

Physics teaching reform and practical research incorporating curriculum ideology

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ABSTRACT. *Physics is a natural science that studies the basic structure, motion forms, interactions, and transformation laws of matter. It has a unique role in deeply integrating ideological and political education and cultivating talents with socialist core values. This article starts with the teaching of physics "curriculum ideological and political", examples of education effects and the suggestions of teachers, taking the part of physics teaching mechanics as an example, and specifically discusses how to implement the fundamental tasks of ideological and political education in physics courses. The in-depth integration of education and professionalism will cultivate socialist successors with core socialist values.*

KEYWORDS: *physics; mechanics; ideological and political education; teaching practice*

1. Introduction

The scientific worldview, epistemology, and methodology shown by physics profoundly affect mankind's basic understanding of the material world, human thinking and social life, and are an important cornerstone of the development of human civilization. The physics course with basic knowledge of physics, basic laws and methods as the main content, its course objectives, teaching content, teaching methods and methods provide students with a rich knowledge system, scientific thinking and ability training[1]. At the same time, physics provides a rich and varied ideological and political education for physics courses with its profound historical background, a scientific spirit of seeking truth from facts, scientific thinking with insight into everything, materialist dialectical research methods, subtle human values and the basic role of leading science and technology. The elements and resources also cast the distinctive characteristics of the physics curriculum[2]. It has the irreplaceable educational function and advantages of other courses. It should be active, active, and innovative in the comprehensive promotion of curriculum ideological and political construction.

2. Physics teaching practice from the perspective of curriculum ideology

2.1 Formulate teaching goals incorporating ideological and political elements

Traditional physics classroom teaching focuses more on knowledge transfer and ability achievement. However, there are obvious deficiencies in the ideological and political collaborative education of people, and the physics curriculum's function of cultivating people is not fully utilized. This kind of teaching goal that only attaches importance to knowledge transfer and ability training ignores the cultivation of students' ideals and beliefs and socialist core values, which will inevitably lead to students' biased outlook on life and values, and lack of morality[3]. Guided by the ideological and political concepts of the curriculum, the physics teaching goals are divided into three levels, namely the primary goal (knowledge transfer), the intermediate goal (achievement of ability) and the final goal (value guidance). Among them, value guidance is the highest level and the ultimate goal. Its realization penetrates into the two goals of knowledge transfer and ability achievement. Through this subtle, moisturizing and silent education method, the core socialist values are spread, and students are guided to establish a correct outlook on life[4]. Values and world outlook cultivate students' awareness of patriotism, love for the party, and love for socialism. To carry out physics teaching reform practice under the vision of "curriculum ideological and political", we must regard strengthening morality as the ultimate goal, and through in-depth exploration of the ideological and political elements contained in the physics curriculum, the function of ideological and political education and knowledge transfer and ability To achieve an organic and scientific combination, so that dialectical materialism, scientific philosophy, correct outlook on life, and values permeate the entire physics teaching process.

2.2 Select teaching content that highlights ideological and political functions

In terms of teaching content, traditional physics teaching pays attention to the systematicness, completeness and cutting-edge of knowledge, but lacks in the ideological and political education function of the curriculum, and fails to give full play to the ideological and political functions of the curriculum to achieve collaborative education. The goal. In the teaching process guided by "Curriculum Ideological and Political", the teaching content needs to be integrated and reprocessed, and the content of "Curriculum Ideological and Political" should be integrated into the process of reorganizing and optimizing teaching content and knowledge; it is important in the selection process of teaching content It focuses on the concept of "knowledge imparting and cultivating morality". By introducing stories and topics such as the history of the development of physics, outstanding scientists, and the promotion of China's scientific and technological progress in physics, the content of promoting the core values of socialism, spreading patriotism and patriotism, realizing the Chinese dream, transmitting positive energy and cultivating the spirit of the discipline will be passed Various forms and channels

penetrate into all links of teaching, strengthen students' ideals and beliefs, cultivate students' humanistic literacy, help students establish correct outlook on life and values, enhance students' national pride and cultural confidence, and realize the collaborative education of students. Features. For example, adding ideological and political elements to mechanics teaching[5].

2.2.1 Ideological and political elements in mechanics teaching

2.2.1.1 The three elements of force

The effect of force on an object depends on the magnitude, direction and point of force. The three are called the three elements of force, of which the direction of force is more difficult to understand. In the course of teaching, teachers can associate the "direction of force" with the story of the opposite of the idiom. Enlighten students to realize that no matter what you do, you must first focus on the direction to give full play to your strengths, if the direction is wrong, then strengths become weaknesses, which will only have the opposite effect[5]. Warn students of the importance of the right direction, and then guide young students to establish a correct outlook on life and values. This not only allows students to deeply understand the importance of the direction of force, but also to review the different stories and the profound Chinese culture.

