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Research Article

Ideological and Political Education in Curriculum of Traffic Engineering: An Example of Traffic Environmental Impact Assessment Course*

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Abstract

Nowadays, the traditional specialized teaching methods in college are no longer suitable for the requirement of talent training in our new age while academic curriculum studying is always divorced from ideological and political education for the most time. Under the concept of ideological and political education in curriculum, research is conducted in this paper to study the approaches and methods for teachers to implement this education mode, with which teachers can impart academic knowledge and perform ideological and political education at the same time. Combined with the characteristics of traffic environmental impact assessment course, this paper will also try to estimate teaching practice and effects of ideological and political education. Based on its requirements, from the perspectives of teaching goals, contents of curriculum and school evaluation respectively. The results indicate that if academic teaching can embrace ideological and political education in curriculum, the separation between two will be relieved in some degree and the synergy will be formed on both of them. In addition, some teaching methods should be improved during the teaching process towards the teaching goals of ideological and political education in curriculum. As for teachers, it is necessary to sort out and adjust the syllabus, contents and methods of teaching, especially to optimize the teaching material and evaluation mechanism of learning effect.

Keywords

Ideological and Political Education in Curriculum • Teaching Reform • Traffic Engineering Education •
Traffic Environmental Impact Assessment Curriculum

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For a long time, one of the most important tasks of higher education is to train core democratic values of the next generation (Lilja, 2018). Generally speaking, highly educated citizens can participate more actively in political activities and obtain important political resources (Rasmussen, & Norgaard., 2018). It is shown that education levels have a statistical and substantive influence on the ability of citizens to understand ideological positions of different political parties (Carroll, & Kubo, 2018). The political views of citizens with higher education are highly similar to those of the representatives in the democratically elected countries (Schakel, & Hakhverdian, 2018). And increasing ideological education in higher education can bring new viewpoints of futuristic epistemology to students (Davids, 2018). There is convincing evidence that negative school education could diminish political participation of young people (Bruch, & Soss, 2018). The improvement in educational equality can reduce the political knowledge gap between the young and others (Luo, & Chen, 2018).

Ideological and political education plays an important role in cultivating college students' outlook on world, life and values. Therefore, the ideological and political education in some countries has regained attention in contemporary education policy and practice (Sant, & Hanley, 2018). Since 2014, the British government has appealed to promote the education of the basic British values actively (Janmaat, 2018). In addition, a wide range of non-governmental actors are promoting ideological and political education in institutions of higher learning, including philanthropic foundations, think tanks, educational entrepreneurs and scholars (Allen, & Bull, 2018). Ideological and political education also plays an essential role in Chinese higher education system (Dong, Gao, Zhang, & Ma, 2017). And it has been regarded as a political task of teachers to promote ideological and political education in class (Walton, 2018). In carrying out ideological and political work in colleges and universities, we should persist in taking morality cultivation as the central link and running ideological and political work through the whole process of teaching.

There is a reliable linkage between political ideology and scientific theory research (Rutjens, Sutton, & van der Lee, 2018). With the rapid development of modern technology such as cloud computing, large data, artificial intelligence, etc., the ideological and political education for college students is facing great opportunities and challenges to be improved and adjusted significantly. The traditional training mode in which professional teachers and ideological and political educators are relatively disconnected from each other in education, has been difficult to satisfy the requirements of college students' talent cultivating in new era. However, the pace and depth of education reform belong to political procedure, and meaningful reforms may fall into stagnation and frustration (Fabella, 2017). It is of necessity to create an environment where the education of critical knowledge flourishes in the context of financial constraints and political transformation (Esson, & Wang, 2018). If the education of ideology and politics got neglected in the reform of higher education, students would suffer a loss in psychology, bearing fear and anxiety of different degrees. Therefore, the ideological and political education of college students is recommended to follow certain rules and be combined with recent development of education, so that it can develop toward the healthy direction and make substantive achievements (Li, 2018).

