

Research on Ideological and Political Education Based on the Course of Mechanical Control Theory

Lijun Wang^{a*}, Hao Li^b, Xu Lu^c, Hua Che^d and Zhenzhong Yang^e

School of Mechanical Engineering, North China University of Water Resources and Electric Power, Zhengzhou, China

^awljmb@163.com, ^b1358023830@qq.com, ^cluxu5939@163.com, ^dchehua@ncwu.edu.cn, ^eyzzho@163.com

**corresponding author*

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Abstract: Under the wave of education reform, integrating the ideological and political education into various disciplines has become the mainstream issue of education. This is also benefit to fostering students' patriotism. Through precepts and deeds, leading the students' thoughts follows the direction of national development tightly. How to carry out the action of integrating the ideological and political education into professional courses and achieving the perfect combination of the two have become a question worth pondering. Taking the example of professional course of mechanical control theory, teachers add ideological and political elements to the premise of combining professional knowledge and specific examples, allowing students to improve their thoughts invisibly while learning the knowledge of major course. This article focuses on exploring the experience of integrating the ideological and political elements into the course of automatic control principles through the method of combining specific professional knowledge with specific examples, and to provide a new way for other disciplines to integrate ideological and political education.

1. Introduction

In 2018, at the National Education Conference, Xi Jinping proposed to combine moral education with ideological and moral education, cultural knowledge and social practice education. It also explains that the discipline system and teaching system of higher education should be carried out according to the above objectives. At the same time, teachers and students should follow this standard. The teachers should practice teaching on the premise of this idea, in the meantime, the students should also learn while focusing on this idea. Incorporating the ideological and political into the tedious curriculum, and enrich the professional classroom, stimulating students' interest in learning, and sublimate students' ideological, life, values and their views of world, in this way to achieve the goal of all-round teaching[1].

As the compulsory course of most engineering majors such as mechanical automation, measurement and control technology and instrumentation, and transportation, it is very important to

integrate the mechanical control theory into ideological and political education, and it is of great significance to the reform of ideological and political courses. In the course of ideological and political, teachers should always stick to the teaching principles of morality and cultivating people, also pay more attention to imparting knowledge and cultivating students' values in course teaching. At the same time, when practicing, teachers should fully explore the potential of ideological and political courses, cultivating more socialism builders and successors for the development of the party and the country. It is particularly important to let ideological and political into professional courses, and to integrate with it [2].

2. How to Implement Ideological and Political Education in Mechanical Control Theory

It has always been rather difficult to integrate the ideological and political teaching in the teaching of science. At present, there are two main modes of ideological and political teaching in most science subjects. The first is to combine students' future professional development and specific professional knowledge to understand politics, ideals, and planning. The second is to teach students ideological politics based on specific knowledge and the great deeds behind professional knowledge. We call the teaching mode that incorporates ideological and political teaching in professional courses as implicit ideological and political courses, while the ideological and moral courses we are familiar with are called explicit ideological and political courses. Most students show no interests when listening to explicit ideological and political courses. Because the common of these courses is to talk about ideology and politics, leading students feel very boring of this course. While, adding ideological and political elements to professional knowledge teaching has changed traditional teaching, the teacher is no longer limited to literal knowledge, rather than leading the thinking of what professional knowledge is used in the actual life. It combines the specific deeds of some great people or tells students how specific knowledge points are used in our lives, and at the same time guide students to think about the things in our lives that use this knowledge point it can create a kind of knowledge that students learn from life, but also apply to life, change the boring situation in the previous professional classroom, not only can stimulate students' interest in learning, but also achieve the purpose of integrating ideology and politics into the classroom. Let students receive the edification of ideas invisibly, let students receive moral education without resistance, and teachers are also using their own words and deeds to influence students' value orientation [3].

