Exploration of "Electrical and Electronic Technology" Course-based Ideological and Political Education (IPE) Integration in Technical Colleges

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ABSTRACT

On the basis of combining the characteristics of "Electrical and Electronic Technology" course, this paper gives seven ideological and political connection points of the course, proposes to improve the ability of Integrated engineering teacher, dig into the core competencies in IPE deeply, and adopt diversified teaching ideas to improve students' understanding of the core competencies in IPE. It also gives the IPE method of Electrical and Electronic Technology, which integrates both online and offline, due to the problems of IPE ability of existing teachers in the course of "Electrical and Electronic Technology" in technical colleges, the depth of core competencies in IPE is not enough, and the way of integrating core competencies in IPE into professional courses is single.

1. Introduction

In 2020, the Chinese Ministry of Education promulgated the 'Standards for Ideological and Political Courses in Secondary Vocational Schools', which specify that core competencies in Ideological and Political Education(IPE) are one of the key capabilities in technical colleges[1]. It offers guidance for IPE in technical schools. The learning period in technical colleges is a crucial stage for the development of students in technical colleges. Compared with students in regular high schools, students in technical colleges may have accumulated less cultural knowledge, their learning motivation may not be so strong, and their learning skills and academic performance may also be relatively at a disadvantage. It is found that the integration of core competencies in IPE into professional courses can cultivate and shape students' ideas, personal accomplishment and values. "Electrical and Electronic Technology," as a course for the mechanical and electrical specialties in technical colleges[2], aims to cultivate students' professional skills in the field of electrical and electronic engineering, and enable them to apply these skills to solve practical electrical and electronic problems in production[3][4]. The course contains a large number of practical operation sessions, embodying a wealth of IPE resources. An increasing number of engineering integration teachers have recognized the necessity of implementing curriculum-based IPE, actively promoting the integration and implementation of

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curriculum-based IPE in electrical and electronic courses, and have achieved remarkable results, although research, exploration, and promotion by experts and scholars in recent years. However, there are still some problems, specifically manifested in the insufficient connection points of core competencies in IPE, and the single way of integrating core competencies in IPE into professional courses. However, there are still some problems, specifically manifested in the insufficient connection points for core competencies in IPE, and the single way of integrating core competencies in IPE into professional courses.

2. Difficulties in Integrating IPE into the 'Electrical and Electronic Technology' Course

2.1 Insufficient Connection Points for Core competencies in IPE

There are two insufficient in connection points for core competencies in IPE. On the one hand, some teachers overlook the self-excavation and development of core competencies in IPE in the curriculum. It is undeniable that some teachers may excessively rely on the IPE elements provided in the textbooks, or directly draw on existing resources from the internet. Furthermore, some teachers may only conduct superficial explorations into the core competencies in IPE of the course, and the resources they choose are mostly outdated, disconnected from the current latest knowledge system and contemporary context, although there is a continuous emergence of research on integrating IPE into the 'Electrical and Electronic Technology' course at present[5].On the other hand, the regional role of core competencies in IPE in the curriculum is often overlooked. Generally speaking, core competencies in IPE related to the city, region, or school where they are located are more likely to broaden students' horizons and are more easily recognized and understood by them. Taking Nantong as an example, this city, as the 'first modern city in China', is rich in core competencies in IPE. For instance, Nantong has 4 national patriotic education demonstration bases, 23 party history education bases, and has built the first normal school, the first museum, and many other 'firsts' in China. But these elements are rarely reflected in professional courses.

2.2 The method of integrating core competencies in IPE into professional courses is monotonous

Currently, in the teaching of the 'Electrical and Electronic Technology' course, the traditional teacher-centered teaching method is mostly adopted, which may involve excessive teacher explanations or unchanging video playback, etc. This educational model might restrict students' active exploration and creative thinking. Some teachers may not have adequately engaged in learning and reflecting on curriculum-based IPE, leading to their inability to organically integrate core competencies in IPE with professional knowledge. As a result, they can only mechanically 'stack' the two together. For instance, during the explanation of professional courses, only some knowledge points related to IPE are mentioned. As a result, it often fails to achieve deeper-level teaching objectives. This approach not only lacks the design of ideological and political teaching objectives but also does not reconstruct the methods for introducing core competencies in IPE and teaching strategies. Consequently, it often cannot achieve deeper-level teaching objectives.

3. The plan for integrating core competencies in IPE into the 'Electrical and Electronic Technology' course

3.1 Explore the connection points of core competencies in IPE according to the characteristics of the course

The research team has summarized six ideological and political connection points for the 'Electrical and Electronic Technology' course, as well as IPE content for these course connection points, based on the course content, combined with teaching practice, and referring to the research results of other scholars[6], as shown in Table 1.

3.2 Improving the IPE capability of professional course teachers

Teachers of electrical and electronic engineering integration can fully utilize various educational resources, such as national quality courses, online open courses, social practice bases, etc. At the same time, according to the course objectives, they can integrate the core competencies in IPE from educational resources into the teaching process, providing students with rich learning materials and improving the integration level of them. Besides, they should also combine the actual situation of the school and students, focus on the innovation of core competencies in IPE, and integrate the upper education resources and cases that are suitable for their major, making them more relevant to needs of the students. Meanwhile, professional course teachers and ideological and political courses teachers can establish together an IPE resource library that includes both general and specialized resources. As the education resources in the library are continuously updated, and the increase of various factors in favor of the integration of ideological and political in courses, the IPE capabilities of teachers will be improved also.

Table 1. Ideological and Political Connection Points and IPE Content in the 'Electrical and Electronic Technology' Course

Course connection points	IPE content
Emphasize scientific methods and a rigorous attitude in the process of learning electronic components, circuit analysis, and design.	Scientific spirit and innovative consciousness
The process of experimental operations and electronic fabrication will enable students to experience the journey from failure to success.	The spirit of hard work and craftsmanship
Team projects and collaborative problem-solving are important components of learning electronic technology.	Teamwork and social responsibility
Introduce achievements and development process of China in the field of electrical engineering and electronics.	Patriotism
emphasize the importance of professional ethics in the process of learning the standards and specifications of electrical and electronic technology	Professional ethics and laws and regulations
environmental protection design and energy-saving technologies in electronic technology	Environmental protection and sustainable development
The latest developments and trends in electrical and electronic technology	International perspective and exchange cooperation

3.3 Blended teaching enhances the connection between IPE and the course of Electrical and Electronic Technology

The 'online + offline' blended teaching model is favored by teachers, as it can give students more time for reflection and interaction, which helps to improve their learning of both professional knowledge and core competencies in IPE simultaneously. So, our research group has integrated core competencies in IPE into three stages: before class, during class, and after class. Before class, teachers integrate teaching materials, select materials, explore core competencies in IPE, and send them to students online; during class, teachers encourage students thinking independently and convey the well-designed teaching segments to students; after class, teachers also need to design online survey questionnaires and offline assignments to understand the learning situation of students' professional course knowledge and ideological and political knowledge, and to reflect on their teaching.

4. Conclusion

Addressing the insufficient connection points between core competencies in IPE and the 'Electrical and Electronic Technology' course in technical colleges, this article proposes six connection points for the 'Electrical and Electronic Technology' course, as well as the corresponding IPE content for these contact points. It also suggests methods to improve the capabilities of integrated engineering teachers and presents a dual-directional integration method for education throughout the 'Electrical and Electronic Technology' course, both online and offline.

Fund Project

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