

Exploration of Motor and Drag Basic Course Teaching Method

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Abstract

"Motor and Drag" is a basic required course for new engineering electrical majors under the digital background. The course is relatively numerous and abstract and difficult to understand. However, in the new era, students' interest points and way of thinking are greatly different from the past, so this requires teachers to conform to the trend of The Times, keep pace with The Times, be committed to exploring new teaching methods, and help students overcome the complex, abstract and difficult parts of the course. Teachers should not only carefully design the course content, and use simulation software to assist in teaching, but also should break through themselves, adopt diversified teaching methods to conduct teaching, and improve the teaching effect.

Keywords

Motor and Drag; Diversified Teaching; Teaching Methods; Theory with Practice.

1. Introduction

"Motor and Drag" is a very important major in electrical, through which students can lay the foundation for other courses they will be studied. The main goal of the course is to cultivate engineering application talents, pay attention to the training of application ability, highlight the needs of engineering application talents training in the selection and arrangement of content, highlight "application first, enough degree, contact with reality"[1]. Such a talent training method is exactly what the country needs today. However, the course has both a strong theoretical nature and a strong application. At the same time, it can also serve as an independent technology application course, directly for industrial production services. And in the teaching, the students are required to not only master the basic theory, but also pay attention to the cultivation of computing methods and practical operation skills, which will inevitably bring difficulties to the students' learning. Therefore, in the course teaching of Motor and Drag course, the discussion of research learning methods is an indispensable step in the teaching and research of Motor and Drag course. In the teaching of "Motor and Drag", the design and combination of teaching methods are more important. The design and combination of the research teaching methods in this course will be discussed.

2. There are Various Teaching Methods

2.1. The Brain Storm Teaching Method

The so-called brain storm teaching method is the method that teachers guide students to launch a certain topic and express their opinions freely, while teachers do not evaluate the correctness or accuracy of their opinions [2]. This method has the ability to obtain the most ideas and opinions in the shortest possible time. It is widely used in teaching, enterprise management and scientific research work. In vocational teaching, teachers and students can discuss and collect opinions to solve practical problems (also known as the collection of opinions), and draw conclusions through collective wisdom.

2.2. Case Teaching Method

The so-called case teaching method is a teaching method to guide students to discuss these special situations by describing the specific educational situations[3]. The purpose of case teaching is not to impart the ultimate truth, but to stimulate students' creative potential through the discussion and thinking of each specific case. Whether the final answer is correct is not the focus of this method. The focus is to draw the thinking process of conclusion in the discussion process. In class, everyone needs to contribute their own strength, speak freely, think freely, and everyone is participants. Students can not only deepen the understanding of some problems and improve the ability to solve the problems from the guidance of the teachers, but also improve their insight into the problems from the mutual communication and discussion between the students.

2.3. Project Teaching Method

The so-called project teaching method refers to the vocational education teaching activities of teachers and students by jointly completing a complete product with practical application value [4]. For modern vocational education, modern science and technology and production organization forms are further improved. People also widely adopt the way of group work, jointly making plans and joint division of labor to complete the whole project. In general, the students who participate in the project teaching working group have different majors and types of work. All come from different professional and professional fields. The purpose is to train students in the ability to work with students and colleagues in different professional fields and to participate in the whole project.

2.4. Simulation Teaching Method

The so-called simulation teaching method is a behavior-guided teaching mode, and its goal-oriented is teaching means and teaching environment[5]. Simulation equipment teaching and simulation situation teaching is two categories of simulation teaching: (1) simulation equipment teaching is mainly by simulation equipment as teaching support, its characteristic is not afraid of bad consequences of operation error, once the mistake can come again, and can also conduct single skills training, students in the simulation training, through their own feedback perception correct essentials and timely correction.(2) Simulation situation teaching is mainly to simulate a social scene according to the requirements of professional learning. In these scenes, it has the same functions and working process as the actual situation, but the activity is simulated. This kind of teaching can enable students to have a more concrete and comprehensive understanding of their future career positions in a practical social environment and atmosphere, especially some unique norms belonging to the industry, which can be deepened and strengthened, which is conducive to the further improvement of professional quality.

2.5. The Task-driven Method

The so-called Task-driven method about teaching content is implied in one or several representative tasks, to complete tasks as the center of teaching activities, under the motivation to complete the task, through the task analysis, discussion, clear what knowledge, need to solve what problems, and find out what is old knowledge, which is new knowledge, under the guidance of teachers, through the active application of learning resources, in the learning process of independent exploration and interactive cooperation, find out the way to complete the task, and finally through the complete significance of the task [6].

