

Thinking of Curriculum Policy in the Cultivation of Chemical Professionals

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Abstract: Ideological and political thinking of specialized courses is an important guarantee for the implementation of the fundamental task of moral education. In order to carry out the ideological and political work of the curriculum in specialized courses, the training program is revised, and the mode of carrying out the ideological and political work of the curriculum is determined through teaching discussion, and the ideological and political elements are excavated in combination with knowledge points to form different ideological and political themes of the curriculum. The ideological and political elements of the course are organically integrated into the whole teaching process by adopting curriculum introduction, participatory learning and homework; Diversified evaluation methods were explored to test the effectiveness of ideological and political education.

Keywords: Curriculum thought and politics; Personnel training; Course design; Evaluation

Fund Project:

Qingdao University Curriculum Ideological and Political Education Reform Research Project (2023-8), Qingdao University Party Building Innovation Project (2020-142023-20), Ministry of Education Industry University Collaborative Education Project (202002046067), Qingdao University Teaching Research Project (JXGG2020, 2036)

In 2020, the Ministry of Education put forward the requirements for the ideological and political construction of college curriculum in the Guiding Outline of the Curriculum Ideological and Political Construction of colleges and universities, in which the implementation of the fundamental task of moral cultivation must integrate value shaping, knowledge imparting and ability training into one method and the three parts cannot be separated. In the course teaching of science and engineering majors, the combination of Marxist standpoint and method is combined with the training of scientific spirit to improve students' ability of correctly understanding, analyzing and solving problems. In addition, the professional courses of engineering should also pay attention to strengthening students' engineering ethics education, cultivating students' spirit of excellence, and inspiring students' feelings and mission of serving the country through science and technology.

The Chemical Engineering and Technology Program of our school was established in 1992, and is currently one of the important engineering disciplines at our school. In 2022, it received accreditation from the Chinese Engineering Education Certification. After the promulgation of the guidelines of the Ministry of Education, the program promptly adjusted its training scheme according to the school's requirements, incorporated requirements for ideological and political education into the curriculum, and clearly defined the goals of ideological and political education in the the curriculum outline.

1. Exploring ways of ideological and political elements of the curriculum

The mining and organization of ideological and political education materials in the curriculum rely on the collective strength and wisdom. Since 2020, according to the requirements of the school, the teachers of the whole department have been organized to carry out regular concentrated teaching discussions on the ideological and political education content. This involves centralized data organization and analysis to identify important ideological and political elements in various professional courses, as well as to explore how ideological and political cases are manifested in different courses. Under the guidance of the course outline, the goal of ideological and political education and the theme of the chapter of each course are clearly defined. As a traditional professional course

of engineering, the history of science and technology and the spirit of scientists are the traditional ideological and political contents of the course^[1-2]. On this basis, with reference to Selected Cases of Ideological and Political Thinking in Chemical and Chemical Courses^[3] and combined with engineering practice and science and technology practice cases, many themes have been developed, such as the history of technological development, the spirit of scientists, innovation in chemical engineering, responsibility, ecological civilization, and patriotic sentiment. These themes are used to organize ideological and political elements in the curriculum, creating a distinctive database of ideological and political education cases for the profession.

2. Curriculum ideological and political teaching strategies

2.1 Give full play to teachers' initiative and guarantee ideological and political teaching

Teachers are responsible for curriculum ideological and political education. Their own political accomplishment, moral accomplishment and humanistic accomplishment are the main factors affecting the quality of curriculum ideological and political education. In improving teachers' political theory learning, the advantages of concentrated learning are once again highlighted. The department combine the party building work with the ideological education of professional teachers, taking the party building work as the starting point. The improving methods include the teaching and discussion mode and the thematic seminars of ideological and political. Various studies were carried out to improve the knowledge reserve and teaching ability of teachers of specialized courses, such as course observation, online training and video file learning. The department encourages young teachers to attend a certain number of hours of course observation every semester, and complete the lecture notes, forming a culture of learning from predecessors; Different online contents of education and learning were chose from the special course ideological and political network training course for college teachers and the column of "Ideological and Political and moral education" in Learning Power. This ensures that professional course teachers stay informed about current political developments and actively integrate ideological and political education into their professional knowledge.

