

Exploration of the Construction of the Civic and Political Education in Engineering Geology Course

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Abstract: The purpose of this paper is to discuss the integration of the elements of civic and political education into the engineering geology course to improve students' ideological and moral qualities. It is proposed that by integrating elements of civic and political education, students are guided to form a positive attitude toward engineering practice as well as correct values and ethics. With regard to the teaching design and implementation of the course, the implementation paths of teacher team building, careful teaching design, innovative teaching methods, and the integration of civic and politics in practical teaching are proposed to summarize the significance of integrating the elements of civic and political education in the construction of the engineering geology course. It is pointed out that this integration not only improves the quality of the course, but also provides a reference for the civic and political education of other similar professional courses. This integration not only focuses on the teaching of professional knowledge, but also pays more attention to the cultivation of students' ideology and morality, which provides a model and guidance for shaping new talents with all-round development.

Keywords: Engineering geology; Civic and political education; Implementation approach

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1. Introduction

In order to implement General Secretary Xi Jinping's important exposition on education, the State Council issued a working opinion ^[1] that colleges and universities should adhere to the principle of cultivating people with moral integrity, and make civic and political theory courses as key programs throughout the entire process of education and teaching. The Ministry of Education issued a guideline for the construction of courses on civic and politics ^[2], which stresses the need to build a "three-pronged education for all" system by combining all types of courses with civic and politics courses in the same direction and forming a synergistic effect ^[3]. This requires all teachers to be involved in civic and political education and to implement it in every class ^[4].

2. Objectives of the civic and political course

Engineering Geology is a professional basic course, its main contents include seven knowledge sections: introduction, minerals and rocks, geological structure, groundwater, adverse geological phenomena (landslide,

mudflow, earthquake, etc.), geological survey, and geological practice. Its content lays the foundation for rationally dealing with the contradiction between engineering activities and geological conditions, correctly using natural geological conditions, and transforming undesirable geological conditions. Students are required to be meticulous in ensuring the quality of engineering, since engineering accidents will produce incalculable losses to people's lives and property. At present, the teaching content of the Engineering Geology course is still based on the professional basic theoretical knowledge, with minimum integration of civic and political education such as the cutting-edge technology of the discipline and the current affairs. This paper reflects on the integration of civic and politics into the Engineering Geology course, and proposes a practical method for the integration of civic and politics [5].

3. Civic and political education teaching design

The teaching design of the civic and political education is shown in **Table 1**, with the methods of integrating the civic elements.

Table 1. Teaching design of civic and political education

Knowledge chapters	Refinement of civic and political elements	Methods of integrating the civic elements
Preface	National sentiment, engineering ethics	Showing the domestic engineering construction documentary film "Super Project" to stimulate students' sense of national pride; explaining the relationship between engineering geology and the environment, and establishing an ethical view of engineering on the basis of knowledge of nature, respect for nature, and appropriate modification of nature.
Causes of minerals and rocks	Political identity, craftsmanship	Displaying the stories of our geologists Siguang Li, Jiqing Huang, and the famous engineer Tianyou Zhan and other outstanding talents to cultivate students' craftsmanship of dedication, trustworthiness, and excellence. When explaining the content of the rock, the various problems overcome during the construction of the Three Gorges Project are introduced, so as to establish the craftsmanship spirit of students to strive for excellence and innovation in their workplaces.
Geological formations and their effects on engineering	Nationalism, dialectical materialism	Introducing the Tibetan Plateau, Longmenshan Geopark, Mount Hua, and other scenic spots, etc., and marveling at the great beauty of the motherland; comprehensively explaining the formation of various geological phenomena, and guiding students to look at the problem with a comprehensive and developmental perspective, and establish a dialectical materialistic view.
Surface water	Responsibility of the times	Focusing on the dynamic characteristics of groundwater, the "Xinjiang Turpan-Kan'erjing Project" and other allusions are selected as case study teaching resources to cultivate the spirit of perseverance and reflect the diligence and wisdom of the people. The impact of changes in the groundwater environment on construction projects is explained to inspire students to establish "harmonious coexistence between human beings and nature." Emphasis is placed on environmental protection and awareness of sustainable development.
Adverse geological phenomenon	Core values	Major geological disasters such as the Xintan landslide, Zhouqu mudslide, and Wenchuan earthquake are shown as integration points to demonstrate the powerful rescue forces in the face of disasters, and to cultivate students to establish the socialist core values of wealth, harmony, and friendliness.
Engineering geological survey	Legal awareness	Typical negative engineering surveys are used as an integration point, such as engineering accidents caused by surveys not carried out in accordance with specifications during the engineering process, and compensation incidents triggered by survey errors, to increase students' awareness of the rule of law in complying with the legal system and industry guidelines.
Engineering Geology internship	Moral integrity	During the on-site determination of rock formation yield, the <i>Wen Jiabao Geological Notebook</i> is used to guide students to appreciate the hardship of geologists, and enhance the cultivation of students' character of defying difficulties, hardworking, and teamwork.