2.2.1.2 The law of universal gravitation and aerospace

The earth is the cradle of mankind, but mankind cannot live in the cradle forever. "The law of universal gravitation is undoubtedly the cornerstone of human aerospace. In recent years, China has made a series of progress in the field of deep space exploration. For example, after about 110 hours of flying to the moon, China's Chang'e-4 probe went through a near-moon system. A series of operations, such as motion control, lunar orbit drop control, lunar orbit change control, hovering and landing point recognition, and the world's first close-range image of the moon's back were sent back through the "Queqiao" relay satellite. The mystery of the back of the ancient moon has been opened[6]. By combining the law of universal gravitation with China's new progress in the aerospace field, the timeliness and interest of knowledge is enhanced, and students' desire for knowledge and exploration of the universe is aroused, and students' Learning interest and the ability to apply knowledge will undoubtedly deepen students' understanding and mastery of relevant knowledge, and enhance their national pride and self-confidence.

2.2.1.3 Joint force

At present, China already has the world's largest high-speed rail network and the world's most complete technology and industrial supporting system. High-speed rail has become a beautiful business card for China's equipment manufacturing to go

global. High-speed rail, Alipay, bicycle sharing, and online shopping are hailed as China's four new inventions. This is because the carriages of ordinary trains do not have power devices, so the driving of the train depends entirely on the traction of the front of the train. The high-speed rail adopts a power dispersion design. Each car of the high-speed rail has its own power unit. When driving, in addition to the traction provided by the front of the high-speed rail, each car of the high-speed rail can provide traction. These traction forces are combined into a more powerful The combined force of the high-speed rail has greatly increased the speed of operation. More importantly, the front of the car is responsible for controlling the direction and managing the operation of the whole car. The working principle of high-speed rail has a very close relationship with the synthesis of force and the functional principle of the particle system[7].

2.2.1.4 Work

Gravity is a conservative force, and hydropower is the process of gravity doing work, converting the potential energy of gravity into the kinetic energy of a hydraulic turbine, and then into electrical energy. At the same time, compared with coal power, hydropower is a renewable and clean energy. Therefore, the knowledge point of conservative work can be linked with my country's Three Gorges Hydropower Station. Under the premise of giving full play to the huge comprehensive benefits of flood control, shipping, and water resources utilization, the Three Gorges Project can generate more than 80% of the total power generation of more than 80% of countries in the world in a year, effectively reducing greenhouse gas carbon dioxide emissions, and conducive to building a resource-saving , An environment-friendly society to promote the sustained, rapid and healthy development of the national economy. By linking work to the great project of the Three Gorges Hydropower Station, students can not only deepen their understanding and mastery of work, but also guide students to establish a green concept of sustainable development, and let students have a deep understanding of the system advantages of socialist concentration of power to do major tasks. Understanding that a happy life is done is to enhance the national pride and self-confidence of young students.

2.3 Reform teaching evaluation methods and perfect ideological and political education

Add ideological and political elements to the examination questions, so that you can pay attention to the students' thought dynamics while investigating the students' knowledge mastery. Some researchers have found that students are generally welcome to incorporate ideological and political elements into the teaching content and examination questions. Some students report that appropriate and organic integration of ideological and political elements in theoretical teaching can add interest and cultivate ideological and political knowledge. The students' philosophy and dialectical materialism.

2.4 Improve the ideological and political awareness and ability of the teaching staff

To realize the ideological and political education function of physics courses, the construction of the teaching team is the key. General Secretary Xi Jinping pointed out at the National Conference on Ideological and Political Work in Colleges and Universities that preachers themselves must first understand the way and channel. Teachers in colleges and universities must insist that educators receive education first, strive to become disseminators of advanced ideology and culture, and staunch supporters of the party's governance, and better shoulder the responsibility of instructors and guides for the healthy growth of students. Therefore, it is particularly important to strengthen the ideological construction of the teaching team and enhance the ideological and political awareness of the teaching team. As the defenders and disseminators of the core values of socialism, the Chinese Communist Party members should become the mainstay in exerting the ideological and political education function of the curriculum[8]. Let the experiment of curriculum ideology and politics be carried out among party members first, and gradually accumulate experience and expand the scope of the experiment. In the teaching and discussion of the course, follow the laws of ideological and political work, the laws of teaching and educating people and the laws of student growth to do a good job of top-level design, strengthen the exchange and discussion of curriculum ideological and political concepts, and enhance teachers' curriculum ideological and political awareness and ability to build moral Human is the foundation, and promote the coordinated development of students' intellectual and moral education.

3. Conclusion

The physics course is not only a basic course for imparting subject knowledge, but also should give full play to its ideological and political functions, and contribute to the cultivation of socialist successors with core socialist values. Strengthen the top-level design in the process of teaching reform, incorporate value guidance into the teaching goals, influence students' world outlook, outlook on life, and values while moisturizing things silently, spread the core socialist values and positive energy; dig deeper into the ideological and political elements contained in the curriculum, and Organically integrated into the teaching content; meticulously design and organize the teaching process, reform the teaching evaluation method; give play to the pioneering role of party member teachers, and enhance the ideological and political awareness and ideological ability of the teaching team. Physics teachers should keep in mind the teachings of General Secretary Xi, strengthen the awareness of morality, and strive for life for the cultivation of qualified socialist successors.

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