

Innovative Exploration and Design of Ideological and Political Education in the “Analog Electronic Technology” Course

Xiangyu Li*, Hao Hu, Jingteng Bi

College of Aviation Foundation, Naval Aeronautical University, Yantai 264001, Shandong Province, China

*Corresponding author: Xiangyu Li, rainlw@126.com

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Abstract: Taking moral education and war education as the fundamental task and the soul of the course, based on the “Guiding Outline of Curriculum Ideological and Political Construction” in colleges and universities, the study constantly explores and practices the curriculum ideological and political simulation of electronic technology. The course group mainly explores the potential ideological and political elements from the “three levels,” pays attention to the “four dimensions” of the overall design of the course ideological and political content, pays attention to the high unity of knowledge imparts, ability training and value guidance, gives full play to the main position of the course in the training of electronic professionals, and the ideological and political course in the same direction and frequency, training revolutionary soldiers in the new era.

Keywords: Analog electronic technology; Curriculum thinking and politics; Dialectical materialism

Online publication: February 10, 2025

1. Introduction

In May 2020, the Ministry of Education issued the “Guidelines on Ideological and Political Construction of Curriculum in Colleges and Universities,” making it clear that comprehensively promoting ideological and political construction of curriculum in colleges and universities is a strategic measure to implement the fundamental task of cultivating morality and talents, and value building is the priority in the “trinity” of talent training goals of value building, knowledge imparts and ability training in colleges and universities^[1]. The foundation of military educational institutions is to cast souls and educate people, which is essentially to solve the core problems of “what soul to cast, how to cast souls, what people to educate, how to educate people.” Therefore, in the course construction process, its primary task is to train revolutionary soldiers with “soul, ability, blood, and moral character” in the new era.

According to incomplete statistics, professional teachers account for 80% of college teachers, professional courses account for 80% of college courses, and professional learning time accounts for 80% of students’ learning

time. According to a survey, 80% of college students believe that professional courses and professional teachers have the greatest impact on their growth. Wu Yan stressed: “We should seize the ‘main force’ of professional teachers, the ‘main battlefield’ of professional teaching and the ‘main channel’ of professional courses, and further promote the close integration of professional education and ideological and political education”^[2]. In the new era of digital intelligence, the “Analog Electronic Technology” course is a professional basic course and an “enlightenment course” that leads students to open the professional field of electronics, which is of pivotal significance in the course ideological and political teaching. Therefore, the basic task of the course is to cultivate morality and educate people for the war, and to cast the soul of the course. Based on the “Guiding Outline of Curriculum Ideological and Political Construction in Colleges and Universities,” the course constantly explores and practices the course ideological and political simulation of electronic technology.

2. Simulate the main problems existing in the course thinking and politics of electronic technology

As the basic course of electronic information engineering and other majors, the analog electronic technology course cultivates certain circuit analysis, design and troubleshooting abilities based on mastering the basic concepts, basic principles and basic methods of analog electronic circuits. This course has strong theory, engineering and practice^[3]. At present, the school is still in the exploratory stage to implement the teaching reform of “curriculum ideology and politics” in the science and technology courses such as analog electronic technology, and there are still three problems as follows.

2.1. The ideological and political content is “identical” and lacks the professional characteristics of the course

The new era puts forward higher requirements for military talents, requiring them to have the quality of “soul, ability, blood and moral character”, and the requirements for professional basic courses of military schools are higher. At present, analog electronic technology courses are mainly for students of different majors such as electronic information engineering and communication engineering. Teachers usually choose the same ideological and political cases, which shows that the ideological and political content is “identical” and lacks the professional characteristics of the course^[4], resulting in a certain gap between the ideological and political education of the course and the requirements of the era.

2.2. The ideological and political integration into the “superficial,” lack of deep thinking

From a literal point of view, “curriculum thought and politics” includes two parts^[5]: “curriculum” and “thought and politics.” Teachers simply implant ideology and politics into professional courses when teaching, and some thoughts and politics deviate from the course content and fall into idle talk. When teachers pass on, explain, reason and explain the ideological and political content, there is a superficial phenomenon that they do not dig deeply and elaborate in detail, so that the ideological and political content of the course fails to reach the depth and breadth of application.

