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Exploration of Integrating Ideological and Political Elements into the Teaching of Principle and Application of Single Chip Microcomputer under the Background of Engineering

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Abstract: In view of the current situation that science and engineering students' learning is partial to rationality and logic and lack of ideological and political education under the background of new engineering, ideological and political content is introduced into theoretical classroom and experimental teaching to cultivate high-quality talents with both morality and ability and conforming to the trend of the times. This paper first analyzes the necessity of integrating ideological and political elements into the teaching of Principle and Application of Single Chip Microcomputer, then puts forward the implementation process of curriculum ideological and political, such as the selection of teaching cases, the means of ideological and political integration, and finally summarizes this paper.

Keywords: New Engineering; Principle and Application of Single Chip Microcomputer; Ideological and Political Elements

1. Introduction

With the advent of the digital technology era, the demand for science and technology in all walks of life under the background of new engineering is increasing. However, it is difficult for talents with only professional knowledge but lack of historical mission, professional quality and craftsman spirit to make great contributions. At present, our country needs responsible, responsible and capable talents. Therefore, colleges and universities are also strengthening the training of scientific and technological talents. Principle and Application of Single Chip Microcomputer is a course with theoretical knowledge and practical ability. The majors offered in the course are generally Internet of things engineering, computer science and technology, information and communication engineering and so on. In the classroom, teachers should not onlyimpart professional knowledge, but also strengthen ideological and political education for students and integrate social ethics, professional norms, craftsmanship, patriotism and other ideological and political elements.

2. Problems in integrating ideological and political elements into the teaching of Principle and Application of Single Chip Microcomputer

At present, the problems in the integration of ideological and political elements are as follows:① lack of motivation. Most teachers think that ideological and political is the thing of ideological and political theory courses and counselors, which has nothing to do with themselves, so they despise ideological and political; ② Although some teachers have introduced ideological and political elements, the mining and integration of ideological and political elements are not in place, and mechanically copy some irrelevant

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ideological and political elements, which leads to students' disgust.

3. The implementation process of integrating ideological and political elements into teaching

3.1 Syllabus revision

The syllabus of the course Principle and Application of Single Chip Microcomputer requires students to master the C language of single chip microcomputer, external interrupt, USB to serial port, timing interrupt and other knowledge points in theoretical learning. In hands-on experiment, they need to master water lamp, key control water lamp, electronic display screen, key control matrix digital, etc. These are staying in the professional curriculum. In order to strengthen the ideological and political content of the curriculum, we need to add the ideological and political content in the outline, focusing on the ideological and political content of science and technology. The revised syllabus aims to cultivate students' learning enthusiasm, turn the abstraction and complexity of science and engineering courses into examples in life, and reduce students' learning pressure, in order to enable students to have strong scientific and technological quality and academic moral level, and establish a selfless spirit of dedication to the country.

3.2 Selection of teaching cases

The concrete implementation of ideological and political teaching mode firstly adopts course case selection, SCM and ideological and political content integration, SCM knowledge point explanation, ideological and political content reinforcement review, and then combines experimental basis for operation. Table 1 shows specific cases where ideological and politicalelements are integrated into the teaching content. In teaching, we should pay attention to the combination of the principle of single chip microcomputer and scientific and technological development cases, introduce the typical figures of current science and technology, and write ideological and political cases based on the excellent traditional culture of our country. For example, in the Principle and Application of Single Chip Microcomputer classroom teaching, the introduction of domestic and foreign single chip research advances, information-McS-51, AT89C52, AT89S51, AT89C20 and other chip knowledge; Science and technology cases and science and technology stories to promote social development and progress——crystal oscillator history, reset knowledge, circuit knowledge; Related to the course of China's excellent cultural tradition, the story of people——8051 MCU STC Hongjing founder Yao Yongping, Guo Tianxiang, Zhou Ligong, Wu Jianying and other leading figures in the field of MCU. We can teach students the stories of these legendary figures, and tell about their contributions in the development of China's microcontroller technology. The appeal of such representative characters' stories should not be underestimated. If students can take these characters as their role models, it will be a very powerful motivation for them to learn single chip microcomputer technology.

Table 1. Specific cases of ideological and political elements integrated into the teaching content

No.	Overview of Teaching Content	The Course Aims at Ideological and Political Education	The teaching method
1	Microcontroller chip	The importance of core technologies	Question form
2	Ancient and modern Chinese and foreign figures cases	Correct outlook on life and values	Lecture and discussion
3	Guo Tianxiang uses the single-chip entrepreneurship story to publish textbooks, participate in competitions, and establish companies	Innovation and entrepreneurship, learning this course has a lot to do	Discussion, personal report and presentation
4	MCU timer internal structure andprogramming application	Cherish your time andlearn to manage your time	Teaching,heuristic, etc
5	Single-chip interrupt system	Important things first	Lecture
6	SCM integrated course design, experimental content, etc	The frontier of science and technology and practice are the criterion for testing truth	Live demonstration

3.3 Selection of a variety of teaching methods

Ideological and political education can also make use of high-tech technologies, such as multimedia teaching, video, animation and PPT picture projection. This process not only stimulates students' sensory experience, but also turns obscure knowledge points into concrete examples of life to deepen students' impression. In addition to offline teaching on campus, teachers can also use online methods, such as online APPS, WeChat public accounts, QQ and Web pages. Online teaching is mainly to develop new models. Through these network platforms, students are organized to listen to reports and lectures on advanced tasks such as well-known

professors and moral models, communicate with outstanding talents, ask and consult. Students learn about real-time events, cutting-edge technologies, domestic and foreign universities, top 500 enterprises and other information related to the course through questions and consultation, strengthen the reflection on curriculum learning, and finally get inspiration and thinking, so as to realize the purpose of cultivating ideological and political teaching and research in colleges and universities. In addition, homework is arranged on the superstar platform, and the curriculum and ideological and political content are integrated through the evaluation link.

4. Conclusion

To sum up, in the current courses offered by colleges and universities, Principle and Application of single Chip Microcomputer has been placed in the theoretical and experimental teaching mode, and the course content has not been integrated with ideological and political knowledge. In addition, in the early stage of the course, some hot events, scientific and technological figures, and innovation and entrepreneurship based onsingle chip microcomputer were unconsciously introduced, without forming a systematic and targeted course ideological and political system. In order to effectively improve the ideological and political awareness level of engineering students in colleges and universities, our course group introduced ideological and political content into the teaching of Principle and Application of Single Chip Microcomputer according to the actual situation. The practical results show that it not only improves the innovation ability and problem solving ability of engineering students in colleges and universities, but also stimulates students to think about the country and their own life fate, and ignites students' passion for ideological and political study.

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