

Construction and Implementation of Ideological and Political Courses of Electrical Engineering and Automation Specialty

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Abstract

Combined with the "14th Five-Year Plan" of national intelligent manufacturing, taking the teaching of electrical engineering and automation as an example, the thinking element is integrated into the classroom teaching of professional courses. The whole process makes full use of the guiding and heuristic teaching methods and means, and embodies the student-centered education and teaching concept. Based on the three characteristics of knowledge transfer, ability cultivation and spirit shaping in the course design of electrical specialty, the ideological and political construction framework of core specialized courses is constructed in combination with the teaching process.

Keywords

Electrical specialty; Ideological and political teaching; Education goals.

1. Introduction

Electrical engineering is an indispensable key discipline in the field of high and new technology. In a sense, the degree of development of electrical engineering represents the level of scientific and technological progress of a country. Because of this, the education and research of electrical engineering has been playing a very important role in the universities of developed countries. With the progress of The Times, the concept of information, automation and network has been gradually integrated into the courses of electrical specialty, and further to the direction of intelligent development. Electrical specialty courses with electricity as the carrier have developed into the combination of "strong electricity and weak electricity", "engineering and system". Moreover, individual basic courses of electrical majors have infiltrated into other disciplines, such as control science and technology, computer science and technology, civil engineering, etc., which are widely opened and have great influence on students. Because of this, electrical professional courses are very important to carry out the concept of "curriculum ideological and political" into the classroom.

Based on the three characteristics of transferring knowledge, cultivating ability and shaping spirit in the course design of electrical specialty, the ideological and political construction framework of core specialized courses is constructed for six ideological and political cultivation objectives and five teaching links. In the framework, ten courses of ideological and political integration strategies are given to comprehensively analyze how to carry out curriculum ideological and political construction of electrical core professional courses.

First, the importance of education in electrical specialty

The three characteristics of knowledge transfer, ability cultivation and spirit shaping reflected in professional curriculum design correspond to each other, although independent, but complementary. General Secretary Xi Jinping pointed out in his instructions on party building in colleges and universities across the country that the first duty of a teacher is to "preach". Excellent teachers should be good at "impart knowledge and solve puzzles", and more importantly, "preach" should be their responsibility and mission.

The construction, development and connotation of ideological and political courses of electrical specialty are shown in Figure 1.

