

# *The Exploration and Practice of the Integration of Ideology and Politics into the Teaching of Automobile Theory*

Li Feng\*, Jianmei Wang, Yuan Li

*School of Intelligent Manufacturing, Wuhan Hua Xia University of Technology, Wuhan, China*

*\*Corresponding author*

**Keywords:** Automobile Theory, Course Ideology and Politics, Online + Offline, Teaching Design

**Abstract:** Integrate ideological and political education into the teaching of professional courses, comprehensively promote the ideological and political construction of courses, and improve the quality of talent training. The course content of automobile theory is divided into several knowledge points, and the ideological and political education elements of some knowledge points are deeply excavated and integrated into the actual teaching process in the form of cases. Through students' multi-dimensional learning of "Online + Offline", the integration of ideological and political elements into automobile theory teaching not only enhances students' professional quality, but also improves students' learning interest. By skillfully integrating ideological and political elements into the professional education of students, it not only shapes the value of students, but also enhances the ideological awareness of students. At the same time, it achieves the goal of educating people in the whole process.

## 1. Introduction

In the process of traditional university education, when students of engineering college study the ideological and political courses in junior grades, they generally feel boring, difficult to understand and to absorb, which makes it difficult to achieve the teaching objectives of the ideological and political courses. In order to let the moral education elements of ideological and political courses into the heart and ears, college teachers should fully explore the moral education elements of each course while carrying out professional education. Teachers should pay attention to strengthening students' engineering ethics education, cultivate students' great country craftsman spirit of striving for excellence, and stimulate students' feelings and mission of serving the country with science and technology <sup>[1]</sup>. Nowadays, when most engineering majors carry out curriculum ideological and political reform, they usually lack of understanding of curriculum ideological and political reform; the excavation of moral education elements is not deep-going; Deliberately imposing ideological and political elements; ideological and political cases have changed all the time. In view of the current curriculum ideological and political education in professional education, the professional teachers' self-cultivation is not professional, the moral education elements are not appropriate, and the real

whole process education is not realized. This study takes the course ideological and political reform of the core course "automobile theory" of the vehicle engineering major of a university as an example, and carries out the comprehensive reform of the course ideological and political from the aspects of teachers' self-improvement, the mining of the course ideological and political elements, and the integration of the ideological and political elements into the classroom teaching [2]. After the reform, students can not only master professional theoretical knowledge, but also shape their values.

## 2. Enhance Teachers' Consciousness and Ability of Ideological and Political Construction in Curriculum

The key factor for the ideological and political construction of the curriculum to achieve substantial results lies in the active participation of the front-line professional teachers. To begin with, professional teachers should fully study the documents related to the ideological and political construction of the curriculum, and understand the background, current situation and implementation plan of the ideological and political construction of the curriculum. Secondly, professional teachers should establish ideological and political construction consciousness in the curriculum, and actively integrate ideological and political elements into the curriculum. Then, professional teachers should systematically sort out the chapter knowledge points of professional courses, select appropriate ideological and political elements, and creatively design the teaching plan. Finally, teachers should pay more attention to current affairs and politics, collect professional ideological and political elements in time, think about how to skillfully integrate the knowledge points of the professional courses into the ideological and political elements in time, and update the ideological and political elements in the professional teaching process [3-5].

## 3. Improve the Innovative Design Ability of Ideological and Political Education Elements

### 3.1 Case Design of Strengthening Ideological and Political Education Elements

Table 1: Case design of ideological and political education elements

Chapter	Knowledge points	Elements of ideological and political education	Case
Topic 1: Introduction	The Development of the textbook of Automobile Theory in China	President of the people's Republic of China thought on Socialism with Chinese Characteristics for a New Era.	President of the people's Republic of China inspect the important spirit of FAW's speech
Topic 2: Fuel economy of vehicles	Research on electric vehicles	Core socialist values	New energy vehicles on the road to carbon neutrality
Topic 3: Braking performance of vehicles	Automobile anti-lock braking system	Excellent traditional Chinese culture education	Haste makes waste
Topic 4: Handling stability of vehicles	Electronic control system to improve vehicle handling stability	Legal education	Automobile modification laws and regulations
Topic 5: Smoothness of vehicles	The body's response to vibration	Professional ethics education	How to become a qualified car designer

According to the teaching characteristics of the professional course of "automobile theory" and the teaching contents of the main use performance, professional teachers comprehensively coordinate the progressive relationship of various chapters and knowledge points, and select some knowledge points to integrate the ideological and political elements of "China Red". Through the ideological and political education of professional courses, the "dream of becoming a powerful country in automobile" of China's automobile industry is effectively conveyed, so as to enhance students' self-confidence in national brands and enhance their sense of national mission. The case design of ideological and political elements of each knowledge point is shown in Table 1. The specific design process is as follows.