Therefore, the complete higher education should include ideological and political education as well as professional knowledge education. To ensure the synergy of these two educational contents in colleges and universities, Chinese government has put forward the teaching concept of ideological and political education in

curriculum. The affinity and pertinence of ideological and political education is expected to be enhanced through classroom teaching so that the needs and expectations of students for their growth and development could be satisfied. Thus, it is required that teachers should combine knowledge with ideals, beliefs and moral education in the process of teaching. By fully exploring the ideological and political elements of each curriculum, the ideological guidance and the cultivation of values can be integrated into the teaching of each curriculum. Taking traffic environmental impact assessment course as an example this paper studies the methods of performing ideological and political education in professional courses from theoretical basis, technical methods and engineering examples. Combined with the characteristics of traffic environmental impact assessment curriculum, this paper will also try to estimate teaching practice and effects of ideological and political education. The research in this paper can provide guidance and reference for the better implementation of ideological and political education in other major curricula.

Requirements for performing ideological and political education in curriculum

Ideological and political education in curriculum does not refer to a specific course or a group of curricula, but represents the expectation that the curriculum in university have the dual functions of imparting knowledge and delivering ideological and political education, so that students can be cultivated with professional technique as well as a correct outlook on world, life and values. Ideological and political education in curriculum also means a method of thinking. Teachers are required to carry out ideological and political education to students in the process of professional teaching, viewing it as the main goal and combining it with the education of major development. However, ideological and political education in curriculum does not mean to change the original attributes of professional courses, nor to transform all of them into or treat them as ideological and political courses, but to fully perform the moral function of the curriculum, to refine the cultural genes and value paradigms contained in professional knowledge by using the disciplinary thinking of moral education. Eventually the curriculum would be transformed into an effective teaching carrier for ideological and political education, with spiritual guidance of ideals and beliefs integrated into knowledge learning.

The construction of ideological and political education in curriculum is a complicated project involving many aspects. Since every discipline and specialty has its own knowledge system and unique characteristics, special researches are demanded on how to perform ideological and political education in curriculum. It is concluded that the teaching plan should be formulated according to the characteristics of professional courses, ideological and political elements be integrated into the objectives, contents and methods of teaching, and the value, spirit and thinking be excavated from knowledge.

First of all, more thorough understanding of ideological and political education in curriculum is necessary. The implement of ideological education in curriculum is to integrate into the teaching of all kinds of courses the scientific thinking method, the basic principle of behavior and the sense of responsibility to serve the country. While setting teaching objectives, the ideological and political resources with the characteristics of professional courses should be fully explored, with teaching contents largely expanded. In terms of teaching

contents, teachers are suggested to fully explore the educational elements contained in various courses, guiding students to establish an appropriate outlook on world, life and values.

Secondly, in the process of teaching, the rule of curriculum construction has to be followed, to ensure that the advantages of professional disciplines can be fully taken. The teaching method should be flexibly applied according to the teaching objectives as well as the characteristics of students. On the other hand, the leading role of teachers and the main role of students should also be clearly defined. While teaching the problem awareness and problem orientation are suggested to be strengthened, with endeavor made to innovate methods of teaching and assessing learning effect in order that the teaching effect can be improved. A list of teaching methods like teaching, discussion, case analysis, etc. can be adopted. By increasing the proportion of analyzing practical project case, a good atmosphere can be created where students are stimulated to study seriously, practice actively, discuss extensively and think positively.

Finally, importance should be attached to the role of textbook in the course of performing ideological and political education in curriculum. As a vital support for teaching, textbook is also a carrier and foundation for the system construction of ideological and political education in curriculum. Without textbook construction of high quality, the function of ideological and political education in curriculum has become a river without headwaters or a tree without roots. Therefore, professional textbooks of various disciplines must embody political will and moral guidance and fully fulfill the educational value of professional courses. The contents of textbook should also be adjusted and optimized in time according to the teaching effect and the requirements of ideological and political education in curriculum.

