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Constructing the Civics of Fundamentals of Electronics Technology Course Based on OBE Concepts

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Abstract: Fundamentals of Electronic Technology is one of the main courses for computer science majors. On the basis of fully considering the academic situation of our students and the characteristics of local applied undergraduates who pay more attention to the system structure of "application-oriented" and "practice-oriented", we integrate the elements of Civic and Political Education into the classroom teaching content from the perspective of cultivating morality and educating people, and put forward the research of Civic and Political Education Program of Basic Electronic Technology Course under the concept of OBE. BOPPPS blended teaching of the "Fundamentals of Electronic Technology" course of the Civic and Political Education Program Research.

Keywords: fundamentals of electronic technology, OBE, BOPPPS blended teaching, curriculum civic politics

Introduction

The report of the 20th Party Congress, General Secretary Xi. emphasized that the "comprehensive implementation of the Party's education policy, the implementation of the fundamental task of moral education, and the cultivation of moral, intellectual, physical and aesthetic all-round development of socialist builders and successors" put forward higher requirements, the need for education and teaching process, "fine", "accurate", "fine", "real" to promote the construction of the course of thought and politics, to create a "everyone focus on education", "accurate", "fine", "real". The higher requirements are put forward, and it is necessary to promote the construction of course ideology and politics in the process of education and teaching, "precise", "accurate", "detailed" and "practical", to create "everyone emphasizes on educating people" and "door to door". The construction of courses on ideology and politics is being promoted with "accuracy", "detail" and "reality" to create an atmosphere of ideology and politics in which "everyone attaches importance to educating people", "there is ideology and politics in every door", and "there are special features in every lesson".

China's key core computer industry is weak in independent innovation and independent controllability, "Fundamentals of Electronic Technology" as a basic course for electronics, electrical, computer and other professions, is the core hardware and software basic theory of the information technology era, is one of the major strategies for the construction of national information technology. Therefore, it is particularly important for this course to integrate the elements of course ideology and politics in the teaching process.

1. Current status of the program in carrying out classroom civics

1.1 The difficulties faced in implementing ideological and political education in engineering courses:

(1) Difficulty in tapping the elements of Civics and Politics: This type of course has a strong scientific nature, and the gap between the ideological and political themes is large, and it is difficult to skillfully integrate the elements of Civics and Politics in the teaching content;

(2) The course is difficult and short: the teaching content of this type of course is complicated and difficult to understand, and the development of Civic Education in the teaching process may image the normal teaching and make the limited number of hours even more stressful;

(3) Students' antipathy: Raw sloganeering and indoctrination education easily cause students' antipathy, which increases the difficulty of building Civics in the curriculum.

1.2 The reform direction of implementing civic and political education in the curriculum

(1) The main focus is to excavate the civic and political elements. Civic and political elements are divided into six categories: humanistic history, homeland sentiment, professional pride, professional responsibility, dialectical materialistic thinking, and craftsmanship, and through the analysis of the course content, a number of key points of civic and political elements are condensed;

(2) The innovation of educational philosophy is the main focus.OBE is an educational philosophy based on learning outcomes or result-oriented education, which represents the mainstream direction of the reform of professional engineering education, and clearly focuses and organizes every aspect of education so that students can achieve the expected results in the learning process.

2. Civic and political reform of the basic electronics technology course under the OBE concept

2.1 Integration of course objectives and civic content

First of all, we need to clarify the course objectives and combine them with the Civic and Political elements. The objective of the basic electronics technology course is not only to enable students to master professional knowledge, but also to develop students' civic and political elements such as engineering ethics, teamwork, innovative thinking and professional ethics. These elements should run through the whole course so that students can develop good professionalism and social responsibility while learning specialized knowledge.

The categories of Civics elements are divided into the following six main categories:

(1) Patriotic enthusiasm: from the aspect of civic education, deeply promote and cultivate the spirit of patriotism among students, and stimulate the sense of mission and responsibility of students' scientific and technological parcels.

(2) Scientific spirit: from the aspect of cultural education, to inspire students to love science, explore and innovate, and to take up the important task of national rejuvenation.

(3) Engineering ethics: from the aspect of moral education, cultivate engineers with the concept of benefiting mankind and sustainable development; from the aspect of rule of law education, strengthen students' hardware engineering ethics education.

(4) Professionalism:From the aspect of ideological education, cultivate students' career spirit of love and dedication; from the aspect of moral education, focus on cultivating students' work style of rigor and truthfulness; from the aspect of labor education, focus on cultivating students' ability of teamwork.