(1) Topic 1: Introduction. When teaching the development history of the course and teaching materials of automobile theory, it is compared with the development history of the courses of automobile dynamics and automatic vehicle engineering in the United States, Europe, Japan and other countries. It is concluded that the Chinese version of the course and teaching materials of automobile theory has been gradually developed with reference to foreign courses and teaching materials. It guides the students to actively participate in the development of China's automobile industry and enrich the professional teaching materials with the scientific and technological achievements of independent innovation.

(2) Topic 2: Fuel economy of vehicles. When we are teaching the current research on electric vehicles, the international consensus on the transformation and upgrading of the development of the automobile industry and the development of new energy vehicles is drawn from the background, significance and technical status of the development of electric vehicles. The energy revolution is an important way to achieve "carbon peaking and carbon neutralization". New energy vehicles must follow a diversified, low-carbon and clean development path, and be integrated into the "four academicians talk about the road of new energy vehicles to carbon neutralization", which guide students to save energy and reduce emissions, travel low-carbon, and actively participate in the development of new energy vehicles.

(3) Topic 3: Braking performance of vehicles. When we are teaching the anti-lock braking system of the automobile, the model, principle and design idea of the ABS system are introduced. During the braking of the ABS system, the slip rate of the wheel is kept at 15 ~ 20% through continuous braking. The braking process uses the peak braking force coefficient to brake with the maximum braking strength, so as to avoid the dangerous working condition of losing the steering ability or tail flicking due to the wheel locking. Then it leads to the conclusion that in order to stop the car as soon as possible, the wheels are in a hurry to lock and brake. Don't mistakenly think that the braking effect is the high when the wheels are locked and dragged. We can integrate the idea of "more speed, less speed", guide the students not to do things too quickly, and stress scientific methods and reasonable design to achieve the expected goals.

(4) Topic 4: Handling stability of vehicles. When teaching the electronic control system for improving the handling and stability of automobiles, we can start from the development history and design principle of the electronic control system for handling and stability. Some automobile sports enthusiasts in real life illegally modified the handling and stability system of automobiles in order to pursue the special experience in the driving process. Then teachers can introduce the relevant knowledge of the laws and regulations of automobile modification, guide the students to abide by the requirements of the laws and regulations of automobile modification, do not violate the law and discipline, and be a good citizen who observes the law and discipline.

(5) Topic 5: Smoothness of vehicles. When teaching the human body's response to vibration, we can start from the harm caused by the vibration of the automobile. Then teachers can point out that the suspension system and seat system of the automobile should be designed scientifically in strict accordance with the national standards, and it is not allowed to cut corners on work and materials,

omit testing links, and design unqualified automobile parts and components to endanger the safety of passengers. Finally, we can introduce the professional ethics of automobile designers and guide students to pay attention to engineering ethics and abide by professional ethics in combination with "how to become a qualified automobile designer".

### **3.2 Enhance Effect Evaluation and Continuous Improvement**

In order to make the ideological and political elements of the course better integrated into the teaching process of "Automobile Theory", we should timely understand the teaching effect after teaching innovation, we should grasp the teaching effect after the course reform. We can comprehensively evaluate the teaching effect through students' classroom feedback, questionnaires, test exercises, assessment results and other aspects. We should constantly improve and update the ideological and political education elements of the curriculum, constantly adjust the reform methods, use the teaching methods that advance with the times, constantly enhance the good teaching effect, and further achieve the overall teaching objectives of the curriculum [6-8].

