

Construction and Practice of Civics in the Course "Structure and Principles of New Energy Vehicles"

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Abstract: The construction of course ideology and politics is the key to the implementation of the fundamental task of cultivating people with moral integrity. In the process of cultivating students in colleges and universities, teachers need to fully explore the ideological and political elements of each course, and flexibly design teaching activities, so as to organically combine ideological and political education with professional education, and to realize all-round cultivation of human beings. The course "Structure and Principles of New Energy Vehicles" aims to integrate knowledge transmission with value guidance. Through modular teaching, it explores ideological and political elements, implementing a holistic educational approach encompassing pre-class, in-class, and post-class activities. Additionally, the course is co-developed through university-industry collaboration, optimizing teaching content, innovating teaching methods and assessment approaches. By deeply integrating real-world corporate cases with ideological and political elements, it helps students establish sound values and grow into idealistic, responsible professionals in the new energy vehicle sector.

Keywords: Civic Politics; All-Round; New Energy; School and Enterprise

1. Introduction

1.1 Course Knowledge and Ability Objectives

Through the study of the course "New Energy Vehicle Structure and Principles", students can systematically understand the new energy and new power technology of automobiles, the key technologies of new energy vehicle energy source, motor drive system, power transmission system and electrification auxiliary system, and the basic structural composition, operation principles and key technologies of the

application of pure electric vehicles, hybrid electric vehicles and fuel cell vehicles. To be able to effectively evaluate the performance of new energy vehicles by focusing on the working principles and usage conditions of different systems of new energy vehicles, and to analyze the structure, characteristics, working principles and considerations in the design of major components related to the power system of new energy vehicles. At the same time, through the study of automobile frontier knowledge field, cultivate students to face the unknown institutions and automobile frontier information learning and analysis ability.

1.2 Course Civics and Nurturing Objectives

This course is a professional compulsory course, the course is carried out in the process of China's domestic brands of new energy vehicle research and development status, technological breakthroughs and achievements as an entry point, the production and sales of new energy vehicles has always been in the world's leading level as the main line, with the "new energy automobile industry planning (2021-2035)" document as a criterion, introducing China's new energy vehicle Strategy, technology research layout, demonstration and industrialization, so as to analyze and explain the scientific research advantages of the modernized country with Chinese characteristics, stimulate students' patriotic feelings, guide students to firmly believe, set up lofty aspirations, establish a correct worldview, outlook on life and values, the courage to pick up the beam of the times, show the responsibility of the youth of the new era, and set up a new era of youth to achieve China's "two hundred years of struggle" and build a strong nation. To realize China's "two hundred years of struggle, building a strong country" lofty [1].

2 Discussion on the Implementation of the Curriculum of Political Thinking

2.1 Establish a Correct View of Teachers, and be a Role Model for Others

Teaching and educating people is the vocation of teachers, teaching is the means, educating people is the goal. Mr. Ye Shengtao, a famous educationist, once said, "The whole work of an educator is to be a role model for others". Teachers' speech and demeanor have a subtle influence on students, therefore, in the process of education and teaching, we should regulate our own behavior, pay attention to teach by example, and do a good job of shaping the students' hearts and minds [2]. Society says that the teaching profession is the most glorious cause under the sun, and even compare teachers to the engineer of the human soul, which is the expectation of society for teachers, but also the sacred mission of teachers [3]. Teachers should bear in mind the trust, take the prosperity and strength of the country and the progress of human civilization as their own responsibility, hard work, selfless dedication, teaching and educating people, with excellent results to hand in a satisfactory answer sheet.

2.2 Realize the Whole Process of Educating People, All-Round Educating People

Teaching and educating people should be carried out throughout the entire teaching process, not just limited to the classroom teaching process. The classroom teaching is often out of line with life, and it is difficult to balance teaching and educating people. It is difficult to combine teaching and educating. The combination of course ideology and real life can achieve the effect of educating people, so the implementation of course ideology should be carried out throughout the course, realizing the whole process and all-round educating people [4]. For example, the arrangement of underclass activities, online and offline mixed teaching, if necessary, the teacher is involved in the life of the students, standing beside the students, to guide, to understand, to appreciate them. The all-round and whole-process teaching design of the new energy vehicle structure and principles course is carried out before, during and after class.