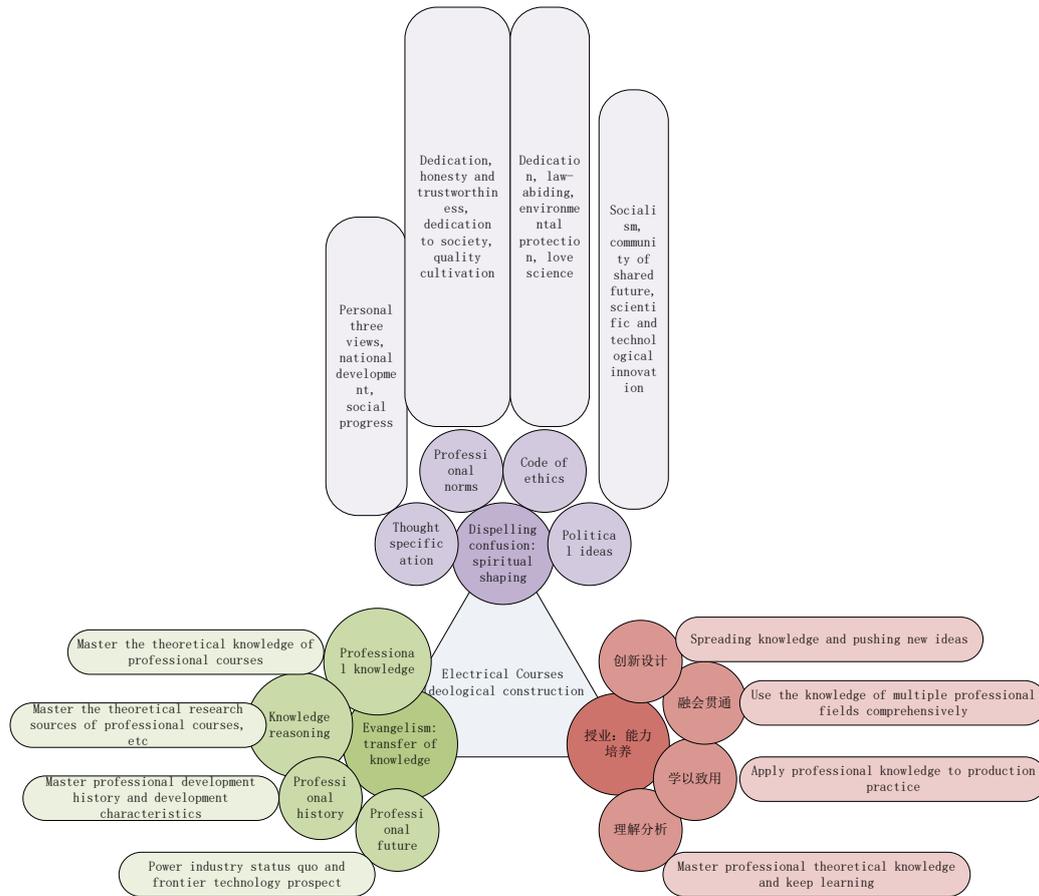


Fig. 1 Construction, development and connotation of ideological and political courses of electrical specialty

The transmission of knowledge, the cultivation of ability and the shaping of spirit are the same as preaching, teaching and dispelling doubts. Although each has its main purpose, it is also a whole complementary to each other. In the process of learning knowledge, students first need to grasp the subject direction and problems. While solving the professional knowledge, they also need to browse other relevant or unrelated knowledge, and need to apply interdisciplinary knowledge to spread the connotation and extension of knowledge, so as to improve their ability. Furthermore, the accumulation of knowledge is also the shaping of spirit. Without knowledge, the spiritual world is empty. Therefore, spirit is the sublimation of knowledge and a great power to promote social progress. On the other hand, if students' spirit is enriched, it will internalize into goals and motivation, and transform into vigorous enthusiasm and initiative for learning, and then acquire more knowledge. Similarly, the improvement of ability will enable students to solve more problems in a shorter time, guide students to put what they learn into practice, explore the enthusiasm and creativity of learning, and then acquire more knowledge. To sum up, passing knowledge, cultivating ability and shaping spirit are inseparable and mutually promoting.

For electrical engineering and its automation, the ideological and political elements of the course include the following parts:

- (1) From the perspective of the development history of the power industry, the knowledge point of understanding the voltage level and characteristics of wiring mode of China's power grid is the entry point.

(2) Pay special attention to the environmental problems caused by the rapid development of the power industry, reflecting the value guidance of the common progress of humanistic care and scientific and technological development.

(3) Combined with the technical and human factors analysis of the severe power failure in the history of the world power industry, such as "The Blackout in Canada and America" and "the Blackout in India", as well as the largest power failure in China -- the large-scale power failure in Southern China caused by the snow and ice disaster in 2008, and the emergency in the COVID-19 epidemic in early 2020. To train students to solve engineering problems with dialectical materialism and development perspective, and to have the sense of social responsibility and integrity as future power engineers.

(4) Through the technical analysis and source of contemporary Power industry products in China, for example, more than 80% of relay protection products in China's power grid come from China, and the world's first crisis distance protection device was invented by Chinese people, so as to establish a sense of trust in their own culture and cultivate a strong belief in independent innovation.

(5) The course introduces the status quo of the electric power industry and the prospect of cutting-edge technology, aiming at "building a strong smart grid with international leadership, independent innovation and Chinese characteristics", and emphasizes the rigorous scientific research spirit, multidisciplinary integration thinking and international vision that future electric power researchers must possess.

Ideological and political elements of electrical specialty are shown in Figure 2.

