Design and Implementation of Curriculum Politics in Electrical and Electronic Technology Course Based on Digital Empowerment

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Abstract. Utilizing digital technology to integrate technology and education to improve the quality and efficiency of the construction of Curriculum politics is a new trend in the development of current college curriculums. Taking the electrical and electronic technology course as an example, the paper discusses the curriculum politics design and implementation based on digital empowerment, including the design integration ideas and methods, the implementation methods, and the effects. The practice has proved that this method realizes the seamless integration of curriculum and ideology, achieves the goal of nurturing, improves students' satisfaction with the curriculum, and enhances teachers' digital literacy and teaching level.

Keywords: Digital Empowerment, Curriculum politics, Electrical and Electronic Technology

1 Introduction

Higher education institutions bear the important mission of cultivating talents for the development of society, and the so-called talents should not only have excellent professional knowledge but also have high moral quality. Therefore, the result of moral education is the basic standard to test the effectiveness of all the work of higher education institutions, and universities and colleges hould take the goal of moral education as the core to realize its educational value[1]. Curriculum politics is mainly to integrate the elements of ideological and political into various courses of professional courses, to achieve education goal in the whole process, all staff, and all-round way. which is a means of realizing the fundamental task of establishing morality and educating people by integrating ideological and political education into the teaching of the curriculum in colleges and universities [2]. In 2014, curriculum politics was first proposed and practiced by the Shanghai Municipal Education Commission of China. In 2016, it was officially included in the documents of the Ministry of Education of China. In 2018, the Ministry of Education of China deployed and promoted curriculum politics in colleges across the country [3,4], In June 2020, the Ministry of Education of China promulgated the "Guidelines for the Ideological and Political Education Construction of the Curriculum in Colleges and Universities" which has since set off a rapid wave of construction of curriculum politics in various colleges. After years of construction in Chinese universities, effective results have been

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achieved in educational concepts, institutional safeguards, curriculum construction, and evaluation mechanisms, forming an all-round and three-dimensional curriculum politics patterns [5].

Digital transformation of global higher education is undergoing with the rise of digital technologies like Big Data, Artificial Intelligent, Blockchain, and 5G [6,7]. Digital technology makes it easier for students to obtain resources and knowledge [8], more convenient for students to communicate with each other, more convenient for teachers to contact students, and more accurate for education management and evaluation. The innovation of digital technology promotes the innovation of education methods, which provides an important strategic opportunity for the teaching reform of using technology to empower curriculum politics. Colleges should integrate technology and education two-way empowerment thinking and intelligent technology to deepen the reform of curriculum politics reform and improve the quality and efficiency of curriculum politicas construction [5].

The electrical and electronic technology course is a professional basic course for non-electrical major students in higher engineering colleges. It is also the first electrical course for students to study at the university. In addition to allowing students to learn the basic knowledge and theeories ralated to electrical and electronic technology, the course also requires the cultivation of students' engineering awareness, digital thinking, and craftsmanship. The curriculum politics design and implementation of the course using digital technology can cultivate students' information literacy and technological ethics awareness, thereby laying a solid foundation for students to study subsequent courses and engage in related engineering and technical work.

2 Curriculum Politics Design and implementation methods of electrical and electronic technology course based on digital empowerment

2.1 The overall design idea of curriculum politics

When designing curriculum politics of electrical and electronic technology, it fully considers the rapid growth and update of knowledge driven by technologies such as big data and the Internet. The course content pays more attention to the use of dynamic digital open teaching resources. The teaching process makes full use of intelligent technology to accurately grasp the individual needs of students in the implementation of curriculum politics, and comprehensively and systematically promote the implementation of curriculum politics. Shown in Fig. 1.