Practice of ideological and political education in traffic environmental impact assessment curriculum

Teaching objectives

Table 1
Teaching Objectives of Ideological and Political Education in Traffic Environmental Impact Assessment Curriculum

Serial number	professional teaching goal	the goal of ideological and political education in this curriculum
1	Understand the basic concepts of environment and environmental impact, master the main environmental problems in the construction and operation management of traffic engineering.	Understand the importance of protecting environment for maintaining the sustainable development of human society and economy, cultivating students' humanities and social science literacy.
2	Master the investigation and prediction methods of traffic environmental impact, and understand the contents and methods of evaluation on traffic environmental impact.	Cultivate students' awareness of environmental protection in the process of traffic planning, designing and operation management, helping them establish engineering ethics and a sense of social responsibility.
3	Retrieve the literature materials according to the title of practical case study, analyze the engineering measures to mitigate the impact of traffic environment, write research papers and report them, so as to enhance the students' professional quality.	Students should be guided to establish the green traffic awareness of the coordination between traffic engineering and ecological environment, and form the ecological civilization values of sustainable development and the environmental protection awareness of natural harmony.

With the rapid development of transportation industry in China, the mileage of road construction continues to grow and the number of motor vehicles owned keeps increasing. Nevertheless, the pollution to environment gets vast increase consequently. How to deal with the relationship between traffic development and environmental protection has become an urgent problem to be solved. The objectives of ideological and political education in this curriculum are shown in Table 1.

This curriculum not only trains students to master the basic theories, methods and engineering measures of traffic environmental impact assessment, but also clarifies the impact of traffic engineering on the environment. And then guides students to establish a scientific concept of sustainable development, ecological civilization values and protection awareness of natural harmony, so that students would be equipped with a good career virtue and noble moral sentiment.

Teaching contents

Ideological and political education in traffic environmental impact assessment curriculum should tap the educational value of professional knowledge, form a unique teaching content system with professional education as the carrier, and fully fulfill the persuasiveness and appeal of professional courses. According to the teaching objectives of the curriculum, the contents of the curriculum are divided into theoretical basis, technical methods and case analysis. The teaching should be combined with students' discussion and essay writing so that students can grasp the basic knowledge of environmental policy and management and understand the relationship between the development of traffic engineering and the situation of environment and resources in China. In teaching contents, not only the technical methods of environmental impact analysis are taught and trained, but also the students' sense of responsibility for environmental protection and their professional identity and professional ethics of improving the environment and restoring the ecology are cultivated and enhanced, through the learning of both domestic and foreign traffic environmental protection system and the case of Chinese traffic environmental protection. The teaching contents concerning ideological and political education is shown in Table 2.

Table 2
Teaching contents of ideological and political education in traffic environmental impact assessment course

Modules	Teaching contents
The theoretical basis	Introduce concepts related to environmental science, protection principles, and hot issues caused by traffic engineering, as well as the contents of road traffic environmental protection, and the general situation, development process and trend of traffic environmental protection at home and abroad. To make students understand the importance of protecting the environment for maintaining the sustainable development of human society and economy, and to cultivate students' humanities and social science literacy.
Technical methods	Introduce analysis contents of traffic environmental impact, including its analysis procedures, environmental impact factors screening, prediction methods and comprehensive evaluation methods. Teaching the methods of traffic environment investigation, including the pollution of noise, air, water and vibration. To cultivate students' awareness of environmental protection in traffic engineering planning, designing and operating, and to help them establish engineering ethics and a sense of social responsibility.
Case study	Introduce the compilation contents, common evaluation criteria and key points of analysis report on traffic environmental impact assessment. Through practical cases, introduce the corresponding measures to mitigate the impact of road traffic environment, describes the specific treatment measures in engineering from the selection of environmental route and cross-section and the protection of slope, and corresponding countermeasures from the control of social and ecological environment, air, noise and traffic vibration impact. Students should be guided to establish the green traffic awareness of the coordination between road traffic engineering and ecological environment, and form the ecological civilization values of sustainable development and the environmental protection awareness of natural harmony.