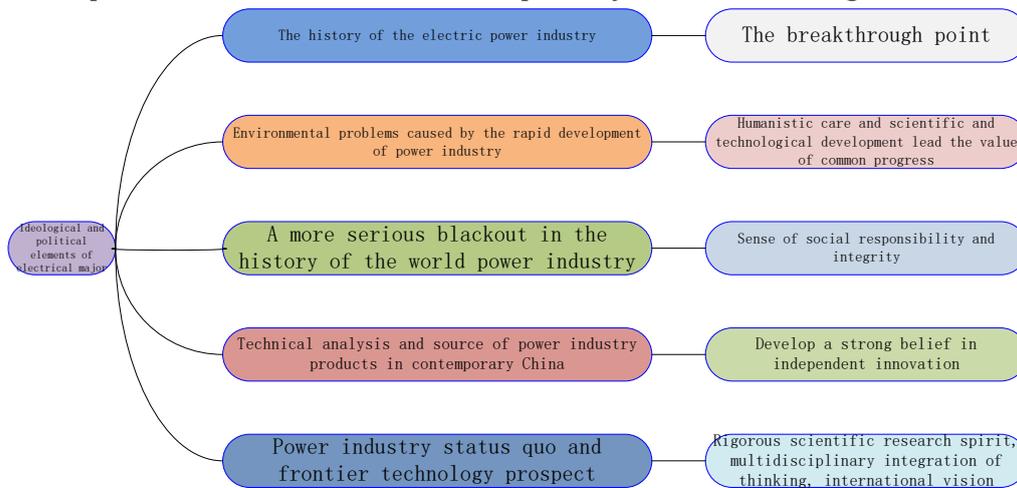


Fig. 2 Structure diagram of ideological and political elements of electrical specialty

Practice of philosophy is the core of "course ideological and political", moral cultivation is the root of "course ideological and political", and all staff education is the guarantee of "course ideological and political". It is very necessary to integrate the requirements of course ideological and political in engineering courses to realize both teaching and educating people.

In guiding students to firm ideals and beliefs. In the course design, we should combine "China policy" while making use of the characteristics of electrical courses. Through the comparison of the history, current situation and prospect of relevant technology development, the students are trained to grasp the opportunity of national development strategy, so that they can establish the common ideal and firm belief of realizing the great rejuvenation of the Chinese nation. Furthermore, students' confidence in the road, theory, system and culture of socialism with Chinese characteristics can be enhanced through the "Chinese standard" and "Chinese creation" of electric power technology.

We should work hard to guide students to cultivate patriotic feelings. Curriculum design, which is based on electrical engineering, compared with international advanced technology of transverse and longitudinal, seen from the comparison advantage, to find and clear direction, guides the student to use patriotism as unceasingly self's motivity of struggling or the man will be personal prospects associated with development of the motherland, to enhance students' political consciousness, overall situation consciousness, core and aligning with the purpose of. To guide students to strengthen moral cultivation efforts. Course project design, in the guarantee of enhancing students' professional skills and knowledge accomplishment at the same time, more to instill correct moral concept, help students set up the correct outlook on life, and through expert deeds and electrical direction in the field of electrical engineering introduction and analysis of current event hot spot, let the students deep understanding to the example of a teacher big big love feelings. Only with moral integrity and all-round development can we meet the requirements of the new era and shoulder the great responsibility of rejuvenating the Chinese nation When a person.



Fig. 3 Implementation diagram of ideological and political construction of electrical specialty To guide students to increase their knowledge. In the course teaching design, the core purpose should be to increase students' knowledge, stimulate students' thirst for professional knowledge and love for knowledge reasoning, and lay a good foundation for personal development. At the same time, in the Internet era of knowledge update so fast, we should train

students with the spirit of no time, help students optimize their knowledge system, expand their horizons, improve the pattern, and then enhance the "four consciousness" of students.

To guide the students to cultivate the spirit of struggle. In the course teaching design, fully excavate the national struggle spirit reflected in the electrical field, guide students to closely link their personal development with professional exploration and national rejuvenation, stimulate students' "Chinese dream", and cultivate students' national spirit of unremitting struggle for youth, dream and country.

To guide students to enhance comprehensive literacy efforts. The improvement of comprehensive quality not only affects the depth and breadth of personal development, but also concerns the long-term goal of all-round development. Therefore, in the course of teaching design, it is necessary to combine theory with practice, cultivate students' ability of comprehending and bringing forth the new, cultivate students' scientific research quality of human text and paying attention to ethics, and make students become all-round talents.

The above six ideological and political requirements point out the direction of ideological and political construction of professional courses. Through the integration of the above elements in the teaching process, the ideological and political education system of electrical professional courses is constructed to achieve the purpose of both teaching and educating people while transferring knowledge, cultivating ability and shaping spirit.

The ideological and political construction of electrical courses is mainly realized through the following aspects, as shown in Figure 3.

2. Integrate ideological and political education into professional course evaluation

From the past to have breakthrough skill points of knowledge, learning effect of students' overall evaluation system, the relevant course education and curriculum evaluation for fusion, make "course education" the overall location placed on student's own political ideological quality of the overall development, guide students to gradually form the correct values, outlook on life and world view. Develop healthier scientific beliefs and professional ethics as well as good behavior habits. In general, curriculum ideological and political education involves the evaluation of will, emotion, attitude and other aspects.