2.3. Ideological and political elements are “disorganized” and lack of overall design

Although the analog electronic technology course contains rich ideological and political elements, in the actual teaching, the ideological and political elements are for the sake of thinking and politics, and the requirements

are for the sake of thinking and politics, and these ideological and political elements are scattered, independent, and there is no overall planning and design ^[6]. Although teachers add ideological and political elements in the teaching of professional knowledge, there is a phenomenon of rote and rigid ideological and political content, with obvious traces of implantation, and the curriculum's ideological and political elements are scattered and disorderly, lacking vivid examples and overall design.

3. Explore the potential of ideological and political elements based on the “three levels”

Analog electronic technology has some ideological and political elements that cannot be replaced by other courses. Combined with the problems existing in the course, it will explore from the philosophical point of view, humanistic value and technological innovation to improve students' correct understanding of problems, analysis and problem-solving ability, and cultivate the professional quality of rigorous and meticulous, integration of knowledge and practice, and excellence.

3.1. The philosophical viewpoint of analog electronic technology

Philosophy can be regarded as the most basic, universal and core subject to explore and study. It is based on specific disciplines, takes the universal laws of the whole world as the research object, and provides theoretical guidance to specific disciplines. It is a theoretical system for cultivating the correct world outlook and values. “Analog electronic technology” contains a variety of philosophical views, based on the analysis of the circuit condensed philosophical views, students use the philosophical views to deepen their understanding of the analysis method of the circuit. The viewpoint of connection and development are the two main viewpoints and main characteristics of materialist dialectics. Everything in the world is in universal connection, and universal connection causes the development and progress of things at the same time ^[7]. For example, the integrated operational amplifier can be composed of the integral or differential circuit, from the time domain point of view, the output and the input signal of the integral or differential operation relationship. From the perspective of the frequency domain, it reflects the low-pass or high-pass performance, so the two circuits are operational circuits and filter circuits ^[8]. It also reflects the internal connection between analog circuits but also highlights the development of the circuit and multi-functional applications.

3.2. The humanistic value of analog electronic technology

Compared with classical disciplines such as mathematics, the development of analog electronic technology started relatively late, but there are still many formulas, methods, experiments and results. The achievement of these classical theories fully reflects the unremitting efforts of scientists and electronic engineers, as well as the scientific spirit of hard research and rigorous and serious. These spirits run through the teaching process, through word and example to train students, let them complete their homework in the study, cultivate the spirit of analysis and problem-solving, and through the independent completion of the experiment to cultivate honest and trustworthy concepts and engineering practice ability ^[9]. A comprehensive review of the entire development process of analog electronic technology shows that scientists such as Flemming John Ambrose and Jack Kilby continue to emerge. They are fearless of difficulties, arduous exploration, pursuit of excellence, and continuous exploration. Their history of development reflects the history of human beings forging ahead and making unswerving efforts to break through real difficulties and build a bright future. Therefore, analog electronic

technology is certainly an engineering discipline, and there are profound humanistic values in the evolution of electronic technology.

3.3. Technological innovation of analog electronic technology

The course of analog electronics technology teaches us to use the knowledge of analog circuits to understand the world and also gives us methods and strategies to transform the world, such as microvariant equivalent circuit method, virtual short and virtual break, etc. At present, analog electronic technology plays a vital role in daily life. Whether it is mobile phones, computers, ubiquitous wireless networks, or even cutting-edge artificial intelligence, these devices are completed by electronic circuits when collecting and processing information, especially analog signals closely related to nature are completed based on analog electronic technology^[10]. Therefore, in the teaching of analog electronic technology, equipment cases and life cases are introduced to cultivate students' emotional link to electronic equipment, enhance students' sense of closeness to electronic equipment, and increase their sense of identity to the profession.

4. Curriculum ideological and political design based on “four dimensions”

In combination with curriculum characteristics, thinking methods and content systems, adhere to the curriculum ideological and political thinking as essential elements of curriculum teaching, scientific design of curriculum ideological and political goals and elements of ideological and political entry points, avoid “superficial” and “hard integration,” and implement the curriculum teaching plan, curriculum teaching design, teaching plan courseware preparation and other aspects throughout the pre-class preparation, classroom teaching, teaching discussion and other links. To ensure the implementation of the curriculum's ideological and political construction, see the success of the curriculum's ideological and political effects.