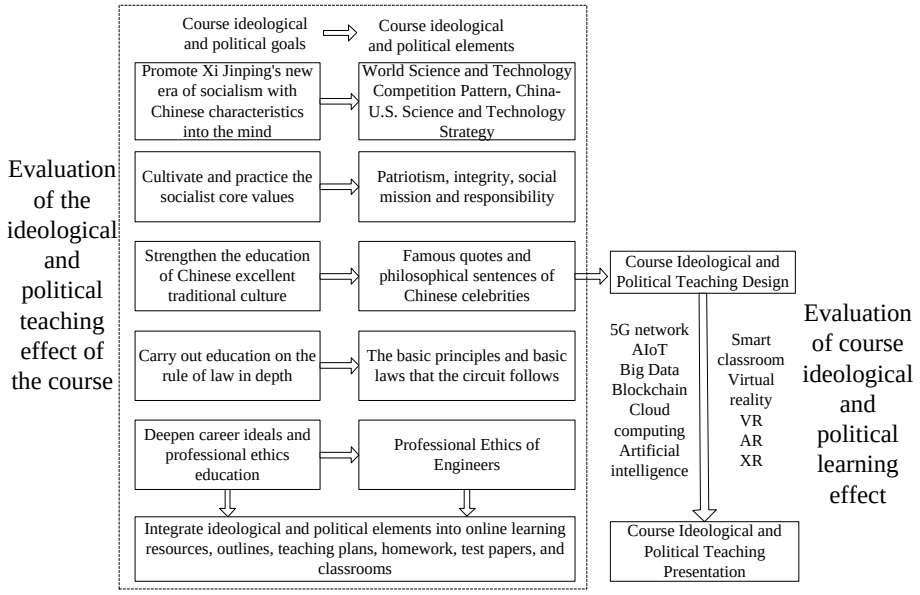

Fig. 1. The overall design thinking of ideological and political education in the electrical and electronic technology course

2.2 Ways to Integrate curriculum politics with professionalism

(1) Identify the positioning of ideological politic elements, explore the key points of ideological politic elements and integrate them into professional knowledge

In the design of the electrical and electronic technology course politics, the stories of celebrities such as Kirchhoff, Faraday, and Ampere are used as case materials to guide students to strive for success, establish lofty ideals since childhood, have the spirit of bravely climbing the peak of science, and "family and country feelings" to study hard for the strength of the country. Using the deeds of the pioneer and important founder of China's electrical industry as case materials, it promotes the family and country feelings of sincerity and lifelong dedication. Taking the history of the development of China's power grid and the establishment of Chinese space photovoltaic power station as examples, let students have a sense of national pride, cultivate students sense of social responsibility, self-confidence, and the spirit of working hard for the country's scientific and technological cause. Guided by the job requirements of mechanical engineers, help students establish clear career goals and cultivate their quality of conscientiousness and meticulousness.

(2) Starting from the top-level design of the course, form a complete course resource library that integrates ideological and political information into all teaching materials

The syllabus clarifies the educational goals and methods of each chapter. The teaching plan designs both inside and outside class activities related to curriculum politics, and makes a good plan for the implementation of curriculum politics. The lesson plan writes in detail the knowledge points and methods of curriculum politics integration in this class, to promote the practical implementation of curriculum politics. When making courseware, teachers carefully

select pictures, animations, videos, and other materials related to the curriculum politics that can resonate with students, and enhance students' understanding and resonance of curriculum politics content like dissolving salt in water. When students do experiments, teachers emphasize ethics, a sense of responsibility, innovative thinking, and problem-solving abilities, so that curriculum politics can be implemented in the course and reflected in actions.

(3) Constructing online learning resources and giving full play to the leading role of ideological and political education

In the digital age, students' learning behaviors, habits and channels are more dependent on network and electronic resources [9]. The electrical and electronic technology course builds an offline core teaching and online auxiliary teaching mode, making online teaching a second classroom teaching system. A wealth of teaching materials has been established on the Panya e-learning platform, not only sharing the teaching resources like teaching plans and courseware integrated into curriculum politics with students but also setting up a special curriculum politics in the guidance part of each chapter and section, which pushes the curriculum politics information for students to read according to the course content. In addition, teachers will also use the method of pushing curriculum politics resources in WeChat class groups to let ideological and political education enter people's minds and hearts.

(4) Innovative curriculum estimate System

The estimate system of electrical and electronic technology courses makes full use of the combination of machine big data analysis and manual evaluation for process evaluation. The evaluation system pays attention to students' daily performance, takes attendance, homework norms, homework attitudes, experimental operation norms, and experimental behavior norms as course ideological and political evaluation items, and implements incremental evaluation to compare the monthly course ideological and political evaluation content of students. Those who meet the progress standard will be awarded points. Teachers monitor the evaluation data in real time, diagnose abnormal data, and take effective measures to avoid the continuous deterioration of student misbehavior.