### **4. Implementation Process of Classroom Teaching**

In the actual teaching process, the designed ideological and political education elements are reasonably integrated into the automobile theory class. Before class, teachers carefully designed a teaching plan incorporating ideological and political elements, collected and summarized materials, made the PowerPoint of courseware, recorded teaching videos, uploaded online teaching platform, and let students learn independently in advance. In the class, when the content of ideological and political elements is taught offline, the teachers actively guide and create a good atmosphere of ideological and political education through classroom interaction, discussion and communication, so as to truly let the ideological and political education elements enter the hearts of students. After class, through the online platform, some knowledge points rich in relevant ideological, political and moral education elements are pushed to expand the content, and the consolidation of ideological and political elements is continuously strengthened in the links of auxiliary test exercises and questionnaire feedback. Let the ideological and political education elements through the whole process of "online + offline" education, to achieve the purpose of ideological and political education in the whole process of professional courses [9,10].

### **5. Conclusion**

According to the characteristics of the professional course of automobile theory, the ideological and political elements of the course are integrated through the whole process of "Online + Offline". In the actual teaching process, some knowledge points are selected and skillfully integrated into the ideological and political education. Students can not only fully understand professional courses, but also happily absorb professional knowledge and ideological and political elements. Based on the practice of this course, the following conclusions are drawn.

1). Professional teachers should deeply understand the objectives of curriculum ideological and political construction, constantly enhance the awareness and ability of curriculum ideological and political construction, and actively promote curriculum ideological and political education to take root.

2). Professional teachers should deeply excavate the ideological and political elements that are suitable for the teaching of automobile theory. Through repeated refining, continuous reform, continuous summary and continuous updating of the ideological and political elements of the course, good classroom teaching results have been achieved.

3). In the classroom teaching, a good atmosphere of ideological and political education was actively created. Through the interactive discussion and communication between teachers and students, the ideological and political elements of the case design were gradually and effectively transmitted, which not only cultivated the patriotic feelings of students, but also conveyed the great values of China's "dream of becoming a powerful automobile country".

## Acknowledgements

This work was supported by: 1. University-level Teaching Quality and Teaching Reform Project of Wuhan Huaxia University of Technology (2019 open online course -- Automobile Theory); School-level Teaching Research Project of Wuhan Huaxia University of Technology (No. : 2028). 2. Hubei First-class Undergraduate Major Construction Site (Vehicle Engineering) Project (201902).

## References

- [1] Mao P, Jiang J. (2019) *Education Reforms and Explorations in "Economic Basis of Environmental Engineering" based on Engineering Education Professional Certification*. Guangdong Chemical Industry.
- [2] Liu Xiaolang, Zhang Xiaojun. (2020) *Exploration and practice of integrating ideological and political education into the classroom of "Automobile Theory"*. *Education and Teaching Forum*, 33, 61-62.
- [3] Chen Shifa, Zhang Li. (2020) *On Comprehensively Improving the Ideological and political Construction Ability of College teachers in Curriculum*. *Marxism and Reality*, 5.
- [4] Deng Wei, Huang Yan. (2014) *Promoting the Reform of Ideological and Political Course Teaching Methods: Establishing a new model of "Teaching students According to their aptitude" in Ideological and Political Theory Course*. *China Higher Education*, 6, 20-23.
- [5] Chen Lei. (2020) *A Preliminary Study on Online + Offline Collaborative Education Mode of Ideological and Political Education for College Students in the Internet Era*. *East West North South*, No. 552, 4, 237-237.
- [6] Guo Changshuai, Hu Yong, Chen Jiashen. (2022) *Exploration on the teaching reform of online and offline mixed "Golden Course" Construction under the background of ideological and political curriculum*. *Times Motor*, 16, 48-50.
- [7] Zhang Boqi, Liu Yuzhe. (2022) *Cheng Sizheng's Research and Practice in Car Modification Class*. *Times Automotive*, 14, 34-36.
- [8] Sun Weihuan. (2022) *Auto mechanical basic course education research*. *Vehicle maintenance and repair*, 12, 27-28.
- [9] Zhang Jianheng, Yang Zhiyu, Li Yongliang, Xia Hongjun. (2022) *Intelligent vehicle professional practice courses education exploration*. *Journal of practical technology*, 47 10, 134-137.
- [10] Wang Jiantao, Tang Xianzhi, Li Xueliang. (2022) *Vehicle engineering professional course teaching design and practice of education*. *Journal of quality education in the west and*, 8, 9, 51-54.