Pre-course tasks: Post online learning videos through Learning Channel, for example, watch videos such as Meet the Greats (Li Bin) to learn

the entrepreneurial spirit of entrepreneurs and hard work style, and at the same time, learn about the history of domestic new energy electric vehicles. Post the learning experience in the discussion forum, or focus on the discussion time in the classroom.

Classroom teaching: Module subdivision of teaching content, mining the elements of Civics and Politics, the details of which are described in subsection 2.3. At the same time, combined with the course experiments on new energy vehicles, such as batteries and motors and other system assemblies are disassembled and assembled to exercise their power ability and independent thinking and problem solving ability.

Post-course tracking: Teachers integrate into students' lives, discuss the situation of China's new energy vehicles with their classmates, exchange advanced stories of new energy vehicle engineers, learn to understand China's new energy vehicle industry planning and the results that have been achieved, and stimulate students' patriotic passion and ideological aspirations.

2.3 Teaching in Modules, Incorporating Concrete Elements of Ideology and Politics

The reference textbook selected for this course is Principles and Structure of Electric Vehicles, 3rd edition, edited by He Hongwen and published by Mechanical Industry Press in 2023. According to the content of the textbook, the core knowledge points of new energy vehicles are sorted out and analyzed, and the Civic-Political elements of the different knowledge modules are excavated in-depth and integrated into the classroom teaching in a silent way, and the teaching modules and Civic-Political integration points are shown in Table 1.

With the rapid new energy vehicle industry, automobile related professional courses are more and more involved in new energy vehicles, electric vehicles and so on. As a specialized course for automobile majors, "Structure and Principles of New Energy Vehicles" has a wide range of ideological and political elements, including craftsmanship, scientific research, energy saving and protection, patriotism and national self-confidence, etc. Each knowledge module covers a number of ideological and political points, and if the teacher is able to design and apply them flexibly, the ideological

and political elements can be applied to the classroom in a quiet and gentle way. If teachers can flexibly design and apply, many elements of Civics and Politics can be carried out in the classroom teaching in a silent way, then it is a kind of washing of the mind and enhancement of thoughts for students [5]. It is conducive to students' firm beliefs, setting up ambitious

aspirations, and establishing a correct worldview, outlook on life and values. In the actual teaching process, teachers can cite cases to integrate the Civic and Political points into actual cases, which is convenient for students to learn and understand, and at the same time can students' interest in learning and mobilize classroom enthusiasm [6].

Table 1. Integration of Course Content and Civic-Political Elements

Module	Main content	Civic and political elements	Civic and political integration content
I	Introduction (background and current situation of new energy vehicles, etc.)	Cultivate students' patriotism and build up national self-confidence and pride.	To study China's new energy automobile industry plan and understand China's strategic goal of transforming from a large automobile country to a strong automobile country.
II	Pure Electric Vehicle	Lead students to pay attention to the rise of domestic new energy automobile brands and enhance national self-confidence.	Utilize multimedia to play Lantu automobile propaganda video to show the advanced technology of Lantu.
III	Hybrid Electric Vehicles	To establish the awareness of energy security and a certain sense of social responsibility.	Learn the energy-saving features of hybrid electric vehicles and understand the current situation of China's oil resource crisis.
IV	Fuel Cell Electric Vehicles	Closely integrate knowledge learning with the national "dual-carbon" strategy to strengthen students' sense of social responsibility.	Hydrogen energy is regarded as the "ultimate energy" of the future. Fuel cell vehicles are the long-term layout of China's energy security and "dual-carbon" strategy.
V	Motor Drive System	Drawing on the spirit of independent innovation and pioneering, we will integrate the individual into the strategic needs of the country's scientific and technological self-reliance and self-improvement.	Introducing the case of the advanced technology of 8-layer flat wire winding for Lantu motor, which breaks the monopoly of foreign technology and pushes China's electric drive system for new energy vehicles from "following" to "leading".
VI	In-vehicle Energy Source System	Technological innovation must adhere to the ethical bottom line and be responsible.	Through the introduction of Arcto Amber Battery's extreme pursuit of safety in technology, it highlights Arcto Automobile's responsibility for the safety of users' lives.
VII	Charging Infrastructure	The concept of green environmental protection should be established, combining personal growth with the construction of the national ecological civilization, adhering to green travel and contributing to environmental protection.	The popularization of charging infrastructure is the key to promoting the popularity of new energy vehicles, which helps exhaust emissions from fuel vehicles and improves the air.