3. The Characteristics of the Mechanical Control Theory Course

First of all, the professional course of mechanical control theory is a relatively comprehensive course. To grasp it, students must firstly learn advanced mathematics, circuits, complex functions, linear algebra, college physics and other courses, and for students to learn the above knowledge, it's not easy in the first place. Now they also need to learn courses that integrate above knowledge, which may be more challenging. On this occasion, students will be very strenuous, which is more likely to cause them to become tired of study. When teaching tedious professional knowledge, adding topics that they are interest in can change their hates of studying. The main points of this course include introduction, control system model, time domain analysis method, root locus method, frequency domain analysis method, nonlinear system, control system design and effect correction, sampling system, modern control theory, etc. There is lots of content that needs to be taught, covering a wide range of knowledge. The curriculum involves more subject knowledge, and the difficulty of knowledge is getting more and more difficult. Therefore, the teacher cannot blindly

teach the students professional knowledge during the class. The professional knowledge background needs to be integrated into the classroom, rather than combine the knowledge of the course used in the things we use in our lives, and they are further explained [4].

4. Combining of Mechanical Control Theory Professional Courses and Ideological and Political Elements

How can the professional courses of mechanical control theory be perfectly combined with ideological and political elements? This article mainly elaborates on two aspects:

(1) First of all, teachers should connect students' ideals with ideological and political education, and be aware of bad behaviors and habits found in students in daily life. For example, students who don't listen carefully in class, and publicly play with their mobile phones, or even sleeps. Teachers should promptly persuade and influence such students. For example, they can show facts, reason with them, and combine specific examples to make them aware of the situation they may face in the future. At the same time, the teachers should also give them psychological support, encourage them not to fall into this situation because of the difficulties they have encountered, and encourage them to regain their strength, regain their confidence, work harder and work harder. Help them to mentally establish their determination to start from scratch if they fail, and don't give up their ideals easily. Give them more psychological encouragement, so that they have the determination and courage to overcome difficulties and re-establish themselves deep in their hearts. Consciousness of active learning [5].

(2) Combine ideological and political elements with mechanical control theory, and always stand for the teaching principles of moral education, combine the knowledge of the course with the corresponding ideological and political elements, and create hidden ideological and political courses for students, so that students can learn. In the meantime, its values and thoughts are changing subtly, and at the same time it only fits with the great rejuvenation of the country and the nation [6].

When we are talking about the introduction of the first chapter, we should explain from origin of mechanical control theory and its application. First, students should know that the founder of the discipline of automatic control principle is Wiener, meanwhile the man who contributes greatly to China's mechanical control theory is Qian Xuesen, and also was called 'the two bombs and one star scientist'. His patriotic deeds must be known to all of us. Every Chinese offspring should know he gave up the generous life abroad in order to serve the motherland. His journey home is full of hardships and fearless sacrifice. He use all his knowledge learned when he was abroad to serve his country. Qian Xuesen is called the father of missiles. Without his contribution, our missiles, satellites and hydrogen bombs may not be available for many years. He dedicated everything he has to the motherland, and our contemporary university physiology should carry forward his patriotic spirit. The knowledge application scope of the course of mechanical control theory can include from things fly in the sky, run on the ground, to swim in the sea, etc., all can apply the knowledge of this course. For example, airplanes in the sky, satellites, high-speed rails running on the ground, cars, ships in the water, Jiaolong, etc. Their control system models are all based on the knowledge of this discipline. To be precise, life is full of mechanical control theories. Teachers can stimulate students' curiosity and thirst for knowledge by teaching these backgrounds [7].