Evaluation of learning effectiveness

The traditional learning effect evaluation of this curriculum contains examination results and normal grades. Among them, the weight of examination results is 0.6, and the average weight of daily performance is 0.4. In order to cultivate students' sense of social responsibility and engineering professional ethics, the curriculum paper assessment is included in the evaluation of learning effect on the basis of ensuring that students master the basic knowledge and technical methods. Combining the classroom teaching with actual case situation, students are required to write a curriculum report with independent views and personal experience, in order that the competence of students in retrieving and processing information and innovating can be trained. Based on the above reasons, the evaluation of the learning effect of this curriculum is divided into process assessment and final assessment, according to the teaching objectives and contents. Process assessment consists of classroom examination and research examination. Classroom examination results are determined by attendance and the enthusiasm of interaction in class. The research examination results are mainly determined by the timeliness of completion, accuracy, independence and clarity of the paper. The final assessment is mainly based on the examination of the theoretical knowledge level. The types, content and way of examination and the proportion of each are shown in Table 3.

Table 3
Diversified assessment scheme

	Assessment categories	Proportion	Examination contents	Assessment methods
Process assessment	classroom examination	30%	Learning attitude	Peers assess Teacher evaluates
	Research examination	30%	Seminar performance	Peers assess Teacher evaluates
Final assessment	Test	40%	Evaluation of theoretical knowledge	Teacher evaluates

Evaluation of teaching effectiveness of ideological and political education in traffic environmental impact analysis curriculum

This major is devoted to cultivating graduates who have mastered the basic principles and knowledge of transportation engineering, can meet the requirements of engineering education certification, and keep in line with international engineering certification standards. Graduates should have solid basic theory, broad professional knowledge, strong practical and innovative ability, and be able to form teams to resolve complex engineering problems, while taking into account economic, environmental, legal and security factors. Apart from getting qualified for their own occupation, they should have a certain international perspective, and can increase their knowledge and enhance their abilities through continuing education or other lifelong learning channels to serve domestic and foreign transportation and related undertakings.

In order to evaluate the effect of ideological and political education in traffic environmental impact analysis curriculum, investigation has been made on the students who choose the curriculum of among the undergraduates of grades 2013 and 2014 majoring in traffic engineering of Hohai University, to analyze their

opinion on the teaching effectiveness. The evaluation is in the form of a five-level scale, and the corresponding results of different scoring values are shown in Table 4.

Table 4
Evaluation Results Corresponding to Different Score

Score	1	2	3	4	5
The evaluation results	Very unsatisfied	Unsatisfied	Generally satisfied	Quite satisfied	Very satisfied

A total of 45 valid questionnaires were received by anonymous questionnaire survey among 47 students who took the traffic environmental impact analysis curriculum. The analysis results of the investigation and are shown in Figure 1.

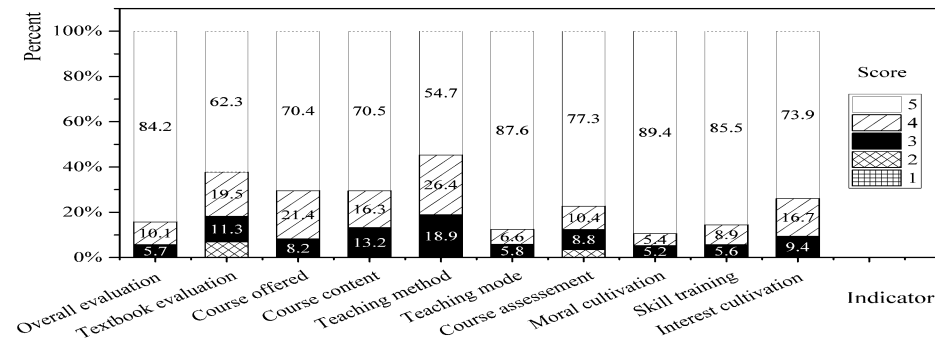


Figure 1. Teaching effect analysis of ideological and political education in traffic environmental impact analysis curriculum