2.2 Like salt dissolving in water, do a good job in ideological and political teaching design

Based on the combination of classical BOPPPS model and Rain Classroom teaching software, the teaching process is divided and reorganized into six modules: introduction, goal, pre-test, participatory learning, post-test and summary^[4] in three teaching aspects: before, during and after class. The full participation, monitoring and quantitative evaluation of the learning process are realized through Rain Classroom^[5]. The ideological and political content of the curriculum is integrated into the teaching design in different ways. The course of chemical engineering is closely related to production and life, which is easy to attract students to participate, and adopts interactive and inquiry-based teaching methods. Pre-preparation tasks are released through the Rain Class before class. According to the different learning tasks, students are informed of the knowledge and education objectives of this class, and corresponding tests are set to strengthen the learning of pre-class preparatory knowledge. During the lesson, teaching is conducted through Rain Classroom, encouraging deep learning through guided inspiration, case studies, and classroom discussions. Students actively participate in interactions through features like bullet screen comments and screen submissions on Rain Classroom. After class, assessments are assigned through Rain Classroom, along with some exploratory assignments to deepen learning. In the homework, part of ideological and political opening content is discussed, and relevant hot topics are discussed to improve students' understanding of realistic problems and solutions. Finally, according to the data analysis of the platform, the teacher pays attention to the learning status of each student, and continuously improves all aspects of BOPPPS in time to form a closed loop of teaching activities and a full understanding of ideological and political content in teaching.

2.3 Continuous improvement the closed-loop evaluation system

Exploring methods and approaches for evaluating the effectiveness of ideological and political education in the curriculum, conducting teaching reflections, and continuously improving ideological and political education are important guarantees for enhancing the level of ideological and political education in the curriculum.^[6] There is no unified standard to evaluate the effect of ideological and political education in curriculum. It adopts a diversified approach by taking students' knowledge mastery and quality development as the test criteria, and tracking students' behavior changes in subsequent learning, tests the role of curriculum ideology and politics in teaching, and gives feedback to the teaching process, further modifies the content of ideology and politics, and realizes the closed-loop mechanism of "evaluation- feedback-improvement".

Firstly, two assessment modes, formative assessment and summative assessment, are adopted to evaluate students' learning outcomes. In the assessment process, the proportion of formative assessment and summative assessment is reasonably allocated. Particularly, after increasing the course ideology and politics content in areas such as student group presentations, active engagement on online platforms, and pre-class previews with quizzes, the proportion of formative assessment in the overall grade can reach 40%-

50%. Summative assessment mainly relies on course exams as the main mode, with appropriate inclusion of ideological and political knowledge points.

Secondly, the teaching effectiveness of course ideology and politics in each course was investigated through a questionnaire survey, tracking data of students at different levels. According to the survey results of the Class of 2020 on the course “Fine Chemical Chemistry”, more than 85% of the students gave a high positive evaluation of the course’s ideology and politics, believing that the course’s ideology and politics played a role in their own growth, and they would take the initiative to act on this principle in their future work.

In addition, the course ideology and politics in the practice of the course of tracking analysis. Taking the practical course “Chemical Process Design” of 2019 students as an example, 56% of the students considered more environmentally friendly process routes in the design process; More than 75% of students can fully consider the impact on the surrounding living environment and natural environment during the site selection process of designing factories. It can be seen that the introduction of ideology and politics in the course enables students to take the initiative to assume the responsibility of chemical engineers and have a better understanding of green sustainable development and ecological civilization.

3. Teaching reflection and summary

In order to better improve the quality of chemical professional talent training, we fully integrate ideological and political elements into the teaching process of professional courses. It is necessary for teachers to explore the way of integrating curriculum ideology and politics and the effectiveness evaluation mode, and the following three aspects need to be seriously considered. First, the professional teachers themselves should establish the idea of curriculum thinking and politics, take the initiative to do a good job in the search, accumulation, analysis and application of curriculum thinking and politics materials, and carefully prepare lessons; Second, do a good job in teaching design, grasp the “degree”, the explanation of ideological and political content is enough, and leave room for students to aftertaste. Finally, the teaching process respects the subject status of students, encourages and positively guides students’ views, forms a harmonious relationship between teachers and students, makes students close to themselves, believe in their way, and achieves the effect of wetting things silently.

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