In the reform of main electrical courses, the concept of "curriculum ideological and political" will show the ability of rigorous innovation, teamwork and safe use of electricity in students' own assessment and evaluation. The main electrical courses, as a major part of the study of electrical students, are also the front for the implementation of ideological and political education. The combination of ideological and political education and main electrical course teaching can cultivate students' own good professional ethics, which is also an important factor that can affect the quality of talent training. The course "Principle of Automatic Control" makes use of its own teaching characteristics and teaching content, so teachers need to carry out assessment on students more actively. , for example, teachers can set aside homework in class, let the student to the study of automatic control in our country related data collection and sorting, and write a report on the related research status quo of automatic control in our country, as a course grade into the course examination results, through a process which can make students feel the development of technology in our country, At the same time, it also makes students realize the superiority of the socialist system.

3. Change the teaching concept of professional teachers

Han Yu, a great educator in ancient China, once put forward that teachers should carry out preaching, teaching and dispelling doubts. The "Tao" in this sentence mainly refers to human

principles, life attitude and moral concepts, which is the ideological and political education proposed by the society at the present stage. However, many colleges and universities have professional ideological and political teachers themselves, so many teachers of specialized courses naturally believe that the teaching content of specialized courses is more focused on professional knowledge in their actual teaching process, which is what Han Yu said. General Secretary Xi Jinping once proposed at the Conference on Ideological and Political Work in colleges and universities that ideological and political education should be carried out in classroom teaching, and the application of ideological and political courses and all kinds of courses should be in the same direction, so as to gradually form a synergistic effect. Therefore, ideological and political education should also be implemented in the main courses of students' major. As a teacher of specialized courses in school, it is not only the responsibility of ideological and political teachers, but also the responsibility of some specialized courses teachers, to have a profound understanding of ideological and political education in their own thoughts. In the process of professional teaching, if the current political content can be permeated from a professional perspective, it can not only liven up the classroom atmosphere, but also avoid the simple lecture mode in ideological and political class, so that students may be more interested in and easier to accept. In order to improve the ideological and political level of professional teachers, it is necessary to rely on excellent teachers. This major not only requires high academic level of professional course teachers, but also requires certain ideological and political education level and ability.

Therefore, in order to carry out curriculum ideology and politics better, teachers of relevant specialized courses should understand the theories of Socialism with Chinese characteristics, Marxism-Leninist theory and other works, master the overall development achievements of China, and carefully think about how to explain and what to explain. Usually, teachers can choose to start from three aspects: First, study the theory of Socialism with Chinese characteristics and Marxism-Leninist theory and other related works. Secondly, I choose to watch and study the national large-scale documentaries such as The Exploration of National Grand Projects, Stonemasons of Big Countries, And Heavy Instruments of Big Countries, and pay close attention to the relevant reports of CCTV 1 and 2, so as to further understand the new technologies and new developments owned by the country. Thirdly, to have a deep understanding of the enterprise and master the quality objectives of the students who need to be cultivated for the main courses of electrical specialty.

4. Integrate the content of "course ideology and politics" into professional course teaching materials

In the core electrical courses, there are many courses related to China's equipment manufacturing industry, NUMERICAL control system and artificial intelligence. For example, "electric transmission and control", "automatic control principle", "digital electronic technology", "SCM principle and interface technology" and other courses. The level of these technologies can reflect the country's own scientific and technological innovation ability. If teachers unconsciously worship foreign advanced technologies when introducing these technologies in the past teaching, students will easily form the idea and behavior that China's domestic technology is very backward. At present, our country has led the world in many aspects of technology. Therefore, in the process of introducing relevant professional technology, we should highlight the advanced technical conditions of our country.

In order to achieve the overall goal of ideological and political teaching, teachers need to write all relevant teaching methods and ideological and political content in detail in the teaching plan. For example, in the sensor and testing technology and single-chip microcomputer and interface technology "course teaching process, the images of objects, from network news and industry

related means such as video shows students, through the intuitive visual impact, the course content and the combination of science and technology and rejuvenating the country detailed description, enables the course education to gradually implement the way. Therefore, we need to collect a lot of information before class and find the implementation point of ideological and political education. Then all the contents will be written into the teaching plan, and finally presented in class. Through the teaching practice, students respond very well, the enthusiasm of students to learn has been fully mobilized, but also can participate in the teaching discussion more actively.

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