Thinking and practice on the teaching reform of "sensor technology" course from the perspective of ideological and political education

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Abstract: Sensor and testing technology is a key link to cultivate students' logical thinking and practical ability, which plays an irreplaceable role in quality education. This paper takes the course of "sensor technology" as a breakthrough point, from the standpoint of teaching reform, the professional training requirements and traditional teaching methods are analyzed, and it is elaborated, and the specific reform is carried out, in order to provide some reference for the relevant education personnel, so as to build a more modern, more effective classroom. Give full play to students' ability of innovation and imagination.

Keywords: Ideological and political education in curriculum; Sensor technology; Curriculum teaching; Reform

Introduction

With the continuous deepening of quality education and new curriculum reform, compared with the past, the government's macro demand for school classrooms has undergone a more significant adjustment and change, from the simple recitation of theoretical knowledge as the focus, more attention to the development and training of skills, which also provides a clearer idea for teachers' innovation. Sensor principle and application is an important part of electronic specialty, occupies a very important position in the whole basic curriculum system, its goal is to make students have a comprehensive understanding of the measurement and control, computer application, electronic information and other aspects of knowledge, so as to improve the students' ability to design and innovate the application of products.

1. Disadvantages of the traditional teaching model of "sensor technology" course

1.1 Theoretical courses are overemphasized, while experimental courses are mostly confirmatory

In the past, the sensor principle and application courses were carried out in the way of combining theory with practice. Theoretical teaching mainly told about the principle, structure, characteristics, measurement lines, error analysis and other aspects of the sensor, and the application characteristics were very obvious. In the experimental teaching, the output characteristics of the sensor are tested, such as pressure, displacement, motor speed, temperature and humidity, etc. If the appropriate processing of all kinds of information after the test, it is bound to have a certain impact on the accuracy and objectivity of the test results, which will also affect the students' understanding and mastery of the sensor.

The course of "sensor technology" is based on the professional basic courses such as digital mode and electricity, which is more theoretical. Many teachers have a kind of "theoretical teaching in the textbook first" illusion. For this reason, they spend a lot of time to teach students the theoretical knowledge, but, for a long time, the university's sensor teaching is based on the textbook. Spend a lot of time in some basic principles, simple application of professional knowledge, based on demonstration teaching methods. However, due to the fixed time of the course setting, the practical operation training of related courses is less, and the main focus is on verification experiments, which restricts students' thinking ability.

1.2 Teaching evaluation is not scientific and reasonable

At present, some universities have obvious bias in the experimental assessment, mainly through the writing of basic experimental reports to evaluate the experimental results of students, which has a great distance from the sensor principle and application of the actual operation, and even can not reflect the overall learning status, can not reflect the real actual operation. Therefore, in the teaching evaluation of "sensor

technology" in universities, there is a great irrationality and lack of scientific nature, so that the real teaching results can not be tested, on the contrary, the teaching results and the real teaching objectives have a great deviation, the actual development of students has caused a great impact.

2. Thinking on the teaching reform of "sensor technology" course from the perspective of ideological and political education

