of knowledge. When selecting or designing a project, it is necessary to consider the following issues: Firstly, to control the difficulty of the project based on the actual situation of the students, that is, whether the project can effectively use the knowledge that students have mastered; Secondly, whether the selected or designed project can be make students interested, and mobilize students' desire to explore new knowledge, so as to achieve a good teaching effect; The third is whether the selected project can play a role in connecting the previous and the next, highlighting its application and comprehensiveness, allowing students to construct a complete teaching effect. Knowledge system; Fourth, whether the project can better promote exchanges and cooperation among students; Fifth, whether the project allows students to link the knowledge they have learned with their real life; Six is whether the project is complete. Whether the project is complete from design to implementation to closure. It should be able to generate a sense of achievement by allowing students to complete tasks and mobilize students' interest in learning.

2. 2 Group and develop a plan

Based on site equipment, task difficulty, etc., students are divided into several groups, each group has 3-4 people, and try to combine the theoretical foundation, good, medium and weak students with practical ability scientifically, and consider the students in each group. Whether collocation can penetrate into teamwork. Combining the project tasks and goals, formulate a plan, determine specific steps, and make clear division of labor among members of each group. Taking the teaching of the "Assembly and Debugging of Radios" project as an example. First, it can be divided into two groups, a student with solid theoretical knowledge and a student with strong practical ability, and the two can work together to complete the task; Second, according to the specific assembly requirements, set up a work plan and establish work steps: inventory materials; do a good job of inspection during the period; do a good job in preparation before welding; solder and install components; do debugging and testing.

2. 3 The implementation process of project-driven teaching method

After the teacher taught the students some new knowledge, they first presented the real project situation to the students, taking AM radio as an example. Let the students first analyze the characteristics of AM radio, which are relatively familiar to the students and can stimulate their interest. When the students' interest is aroused, under the guidance of the teacher, analyze the problems that should be paid attention to or solved when completing the design and debugging of AM radio, such as how the radio wave signal is selected or amplified, choose the one that interests you. How the radio frequency is controlled, etc. After analyzing the problems, they need to be solved one by one by difficulty. The first thing to solve is the sub-project "How the radio wave signal is selected or amplified". After proposing a sub-item, teachers should not rush to explain the theoretical knowledge related to it to the students, but should let the students go to the relevant materials and have a preliminary understanding of the relevant knowledge. Then, according to the actual situation of the students, the grouping can be allocated by the student resource members or the teachers. Of course, members of each group are not fixed and need to be adjusted regularly. How to divide the tasks can be decided by the project leaders of each group. It is necessary to ensure that each group member has tasks, and the nature of the tasks assigned by each person is different each time, so that each student can be exercised in various aspects. The way to complete the task can be in the form of discussion in class, reading materials after class, etc. After each group member finds their own way to solve the problem, discuss in the group first, so that each group member can understand each other's content and form the overall concept. If you encounter unresolved problems in the group, you can discuss it between the groups for a while before asking other students for advice. In this process, teachers should participate in it, systematically understand the students' mastery of knowledge, and make adequate preparations for subsequent knowledge presentations. For another example, regarding the frequency and selectivity of the LC frequency selection network, students may feel that it is very abstract when they first come into contact with it, and they do not know how to calculate it. At this time, teachers should focus on this problem. After the problem is told, the teacher should summarize the knowledge covered by each sub-item as a whole and make a good summary.

2. 4 Results display, evaluation summary

The project-driven teaching method uses typical products as carriers to design teaching activities. The whole process of teaching is ultimately for students, allowing students to obtain the most valuable "products". This "product" can be a manufactured

item or a troubleshooting or a service provided to arouse students' enthusiasm for learning and allow students to experience the work process more intuitively. Therefore, after the project is completed, the radios assembled and debugged by each group should be displayed. Each group will send representatives and teachers to evaluate the "products" displayed by each group, and give praise to students who have completed the task, so as to enhance students' motivation and motivation for learning.

In addition, teachers should also give evaluations based on students' performance, abilities or achievements in the project. The main body of evaluation should be diversified. Students can self-evaluate first, and then teachers can check and grade the project completion results. Teachers and students analyze the problems existing in the process of project completion, the reasons for the problems, and discuss ways to solve them.

3. Conclusion

All in all, in the teaching of "High Frequency Electronic Circuits", the application of project-driven teaching method plays a very important role, integrating theory and practice, mobilizing students' interest and enthusiasm for learning, and cultivating students' innovative thinking ability, cooperation ability, etc. Multifaceted ability. However, the teaching of "High Frequency Electronic Circuits" involves a lot of content. To effectively apply the project-driven method to course teaching, teachers need to constantly explore and practice.

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