2.6. Practical Teaching Method

The so-called practical teaching method is the teaching method of direct teaching in the production site, so that students can learn, practice and do in the practice site or the factory

workshop, which shortens the distance between the theoretical classroom teaching and the actual production application, and greatly improves the pertinence and effectiveness of the teaching [7].

2.7. Use the Multimedia Courseware Reasonably

For the "motor and drag" course, the internal structure of the motor is more complex, and the operation of the motor is a dynamic process, so the course of multimedia courseware should be made for auxiliary teaching. However, the teaching practice has found that most students are opposed to adopting the multimedia teaching method[8]. The reason is that although introducing the internal structure to the multimedia courseware is intuitive and easy to understand. However, in the introduction of motor application, the traditional "blackboard + blackboard book" method is more suitable for students' learning. In response to the students' reflection, we should reasonably combine the two. Multimedia teaching can be used when introducing the internal complex structure and dynamic process of the motor. For example, for the three-phase asynchronous electric motor, its rotating magnetic field is a knowledge difficulty, which is difficult to understand. At this time, multimedia can be used to carry out the dynamic demonstration of the motor, demonstrate the generation of the rotating magnetic field, and observe its characteristics. In This way, students can not only intuitively understand their working principle, and achieve twice the result with half the effort, but also mobilize the initiative of learning, curiosity and enthusiasm to a large extent.

2.8. Teaching Method of Connecting Theory with Practice

The so-called theory with practice teaching method is a teaching method in the practice center (or laboratory) to complete a theoretical or practical teaching task. The practice center has advanced production equipment, which concretized theoretical knowledge and integrates theoretical teaching and practical teaching [9]. Traditional theoretical teaching and practical teaching are separated from each other, and this teaching method perfectly integrates the two, and shows the application, advanced nature, comprehensive and practical nature of the teaching content and the teaching methods incisively and vividly. The working and learning atmosphere created by the practice center is more conducive to the synchronous cultivation of students' ability and quality. Motor courses are very strong, both theoretical and practical. Therefore, the experiments of the motor course specified in the outline must be carefully completed carefully. Given that both the voltage and current of these experiments are relatively large, an adequate preview must be required to prepare each student before doing the experiments. After the students entered the laboratory, the teacher first carefully examined their preview. Before doing the experiment, the experiment will be explained in detail, such as the physical connection diagram of the experiment and the matters needing attention in the experiment process, etc., to ensure the personal safety of students and equipment safety, and to ensure that each student can finish the experiment smoothly. For the study of this course, in addition to the usual experiments, but also need to arrange the motor understanding internship. Through the motor understanding internship, students can further deepen the understanding of the knowledge learned, enhance their hands-on ability, have a deeper understanding of the internal structure of the motor, and cultivate the ability to find and solve problems in the process of practice. Through years of teaching, students are very interested in this part of motor internship. Many students even suggest doing a motor internship before or in the middle of the "motor and drag foundation" of the course, so that they will be more familiar with the internal structure of the motor when attending the class.

3. Combined Analysis

We have learned the above eight teaching methods that are not invariable and we need to combine them. In a class, we can effectively combine the above methods at will. Due to the individual differences of students and the different teaching requirements of various colleges and universities, we can combine ourselves to find the most suitable teaching methods for our current students. As teachers in the new era, we are the leaders and mentors of the future flowers of the motherland, which requires us to take every class, every class, every student seriously. Maybe for us, some small actions, just small things that can do or not, but these may affect the children's life.

The motor course is not only highly theoretical, but also highly practical. Therefore, the experiments specified in the outline must be completed carefully. Given that both the voltage and current of these experiments are relatively large, an adequate preview must be required to prepare each student before doing the experiments. After the students entered the laboratory, the teacher first carefully examined their preview. Before doing the experiment, the experiment will be explained in detail, such as the physical connection diagram of the experiment and the matters needing attention in the experiment process, etc., to ensure the personal safety of students and equipment safety, and to ensure that each student can finish the experiment smoothly. For the study of this course, in addition to the usual experiments, but also need to arrange the motor understanding internship. Through the motor understanding internship, students can further deepen the understanding of the knowledge learned, enhance their hands-on ability, have a deeper understanding of the internal structure of the motor, and cultivate the ability to find and solve problems in the process of practice.

4. Conclusion

Through years of teaching, students are very interested in this part of motor internship. Many students even suggest doing a motor internship before or in the middle of the "motor and drag foundation" of the course, so that they will be more familiar with the internal structure of the motor when attending the class.

In short, the study of teaching methods is itself a process of long-term exploration. For the teaching of this course, it should be adjusted in real time according to the actual situation of the students and the teaching conditions and the specific requirements of the teaching syllabus. Teachers can constantly reform the teaching and improve the teaching level according to the experience accumulated in the teaching process.

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