

Ideological and Political Exploration and Teaching Practice of Fundamentals of Materials Science Course under OBE Concept

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Abstract: The national Conference of Ideological and political work in colleges and universities put forward the requirement that ideological and political work in colleges and universities should be changed by things and advance by time. Curriculum ideological and political education is the education department in order to further improve the quality of ideological and political education and put forward a recessive ideological and political education model, so that different types of courses and ideological and political theory courses coordinated development, the formation of synergistic effect, more in line with the law of student growth and teaching law. Based on the OBE education concept, this paper explores the implementation strategy of curriculum ideology and politics, and explores the basis of material science under the OBE concept. The implementation strategy of curriculum thought and politics in the foundation course is expected to provide some useful references for the course teaching work.

Key words: OBE concept; Materials science; Curriculum thought and politics; Teaching strategy

In recent years, curriculum ideology and politics have been carried out in full swing in colleges and universities, and some experiences have been summarized in the implementation of curriculum ideology and politics. The basic course of materials science is a course that explores the common laws of materials, such as the inevitable relations between material composition, organization structure, preparation work and properties, and guides the design and application of materials. This course is biased towards engineering technology, and integrates curriculum ideology and politics into the course to achieve knowledge imparts and value guidance. On the basis of solid professional skills, students can develop the innovative spirit of exploring, the safety consciousness of micromanaging and the craftsman spirit of striving for excellence, which is of great significance for improving the construction quality of this course and constructing efficient classrooms.

I. Concepts and ideas of the integration of OBE concept and curriculum ideology and politics

OBE concept is based on the needs of the industry to design professional construction planning and personnel training programs. Based on the OBE concept, teachers need to do a good job of enterprise research first, to understand the work that students majoring in materials science are engaged in after graduation and the key abilities that need to be developed. Compared with the previous education model, the OBE concept pays more attention to the achievement of students' goals during their study and the knowledge and skills they have developed, while it is relatively weak on how to learn, when and where to learn. Results-oriented teaching design, teaching activities and teaching evaluation are carried out to achieve closed-loop management.

OBE concept has three characteristics: results-oriented, continuous improvement and student-centered. These three characteristics are the key factors to the successful implementation of OBE concept. The implementation of curriculum ideology and politics under the guidance of OBE concept needs to integrate values education goals in addition to paying attention to the knowledge and skills that students should develop.

First of all, teachers need to investigate the jobs that students in the industry need to take after graduation and the job requirements, which determine the training objectives of the course, and the training objectives directly determine the graduation standards, and then further design the construction of the course system, course content, teaching methods and teaching content. Finally, the teachers track the graduates, listen to the feedback of the industry, and in turn make continuous improvement on the training program. Talent cultivation under the OBE concept is a closed loop of continuous improvement.

The key steps of OBE teaching are as follows: First, identify the learning outcomes. The learning outcomes should be clearly and in detail, not replaced by vague objectives, the learning outcomes should be clearly focused on the core qualities, and the problems addressed by each objective should be defined. Second, the realization of learning outcomes, that is, through what kind of teaching design, what kind of learning resources to achieve learning outcomes. The third is to evaluate the learning outcome, evaluate the learning effect according to the pre-set goals, find the problems, and put forward suggestions for improvement according to the problems. Thus, the teaching work has reached a closed loop. Note that as improvements are made, learning outcomes need to be adjusted accordingly. Fourthly, use the learning results to test whether the learning results of this course can be applied to other courses and whether it can provide support for students to further improve their professional skills.

The concept of OBE is student-centered and results-oriented. It sets knowledge content and skill requirements according to students' professional development direction, penetrates humanistic thought into the entire talent training process, and also provides strong support for the implementation of curriculum ideology and politics. Under the guidance of the OBE concept, the implementation of curriculum ideology and politics can guide students to develop professional quality, improve personality, enhance students' logical thinking ability and ideological consciousness level, and finally improve the comprehensive quality of materials science students.

II. The teaching strategy of ideological and political education in the basic course of materials science under the OBE concept

1. Strengthen the team building of curriculum ideological and political teachers

Teachers' ideological and political education concepts directly affect the implementation quality of curriculum ideological and political education. Teachers' personal moral accomplishment, professional spirit and educational level affect the quality of curriculum ideological and political education. Colleges and universities should strengthen teacher training, steadily improve teachers' ideological and political awareness and teaching level, explore ideological and political elements in the basic curriculum of material courses, and design effective ideological and political education strategies. The internalization of ideological and political content requires students to think. For this purpose, space for independent thinking should be set aside for students in class, and joint communication and discussion between teachers and students should be strengthened so that students can apply their own knowledge content. In order to effectively improve the quality of ideological and political courses, it is necessary to highlight the main learning status of students under the OBE concept and improve the enthusiasm of students to participate in classroom activities. For example, teachers can introduce the latest news in the field of material science to students in class and discuss it with them. At the same time, colleges and universities should strengthen the exchange of experience among teachers, establish the same teaching objectives, optimize the teaching mode, improve the teaching effect, communicate with each other and exchange experience, and learn from the emerging theories and methods in different scientific research fields. To build the basic science of materials into a core course with strong professional knowledge and can show the concept of development of materials in the new era, ideological and political curriculum requires that under the premise of adhering to the correct political direction, combining typical cases in real life, combining ideological and political education with professional knowledge and life, so as to truly ground ideological and political education and let ideological and political elements into the brain and heart. Teachers of professional courses should enhance the sense of responsibility of ideological and political education, find a breakthrough in curriculum ideological and political education, innovate educational methods, and make ideological and political classes into "interesting" classes.