When we are talking about the mathematical model of the control system, the teacher will first use the specific physical model and the corresponding physical knowledge to summarize the corresponding differential principle, and have the corresponding mathematical knowledge to transform into the corresponding transfer function process to train students. When solving

problems, we should not only pay attention to the horizontal connection between subject knowledge, but also pay attention to the habit of vertical connection of subject knowledge. When talking about the feedback system, let the students first know what the definition of the feedback system is, and then grasp the components of the feedback system, and combine specific examples to allow students to extract what Feedback principles are contained in the things received around us. For example, the centrifugal governor in ancient times and the ecosystem in which we live in nature gave us rich materials and humans destroyed it at will. Nowadays, the frequency of natural disasters is increasing, and the damage is increasing; And the Dujiangyan Water Conservancy Project we all familiar with applies the feedback principle. The great creations of the ancestors still play a very important role. Just last year, there was a serious flood disaster in the Minjiang River, and Dujiangyan still played a major role in protecting the Chengdu Plain during this flood release. Let students combine the specific examples of Dujiangyan with the feedback knowledge we talked about, and what parts of a completed feedback system are composed. Let students find out the feedback behind the Dujiangyan water conservancy project by looking up the information and combining their own learning the principle consists of those parts. Let students talk about the knowledge they have learned in combination with specific life examples, and combine specific examples to train students to learn how to apply what they have learned, and use their knowledge to contribute to the development of the party and the country [8].

When teaching the time domain analysis method, the teacher teaches the students an idea to analyze the performance of the system by teaching the transient characteristics and dynamic characteristics of a system. First from the overall research and analysis of the system. If you want to improve the performance and stable application of the system, you must also proceed from the overall perspective. Only by analyzing the system from the overall perspective can a suitable solution be proposed. Combining with the system stability we are talking about, let's talk about the position that stability plays in us. Stability is very important in all walks of life. Stability is important to a country, nation, society, enterprise, technology, family and individual. Said it is very important. The individual is also a system. The stability of the individual can bring the stability of the family, and the stability of the family can make the society more stable. The stable of the country and nation can only be guaranteed when the society is stable. Because the stability of a system is composed of many small systems, the stability of the system is also affected by other small systems. When a small system is affected by its own internal or external environment, how to quickly eliminate the impact and restore the stability of the system as soon as possible is also very important. Therefore, expand this to individual students, in their daily study and life, they are always affected by the external environment. How can they quickly eliminate external interference so that they can focus more on their own learning, and better complete their own study! Therefore, improving oneself to eliminate external interference is a very important factor. At the same time, teachers teach students a way of analyzing problems from the perspective of the whole to help students develop that when solving future problems, they must start from the whole, especially when their own interests conflict with the interests of the country, we should start from the whole picture, and contribute ourselves to the greater good [9].

When discussing the content of frequency domain analysis, we mainly talk to students about frequency characteristics and how the Nyquist and Bode plots are drawn, and how to determine the stability of the system through the characteristic curve of the system, and whether it is correct or not. What kind of improvement measures are proposed for a stable system? At the same time, the stability margin of the system can be calculated, that is, the system stability can be directly evaluated. At the same time, when teaching students how to draw Nyquist diagrams, the idea of

ignoring the secondary points for drawing. Teaching the method of problem-solving by drawing pictures also gives students an inspiration, that is, the method of problem-solving is not unique, and sometimes changing the angle to solve the problem can achieve unexpected results. Therefore, in daily life, when you encounter difficulties that cannot be solved, don't be too sad. Instead, you should look for a solution to the problem from another angle. There are no problems that can't be solved, no hacks that cannot be overcome, as long as you are willing to use your brain, willing to think that everything will pass. At the same time, in the process of teaching students to draw pictures, we should convey an idea to students. When we are solving problems, the first thing we should do is to grasp the primary factor of the problem. When the primary factor is solved, the whole problem can be solved [10].

5. Summary

Curriculum ideological and political is the invisible edification of students' thoughts, and it affects students' thoughts in the quiet and silent manner. The ideological and political elements and professional courses are perfectly integrated, allowing students to invisibly accept the edification of thoughts in the classroom. At the same time, it has also achieved the goal of enhancing the affinity of ideological and political education and meeting the needs of students. At the same time, it has also achieved the requirements of maintaining a good channel and planting a good field of responsibility for other courses, so that all disciplines are in the same direction as ideology and politics. Instead, form a synergistic effect. At the same time, in the new era, we will continue to work hard to train more professional and technical personnel in mechanical control theory for the country.

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