The results of the survey show that students are quite satisfied with the teaching effect of ideological education in the course. The survey data shows that 94.3% of the students are satisfied with the teaching reform of ideological and political education in curriculum, and 84.2% of them are very satisfied with this training method. 91.8% of the students thought that the contents of ideological and political education were rich, 94.8% thought that the ideological and political education in curriculum had an important impact on their outlook on world, life and values, so that they understood the importance of environmental protection for the sustainable development of human society and economy. At the same time, 85.5% of the students believe that the way of increasing ideological and political education in the study of professional courses can help them better establish social responsibilities and engineering professional ethics, increase professional pride, and urge them to learn professional skills more actively. 90.6% of students indicated that their interest in professional learning had increased through ideological and political education. And more than 85% of students believed that their thoughts and actions had changed significantly. About 94.34% of the students thought that the teaching of basic knowledge and case study had a positive effect on the ideological and political education in the curriculum, which made them understand the national policies, laws and regulations related to their major. 81.1% of the students believed that the case study report had trained their expressive and interpersonal skills and stimulated their interest to study seriously through extensive discussion and positive thinking. In short, after a round of reform on ideological and political education in curriculum, remarkable results have been achieved. However, the reform of this teaching method is still in the exploratory stage. 19.2% of the students think it is necessary to

adjust the teaching materials according to the specific content. 12.3% of the students think that the examination standard of this curriculum is relatively high, the pressure of learning increasing accordingly. Therefore, in order to meet the needs of ideological and political education in the teaching of professional curriculum, while modifying the teaching syllabus and teaching content, the professional textbooks and curriculum assessment methods need to be adjusted and optimized simultaneously.

Conclusion

The ideological and political education in professional curriculum in colleges and universities can bypass the predicament that professional education and ideological and political education can't go hand in hand by changing the independent and fragmented education mode of the original specialized courses and ideological and political courses. Its essence is to integrate ideological and political education in colleges and universities into all teaching patterns of professional courses, to guide students to transform knowledge into their inner virtue and the organic constitution of their spiritual system, to become the basic ability and method for individuals to understand and transform the world, and to help realize the promotion of ideological and political education from the free stage to the whole process of educating.

The ideological and political education in specialized curriculum is a systematic project, which requires teachers to change their teaching concepts, observe the rule of ideological and political work, teach and educate people and the rule of students' growth. This requires that in the curriculum design system theory method be used to excavate the moral connotation and elements of professional courses, so that the teaching objectives can be clarified. Through combing the relevance between the content of specialized courses and the content of ideological and political education, the teaching objectives of ideological education in curriculum are clarified, teaching materials are carefully organized, appropriate teaching methods are selected, and the systematic and concrete content of ideological and political education of the curriculum are formed, which is also the key to ensure the effectiveness of ideological education in curriculum.

The fundamental purpose of teaching activities in colleges and universities is to cultivate talents of higher quality. The general accreditation standards for engineering education in China are based on the quality requirements of graduates proposed in the Washington Accord. There are 12 graduation requirements. Among them, the training requirements of engineering and social, environmental and sustainable development, professional norms, individuals and teams, communication, project management, lifelong learning and other qualities and abilities are perfectly fitted with the training objectives of ideological and political education in professional courses. Therefore, through the performing of ideological education in specialized courses, the students trained by Chinese colleges and universities can meet the requirements of the universal standards for International Education certification, and can improve students' professional recognition and professional pride.

In this paper, traffic environmental impact assessment taken as an example, the teaching of professional curriculum has been adjusted from three aspects of teaching objectives, teaching contents and learning effect evaluation according to the teaching requirements of ideological and political education in curriculum. The results of the questionnaire survey on the students majoring in traffic engineering who chose this curriculum in

grades 2013 and 2014 show that the ideological education in this curriculum can not only stimulate students' interest in learning, improve their professional competence, but also sublimate their ideological cultivation. However, different disciplines have different characteristics, as well as different resources of ideological and political education. To ensure that all professional courses can meet the teaching requirements of ideological and political education in curriculum, exploration, practice and innovation need to be performed continuously in teaching syllabus, teaching contents, teaching methods, textbook compilation, the mechanism for evaluating learning effect and so on.

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