2. Explore the ideological and political elements of professional courses

The content of the basic course of material science mainly consists of two modules: basic knowledge and applied knowledge. Among them, the basic knowledge mainly includes atomic structure and bonding, solid structure, crystal defect, movement of atoms and molecules in solids, deformation and recrystallization of materials, single component phase diagram and solidification of pure crystals, binary phase diagram and principle of solidification and preparation of alloys, ternary phase diagram, metastable state of materials, functional properties of materials, etc. And the application of knowledge is mainly plastic deformation, recrystallization, strengthening and toughening, solidification technology and other content. It can relate to the future development trend of these materials, infiltrate the concept of innovation and development to students, guide students to strengthen their sense of social responsibility, and can relate to the application of these materials in production and life, and integrate into the socialist core values. Material science, as a natural science course, also contains philosophical views. For example, the toughness and hardness of materials are a pair of contradictions. The harder the material is, the weaker the toughness is. Another example, the crystallization of materials needs to rely on energy, structure and concentration, and the whole process reflects the philosophical law of quality change. The mining of ideological and political elements should be based on the mainstream values of socialist modernization development, reflect the essence of the basic theory of material science with the help of Marxist philosophy, let the textbook content reflect the correct historical materialism world view, reflect the concept of ecological civilization construction, reflect China's development, highlight cultural self-confidence, and let students develop a sense of professional honor and mission. To contribute to the development of China's material science cause and national revitalization.

For example, in the application of knowledge module, related to the contradiction between modern material production and environmental pollution, to introduce the environmental pollution problems caused by material production to students, so that students can realize the impact of material production on the ecological environment, and then guide students to establish green concepts, environmental protection spirit, enhance social responsibility, and pay attention to social ecological benefits when researching and producing materials.

3. Optimize the teaching methods of ideology and politics in the course

Because OBE is a people-oriented education concept and its results-oriented closed-loop improvement of the teaching process, teachers should pay attention to the learning process of students in the teaching process. Modern information technology can be applied to record and analyze the online learning of students, control the participation status of learning links in real time, and guide teachers to understand the learning situation of students. To facilitate the subsequent adjustment of the teaching program. Teachers can also make use of the online teaching platform to enrich course resources, such as expanding documentaries such as "Great Powers", so that students can understand the development history of China's material science, cultivate students' scientific and humanistic views in the process, and guide students to develop patriotic feelings.

Provide real-time information for students based on social and humanistic perspectives, and form a group mode among students to help each other and discuss together to express their own ideas and viewpoints; In class, teachers use brainstorming, simulation training, role playing, group sharing and other teaching methods to improve the learning effect and improve students' comprehensive quality; After class, online guidance can be achieved with the help of the Internet platform to help students improve their ability to process information and form a situation of mutual cooperation, which is conducive to the improvement of students' social ability, the cultivation of students' spirit of scientific research and humanistic spirit and the contact with enterprises related to material engineering, the realization of resource sharing,

the establishment of an experimental base for school-enterprise cooperation, and the promotion of students' ability in continuous practice. Deepen the understanding of the ideological and political content of the course, so that the goal of ideological and political education can be realized jointly outside and inside the school.

Teachers can guide students to understand the cutting-edge achievements in the field of materials science, grasp the latest trends in the field of materials and the development trend of the industry to enhance students' interest in scientific research, guide students to open their scientific research ideas, optimize their academic knowledge, guide students to evaluate their own ability reasonably, stimulate students' thirst for knowledge on the basis of finding their own shortcomings, and establish academic confidence; In particular, humanistic reports can enhance students' ideological connotation, grasp the historical, social and political status quo and development in the short term, and promote the shaping of students' values.

4. Updating the assessment and evaluation of curriculum ideology and politics

As a closed loop improvement teaching mode, OBE concept, assessment and evaluation work is particularly important. Assessment and evaluation index system should be integrated into the ideological and political assessment indicators, innovation consciousness, environmental protection spirit, scientific attitude, professional spirit into the assessment indicators, but also pay attention to teaching methods, such as in the material science basic course ideological and political content is correct, ideological and political education methods are effective. At the same time, innovation should also be carried out in the assessment and evaluation methods, such as teaching evaluation competition, random inspection of lectures, questionnaires and other methods can be introduced. The teaching and research team of colleges and universities will review the teaching team and teachers' teaching materials, attend lectures in class, and issue questionnaires to students to understand the implementation of ideological and political courses and students' satisfaction.

Finally, follow-up investigation and feedback should be done to understand the sustainable development of students after graduation, through alumni interviews, unit field research and other ways to understand, as the key criteria to show the implementation effect of OBE concept and the cultivation of talents in colleges and universities. The status quo of student development can be taken as the acceptance criteria, and the effect of course ideology and politics on students' ability and quality can be taken as the acceptance criteria. The final results and suggestions will be applied to the current ideological and political integration stage of the curriculum, and the basic teaching of material science will be optimized through closed-loop improvement.

Epilogue

In order to effectively implement the fundamental task of education, to educate people for the Party and the country, college teachers need to strengthen the implementation of curriculum thinking and politics. The emergence of the concept of "curriculum thinking and politics" is not a slogan, nor is it a form that only stays on the surface of teaching reform, but the country according to the domestic and foreign environmental situation and the needs of social sustainable development in the new era. A long-term measure to effectively solve the contradiction between social demand and talent supply, combining OBE education concept and curriculum ideology and politics, taking students as the center, learning results as the guidance, and promoting students' sustainable development as the goal, to improve and explore the construction of teacher team, course content, teaching design, assessment and implementation of safeguard measures, etc. To improve the quality of classroom teaching in all aspects and effectively play the function of cultivating the soul and educating people.

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