4. Implementation means of civics in the curriculum

4.1. Strengthening teacher team building

Teachers should be the leader of professional knowledge and civic teaching, thus the level of the teacher team should be improved through training, study, and competition ^[6]. Civics in moral education involves constantly improving personal political quality and participating in teacher ethics training; in the professional aspect, it is necessary to clarify the development direction of the discipline and be familiar with its cutting-edge knowledge ^[7]. In the education and teaching research activities, teachers regularly carry out collective lesson preparation activities, discuss the important and difficult issues in the process of curriculum implementation, exchange experiences and shortcomings in the process of curriculum practice, and put forward corresponding measures for improvement and response. Through regular open classes and lesson observation activities, the effectiveness of the practice of civics in the professional program has become more significant.

4.2. Careful teaching design

Careful teaching design can improve the quality of teaching civics course. The teacher team continuously integrates the content of teaching resources and establishes a case library that contains a video library of the civics course, a typical case library, and a case library of the technological frontiers of disciplines. Teaching resource carriers including relevant advanced figures, typical deeds, development history, news reports, stories, cases, etc., are fully utilized to make good use of the OBE (outcome-based education) teaching concept which is oriented to the students' results, so as to revise the lesson plans.

4.3. Innovative teaching methods

Based on the concept of OBE education, the use of diversified teaching methods such as case study, interactive teaching, and seminar teaching ^[8] can improve students' concentration and participation. In the teaching process, based on the BOPPPS (Bridge-in, Outcomes, Pre-assessment, Participatory learning, Post-assessment, and Summary) teaching mode, the Super Star Learning Pass platform is used in the class. Additionally, online and offline mixed teaching, heuristic teaching, and case study teaching are reasonably used. Through a series of measures such as discussion, video observation of typical geological cases, and analysis of engineering examples, civic and political elements are fully integrated into various teaching sessions ^[9], which improves the students' classroom participation. After class, students are allowed to collect relevant civic-political resources in the form of homework, so that students are subconsciously inspired. Thus, the knowledge goal and the civic-political goal are realized, and the purpose of educating people is achieved.

4.4. Integration of civic practical teaching

Practical teaching is an effective way to consolidate theoretical knowledge. This course has 6 credit hours of laboratory and a one-week field geological internship. The experiments include the identification of minerals and the three major rocks, the understanding of geological structure models, and the determination of rock production. The fieldwork route is the geological practice route of Tongluoshan Mining Geological Park and Nature Museum, which demonstrates the pioneering spirit of the old generation of geologists and workers in practical teaching, exploration and enterprising, and inspires students to have the courage to face difficulties and work hard. At the same time, teachers and students observe the geological phenomena in the field while walking, which increases students' interest in learning and cultivates their teamwork and hardworking spirit.

5. Evaluation of teaching and learning

Teaching evaluation is the key to testing the effectiveness of the civics teaching reform of the course. In the classroom, teachers can use reports, speeches, lectures, and other methods, and pay adequate attention to students' participation in the course content and understanding of the civics point; after class, students' understanding of the civics content can be understood through their comprehensive assignments. At the same time, evaluation can be carried out in the form of surveys and other forms of questionnaires. Through survey feedback on the students' learning situation, the civics teaching of the course can be dynamically evaluated, and the problems existing in the civics teaching of the course can be resolved promptly according to the survey results, and improvement measures can be proposed; comprehensive topics with civics connotation can also be added in the assessment to deepen students' knowledge and understanding of the civic aspects of the course.

6. Summary

Civic and political education is the responsibility of both the teachers of the civic and political courses and the teachers of the professional courses, and simultaneously achieving the professional courses and the civic and political education in the same direction ^[10]. By integrating the civic-political elements into the Engineering Geology course, the course has been revamped to formulate the syllabus, teaching plan, lesson plans and courseware, and to establish teaching resources such as case bank. Focusing on the characteristics of the major and the course, the civic and political elements of the knowledge points in each chapter are excavated and integrated into practice, so as to stimulate students' national sentiment and political identity, establish students' correct core values and engineering ethics, cultivate students' authoritative awareness of the rule of law, craftsmanship, and dialectical view of materialism. It also aims to improve students' hardworking and enduring morality, cultivate new talents who have all-round development of morality, intelligence, physical fitness, and aesthetics, and who are in line with the needs of the development of the line of business, and provide a good opportunity for similar majors to develop new talents. It also provides ideas and guidelines for the civic and political education of similar professional courses ^[11].

Disclosure statement

The author declares no conflict of interest.

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