4.1. The degree of correspondence between ideological and political elements and teaching objects determines the pertinence of teaching

Ideological and political elements should be targeted, and the contents of different majors and courses have different forms, types, and contents of ideological and political elements. Professional teachers according to the specific reality of the professional course, “tailored,” according to different teaching objects, set different ideological and political elements, the overall ideological and political goals of the course is the same, the specific ideological and political details can be different^[11]. For aviation students, it mainly tells the cases, people and events related to aircraft. For underwater acoustic students, it introduces cases related to submarine and underwater acoustic detection. Through the introduction of equipment cases, pioneers and scientific and technological teams, students can truly understand that scientific and technological strength is combat effectiveness to arouse the consciousness and feelings of participating in national defense and contributing to the sea and the enthusiasm of serving the country with loyalty.

4.2. The degree of achievement of ideological and political elements and teaching objectives determines the purpose of teaching

Whether ideological and political elements and teaching objectives can be achieved mainly depends on teachers and lectures. Teachers are the main body of teaching, leading the whole class, and playing the role of actors. Teachers' dress, image, temperament, virtue, learning and cultivation affect students. Meanwhile, teachers' words

and deeds in teaching affect students from time to time ^[12]. Only teachers who respect teaching, reverence for the classroom, and care for students, will make the classroom full of vitality and vitality, students will also love class, love learning, to achieve the teaching goal. Only teachers always think about mobilizing students in the classroom, thinking and politics can go into the deep, students only into the ear, into the heart and the brain to make teaching more vivid, more purposeful ^[13].

4.3. The degree of matching between ideological and political elements and teaching design determines the integration of teaching

Instructional design refers to the analysis and judgment of many factors involved in the teaching process by teachers according to the laws of education and teaching, curriculum objectives and learning conditions, and the formulation of the implementation plan of curriculum teaching. Curriculum standards should be refined and implemented through curriculum teaching design, which mainly includes curriculum overview, teaching object point analysis, teaching content processing, teaching strategy, teaching mode and method. If you want to match ideological and political elements with teaching design, you need to pay attention to the following links: the selection, optimization and connection of teaching content, the connection and difference between knowledge points, the sorting and refining of the key points, difficulties and doubts of chapters, the conception, design and specific production of teaching plans, slides and blackboard books, and the choice of teaching methods. The integration of ideological and political elements into the course teaching design should not only echo the teaching objectives but also pay attention to the matching of ideological and political elements and classroom design, to achieve a high degree of consistency between ideological and political elements and curriculum standards and teaching design ^[14].

4.4. The degree of fit between ideological and political elements and teaching content determines the temperature and depth of teaching

Considering the unique characteristics of military education, instructors incorporate ideological and political elements into the teaching content, developing a structured approach to integrating these elements into the curriculum. The integration of ideological and political elements in the curriculum should not pay attention to the amount of “quantity,” but should pay attention to the improvement of “quality,” effectively making good use of the internal connection between the excavated ideological and political elements and knowledge points, optimize the teaching program design, and organically integrate the ideological and political elements into the lesson, into the classroom and the teaching ^[15].

- (1) Grasp the “two lines” relationship between the main line of course content and the hidden line of curriculum thought and politics. The hidden line of thought and politics is usually contained in the main line of content. Students can take the initiative to feel this hidden line of thought and politics through typical equipment and character deeds;
- (2) Proper ideological and political elements are directly added to the teaching design, and task-driven, heuristic questioning, case teaching and other teaching methods are adopted to teach and educate students while understanding knowledge;
- (3) Make full use of pre-class preparation, in-class teaching and after-class consolidation of all aspects, the teacher’s worldview, life and moral values, as well as tangible and intangible impact on students, to ensure that curriculum thinking and politics “like salt water,” “moistening things silently.”

5. Conclusion

As a compulsory course, analog electronic technology has the characteristics of foundation, engineering and practice. The ideological and political elements of the course form the soul of the course in ensuring the basic attributes of the course. The ideological and political elements are mined, and summarized from the course content, and are effectively designed into the course teaching, especially for complex concepts and obscure knowledge points. Through vivid language and ideological and political elements, it can increase students' desire for knowledge and internal motivation, not only improving the depth and breadth of the course but also providing strong support for the overall development of students.

Disclosure statement

The authors declare no conflict of interest.

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