2.4 School-Enterprise Cooperation, Co-Construction of Courses

Through the cooperation with new energy vehicle enterprises to build courses, we analyze the role position and advantageous resources of

schools and enterprises in the education of ideology and politics, deeply excavate the culture and spirit of new energy vehicle enterprises, occupational norms, craftsmanship and social responsibility and other ideological and political elements, and look for the

ideological and political points that match with the knowledge points of the course of "structure and principles of new energy vehicles", and work together to build the ideological and political case library. To build a case base of Civics and Politics, and to explore effective ways to integrate Civics and Politics elements into classroom teaching and laboratory teaching naturally, and to lead students' values while imparting knowledge [7]. Specifically include the following aspects.

(1) Optimize teaching content Optimize the course content in a timely manner according to the current situation and employment needs of enterprises.

Through the research to understand the current situation of new energy automobile enterprises, enterprise technology needs and job requirements, etc., the course content of "new energy vehicle structure and principle" is sorted out and optimized. For example, the content of cutting-edge technology of new energy automobile, industry norms and standards, etc., and delete the outdated knowledge points in time to ensure the effective docking of teaching content with the needs of enterprises. Invite enterprise experts and college teachers to carry out teaching activities together, and participate in the construction of the curriculum and the in-depth excavation of the elements of ideology and politics. College teachers can play their personal advantages in teaching work to explore teaching suitable for students, and enterprise experts provide the latest information on the new energy automobile industry and practical cases applied to teaching, so that the teaching content is more targeted and practical [8]. According to the optimized teaching content, teaching resources such as teaching courseware, lesson plans and handouts are jointly supported by the teaching team formed by the university and enterprises. At the same time, through the questionnaire research to collect students' satisfaction with the teaching of school-enterprise cooperation courses under the perspective of ideology and politics, according to the feedback results, further optimize the teaching content and means. (2) Innovative teaching methods

Through the teaching seminars between the university and enterprises, we explore the application of diversified teaching methods such as case teaching, project-based teaching, group discussion, flipped classroom and online

learning in the course. As well as how to choose the teaching methods according to different teaching objectives and contents in order to improve students' interest and learning initiative [9]. Explore how to combine information technology teaching means (such as online learning) with teaching means to provide a more intuitive and vivid, convenient learning experience to improve teaching efficiency and.

(3) Optimize course assessment

Optimize the course assessment to make it more in line with the requirements of the assessment objectives of the course Civics, at the same time, the assessment content should be closely linked to the actual needs of enterprises and enterprise standards, etc., so as to effectively enhance the students' Civics literacy and professional skills. Teachers strengthen their understanding of course Civics and industry standards by participating in training, extracurricular learning and other activities in order to improve their assessment ability [10]. Evaluation includes statistical evaluation of online course background data, offline classroom performance, classroom discussion, completion of group tasks, homework, challenge tasks, and final assessment.

3. Conclusion

The thesis discusses the implementation method of the Civics of the course "New Energy Vehicle Structure and Principles", and the teachers lead by example, set a good example, establish moral values, and serve as a practical example for the students. At the same time, the co-construction of the course in cooperation with enterprises facilitates the introduction of actual cases of enterprises into classroom teaching, using cases as the carrier of the elements of civic politics, realizing the in-depth fusion of professional knowledge transmission and civic education, and enhancing the practical ability and value identity of students. In the process of course implementation, through the layout of pre-course tasks (including the civic and political elements), the integration of classroom civic and political elements and post-course tracking and teaching, it achieves the purpose of civic and political education, and lays a certain ideological foundation for the cultivation of patriotic young people with, aspirations, ambitions, and national self-confidence.

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