2.3 The implementation of curriculum politics

This course adopts the "one center, three stages" whole-process chain curriculum politics education model. "One center" refers to student development as the center, and "three stages" refers to the three time periods before, during and after class. Before class, use the curriculum politics units on the Panya e-learning platform and WeChat class groups to share the points of curriculum politics to chapter knowledge, as well as celebrity stories, famous quotes, cutting-edge science, and technology, etc. for teachers and students to expand knowledge and realize value guidance. In class, teachers use case analysis, student discussion, and other methods to dig out ideological politic elements from the teaching content, and through teachers' precepts and deeds, and students' mutual influence, students can improve their professional quality and realize value shaping at the same time. The practical courses make full use of the guidance of "The National Undergraduate Electronic Design Competition", "The National Applied Talents Comprehensive Skills Competition", "The National Youth Science Popularization Innovation Experiment and Work Competition", "The Challenge Cup" and other discipline competitions to help students establish fair competition, teamwork awareness, and stimulate students' innovation passion. After class, by guiding students to carry out social research activities related

to electrical and electronic technology courses and understand the development status and needs of the industry, so that students can deeply understand the contribution and impact of the electrical and electronic technology industry to society. Teachers encourage students to participate in the popularization of electrical and electronic technology knowledge, provide scientific and technological consultation and assistance to community residents, and cultivate social responsibility and helpful qualities of students. Teachers organize students to participate in academic lectures, exhibitions, or seminars in the field of electrical and electronic technology, allowing students to broaden their horizons, understand the latest technological trends and cutting-edge technologies, and stimulate their interest in academic research and independent innovation.The whole-process chain education mode refers to the implementation mode of curriculum politics consisting of "teachers themselves leading education, teaching content permeating education, teaching methods promoting education, and assessment and evaluation strengthening education".

3 The effect of the implementation of curriculum politics in electrical and electronic technology courses on account of digital empowerment

The digitally empowered curriculum politics realizes the natural integration of "ideology and politics" and "curriculum", and realizes that ideology and politics are silent and enter the mind and heart in the process of achieving the curriculum training goals. Both students and teachers have benefited a lot.

(1) The implementation effect of curriculum politics has been recognized by the students

A questionnaire survey on satisfaction of curriculum politics was conducted among 135 students in the latest semester, and 115 valid questionnaires were received. Table 1 is the survey results.

From the survey results, it can be seen that more than 90% of the students believe that curriculum politics have a greater impact on themselves, which proves that the curriculum politics has played the role of educating people.

(2) The digital literacy and teaching level of teachers have been improved

The ability of teaching team members to use digital equipment and software platforms to teach and use digital evaluation tools to analyze and evaluate students' learning conditions has been improved, and the teaching level has gradually improved. In the past two years, the student evaluation scores of teaching team members have been ranked in the top 20% of the department (about 150 people). Members of the course teaching team have repeatedly won excellent results in various competitions such as excellent ideological and political cases in course, microclass competitions, and excellent teaching cases.

4 Conclusions

This paper takes the curriculum politics design and implementation of electrical and electronic technology course as the theme, makes full use of digital technology to empower and optimize the teaching mode. By designing online and offline three-dimensional mixed teaching mode,

accurately positioning ideological and political elements, creating network resources and innovating evaluation system, the organic integration of ideological and political education and professional courses is realized. Through the implementation of " one center, three stages, whole process chain type " curriculum politics education, the ideological and political elements are naturally integrated into the curriculum, the goal of educating people is realized, and the digital literacy of teachers is improved. This exploration and practice provides comprehensive support for students ' growth and development, and has positive significance for promoting the curriculum politics of professional courses.

Table 1. Survey results of satisfaction of electrical and electronic technology courses

Questionnaire	Influence/%				
	Larger	Large	Average	Small	Smaller
How much do you think the teacher's ideals, beliefs, moral sentiments, solid knowledge, benevolence, etc. have on your moral character:	51.30	37.39	8.70	0	2.61
What do you think is the degree to which the stories, rules, and spirits behind the course content excavated by the teacher have an impact on your moral character:	48.70	48.70	2.61	0	0
What do you think is the degree influence of the course teaching of teacher on you in loving the country, loving the party, loving socialism, and caring about national development and national rejuvenation:	51.30	39.13	9.57	0	0
How much do you think the teacher's course teaching has helped you in strict self-discipline and lifelong learning:	51.30	47.83	0	0	0.87
What do you think of the performance of the teachers in terms of ideals and beliefs, moral sentiments, solid knowledge, and benevolence:	60.87	38.26	0	0	0.87
Generally speaking, teachers often combine the teaching content to deeply explore the value of ideological education contained in it:	58.26	39.13	2.61	0	0
How helpful this course is for me to establish a correct outlook on education, teaching, and students:	54.78	41.74	2.61	0	0.87

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