2.1 Explore the classroom teaching method

In the course of sensor principle and application, the traditional teaching model is to deduce the theory first, and then verify it through experiments. In theory teaching, because there are many mathematical derivations, it is boring, which is not conducive to the verification of experiments. In order to enable students to better grasp the relevant knowledge in the whole class, we have carried on the appropriate adjustment to the traditional teaching idea -- starting from the application, taking the specific task as the guidance, carrying on the theoretical study. The project-based teaching method is different from the traditional teaching method. It aims to make the students fully participate in the whole process of the innovation project, so that they can better understand the theoretical knowledge they have learned. As a teacher, we should change our educational concept, change our teaching methods, from simple teaching knowledge to active guidance, and consciously cultivate creative thinking. "Subject research" is based on "subject", and the study of "subject" is an important subject of "subject" research. When applying, you can refer to the national, provincial and municipal university electronic design competition, Internet of Things, robot competition and other outstanding projects. The difficulty of the project should be appropriate, teachers should have an overall understanding of the overall process of the project, to ensure that students can complete the project independently, this is indeed an effective way to encourage students to participate in the project. In order for students to get used to learning in a project and task style as soon as possible, every student must be able to participate in it. According to the students' interests and research direction, teachers can divide students into groups of 3 or 4 students to ensure that each student has the opportunity to participate. Teachers should break down the tasks of innovative projects, provide specific and effective guidance to students from the perspectives of the significance of project establishment, hardware circuit design, measurement data processing, improvement and prediction, improve students' thinking ability, hardware circuit design ability, guide them to establish and debug hardware circuit, and guide students to write a project concluding report after the project is over. So that the students can not only improve their theoretical level, but also exercise their practical ability. Through the research of this subject, it not only enriches the teachers' theoretical knowledge, but also promotes the enthusiasm of the students to participate in the research of the subject. In addition, teachers can also study and visit brother colleges to learn from experience and lessons, or participate in academic conferences and achievement fairs, introduce the current scientific research projects to students, and enrich students' knowledge. For example, teachers can introduce interesting experiments such as food fullness detection, pulse detection and environmental noise detection to students in class to stimulate their subjective initiative in learning.

2.2 Reform of examination methods

Changes in teaching methods will inevitably lead to changes in evaluation methods. In order to adapt to the new professional quality requirements, to make classroom teaching and innovative activities organic combination, it is necessary to build a variety of learning effect evaluation system. Changing the traditional examination method with attendance rate and writing homework as the main content, to research learning in the classroom question and answer assessment, through the teacher's questions, rush to answer, discussion, homework, small papers, quizzed and other methods to better understand the students' learning status, and to timely adjust the teaching content and methods, so as to obtain better teaching effect. At the same time, we also encourage students to actively carry out research learning after class to enhance their innovative thinking. After the implementation of project-task teaching method, the evaluation of innovative projects becomes very important. In the form of defense and project report, the main members of the project group make project statements, other students ask questions and score related issues in the project, and each group finally writes a written report to sort out and summarize the whole process of the project. And it should be included in the evaluation of the project results, so that each student can play the greatest potential, the students'

learning enthusiasm into a positive spirit of exploration, and truly realize the application of what they have learned. The final examination is also very critical, abandoning the traditional terminology explanation, abandoning the simple concept question and answer and multiple choice questions, focusing on the basic theory and application ability of sensors. Through the reform of teaching evaluation methods, the students' learning enthusiasm has been maximized, and the shortcomings of "mechanical memory" and "no use" caused by the previous examination methods have been overcome, which truly reflects the students' practical application ability.

2.3 Cultivate college students' subjectivity

In the teaching process, teachers should combine theory and experiment with practice, so that students can develop the habit of independent thinking and can complete the experiment independently. For example, in teaching, teachers can let students design a simple sensor signal regulation circuit, and guide students to conduct in-depth analysis of its application. On this basis, the experimental teaching can be divided into verification experiment and design experiment. The purpose of verification experiment is to make students understand the usage and calibration method of the sensor, so that students can understand the operation of the interface circuit, and have a more comprehensive understanding of it in the exploration, and then design experiment. In addition, in the introduction of theoretical courses, teachers should also give students assignments, provide them with an open experimental platform, so that they can choose a kind of sensor to carry out the design of small systems, from the selection of sensors, to the debugging of signal lines, to the construction of digital circuits of analog circuits, to be completed by students themselves.

Conclusion

Continuously promoting the teaching reform of "sensing and detection" course is a rational and necessary measure, which can not only give full play to the innovation ability of students, but also effectively adjust the classroom organization form. This paper discusses the ideas and measures of curriculum reform from the aspects of cultivating interest, introducing engineering examples, making multimedia animation courseware, expanding practice and so on. It is reasonable in theory and feasible in practice to integrate professional basic knowledge closely with it, which fully reflects the main role of students in the classroom and can provide reference for teachers.

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