(5) Human attitude: from the aspect of psychological education, focus on cultivating students' positive attitude and strong stress-resistant ability.

(6) Craftsmanship: from the aspect of labor education, focus on cultivating students' hardware craftsmanship of excellence; from the aspect of innovation education, focus on cultivating students' innovative spirit, practical ability and independent problem solving ability.

2.2 Building a curriculum with an outcome-oriented approach

OBE education concept is an advanced education concept that is results-oriented and adopts reverse thinking to build the curriculum system construction. The main direction of reform is to change the traditional memorization-oriented knowledge output to conceptual knowledge system and project application ability output, improve students' theoretical basic knowledge, improve students' hardware design ability and application to specific projects, so as to lay a solid foundation for participation in related competitions, study of subsequent courses and completion of graduation design.

Breaking the original traditional curriculum knowledge system, based on the integration and reconstruction of teaching content, we put forward the curriculum system of "work-based, cross-fertilization and step-by-step advancement" to cultivate students' ability of comprehensively applying knowledge to solve problems and collaborative innovation. Firstly, the teaching content is combined with the production reality, and the design works are designed according to the sequence, adhering to the principle of "from local to whole, from simple to complex, from easy to difficult"; secondly, the teaching content is integrated into the works, realizing the fusion of theory and practice, and the fusion of course ideology and professional knowledge; finally, through the hardware description language and Logisim simulation technology, expanding the teaching content, step by step to promote the students for the knowledge goals, ability goals and literacy goals of the degree of achievement[1].

2.3 Integration of the BOPPPS teaching model with the Civics of the curriculum

The BOPPPS model breaks down classroom teaching modularly and advocates the concept of student-centered teaching, which consists of six major parts: introduction, learning objectives, pre-test, participatory learning, post-test and summary. In the instructional design, teachers add reasonable content through the six steps and adopt rich teaching tools to attract students to participate in classroom teaching in a comprehensive way, leading to the achievement of course objectives.

The key to the construction of the Civic-Political construction of the curriculum is to combine the teaching design, the Civic-Political elements and the professional teaching objectives. In the process of classroom teaching, teachers dig out different elements of civic politics in the textbooks and expanded knowledge according to the content of different modules, and consciously infiltrate these civic politics elements into all aspects of teaching in the specific teaching process. Students make their own judgment by comparing and reflecting on the contents of the textbook and the contents presented by the teacher. Throughout the process of internalizing knowledge and enhancing abilities, students invisibly construct their own views, thus realizing the Civic and Political objectives of course teaching.

2.4 Multiple and graded evaluation criteria to form a self-referential evaluation system

The OBE teaching assessment system focuses on learning outcomes rather than on teaching content. Based on multifaceted evaluation criteria, each student can be given a different evaluation registration according to the degree of fulfillment of educational requirements, and each student can be evaluated in a targeted manner. Courses are mainly assessed and evaluated through usual grades and final grades. The usual grade is assessed in a variety of ways, including online course video learning, classroom interaction, discussions, tasks, assignments, chapter tests, exams, and class attendance sign-in. The teaching process of this course takes Super Star Learning Pass as the platform, constructs online SPOC video course, and sets up the task points in the video process, meanwhile, rich classroom interactive links are released through Super Star Learning Pass in the process of classroom teaching, such as selecting the person, practicing with the classroom, grabbing the answer, questionnaire, etc., which not only activates the classroom atmosphere, but also can carry out the assessment and evaluation of the course through multiple ways and angles[2].

3. Concluding remarks

After the implementation of the teaching reform in the course , the students' desire for knowledge has been greatly improved and a strong internal drive has been created. Students' feedback mentioned that although they were sometimes confused and pressurized by the difficulties they encountered during the production of their works, they would take the

initiative to consult the relevant literature and technical information, and their group members would work together to find a solution to the problem. At the same time, the interaction rate between teachers and students has been greatly improved, further increasing teacher-student emotions, students are more willing to take the initiative to answer the teacher's questions, express their own ideas and opinions, and discuss with the teacher together. The overall learning atmosphere is good, the students' evaluation is high, and it is welcomed by the students, who are more clear about their learning goals and the direction of their efforts, which lays a solid foundation for the subsequent study of other professional courses and employment.

Conflicts of interest

The author declares no conflicts of interest regarding the publication of this paper.

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