

Integrating the ideological and political education into the general Surveying Course

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Abstract: With the purpose of strengthening the the ideology and politics education in General Surveying course teaching, this paper proposes a set of ideological and political teaching reform methods, including the objectives of ideological and political reform, the ideological and political elements in the main chapters, and the evaluation of ideological and political effectiveness. This exploration provides a more systematic overview of the complete teaching process from ideology and politics teaching objectives, teaching contents and teaching evaluation. This could serve as an example to integrate the ideological and political education into the nature sciences oriented course.

1. Introduction

The National Conference on Ideological and Political Work in Colleges and Universities pointed out that “we should insist on making moral education as the central link, running ideological and political work through the whole process of education and teaching, and realizing ‘the whole process of educating people and educating people in all aspects’”. “Opinions on Deepening the Reform and Innovation of Ideological and Political Theory Courses in Schools in the New Era” issued by the General Office of the Central Committee of the Communist Party of China, was further required that colleges and universities should shift from “Ideology and Politics Science Course” to “Curriculum Ideology and Politics Science”. But this is not only a simple change of word order, but also a transformation of talent training concept. The main form of Curriculum Ideology and Politics is to integrate elements of ideological and political education, including theoretical knowledge, value concepts and spiritual pursuit of ideological and political education, into each course to influence students' ideological consciousness and behavior in a subtle way^[1]. “General Surveying” is an important specialized course in the first level of surveying, geography, remote sensing, etc. It covers the meaning of surveying, basic knowledge, use of surveying and mapping instruments and acquisition and processing of surveying and mapping data, etc. Through the study and training of theoretical and practical teaching sessions, students can master the basic theory and practical skills of surveying, which will lay a good foundation for the subsequent professional courses and also help in build-up the technical foundation for the future work. Inspired by the national education requirements of Curriculum Ideology and Politics, the integration of ideological and political contents in the course of “General Surveying” are of great significance to improve the quality of talent cultivation^[2].

“General surveying” is a course focusing on practical operation, and the long-term teaching reform only focuses on teaching methods and teaching modes to improve students' hands-on ability, ignoring the function of teaching and education. This deficiency led teachers to focus only on theoretical knowledge and skill operation training, neglecting the requirements of ideological and political aspects such as professionalism and ideals and beliefs. It is the key to implement the construction of the ideological and political of the curriculum by relying on the teaching of professional courses to achieve “knowledge transfer” and “value guidance”^[3-4]. Therefore, it is the most crucial issue to naturally integrate the ideological and political element into a course of “General Surveying”, which only focus on practice.

The project team proposed the reform of “General Surveying” from the viewpoint of the Curriculum Ideology and Politics, by reconstructing the teaching content according to the concept and requirements of professional certification, formulating corresponding professional knowledge, practical operation and ideological and political objectives for each lecture of the course. This will be implemented by using vivid and real cases to naturally connect the ideological and political elements to the teaching objectives, teaching activities and teaching evaluation.

2. Research Methods

2.1 General idea

Firstly, we determine the construction goal of ideological and political. And then we discover the available ideological and political elements which can be used, and integrate his elements into program. At the end, the idea of ideological and political will also be represent in the finally evaluation.

2.2 Ideological and Political Construction Objectives

Focusing on the cultivation of students' professional core competitiveness as well as ideological and political qualities, we are aiming to integrate “Curriculum Ideology and Politics” education in professional teaching, promote professional ability cultivation, realize the resonance of socialist core values and professional knowledge, and guide students to grow into the composite talents needed for the development of current surveying and mapping geographic information industry.

(1) Patriotic feelings, through the great achievements in the history of Chinese surveying and mapping and today's BeiDou global navigation system, inspire students' cultural confidence and national pride, and cultivate their patriotic spirit.

(2) Dedication, through the national major surveying and mapping project examples to show the surveying and mapping people self-improvement, willing to dedicate and keep the original mission of surveying and mapping family-country sentiment, guide students to learn from their predecessors, cultivate students' dedication and sense of social responsibility.

(3) Shaping their integrity character, through the typical positive and negative mapping events, to cultivate the professional ethics of honesty and trustworthiness of students and the spirit of excellence in work.

2.3 Exploring of Ideological and Political Elements and Integrating them into general survey course

All chapters of the “General Surveying” course are focusing on how to determine the three-dimensional coordinates of the points^[5]. The reformed course will sort out how to integrate the ideological and political education functions into in each chapter. It will be covered in teaching design process, and choosing suitable teaching strategies and in the teaching process.

(1) Highlighting the centrality of students and guide their interest. Introduce cases first to trigger students' curiosity, for example, the level measurement part, with the case of Everest elevation measurement in 2020, and ask students why they need to measure the elevation of Everest, and its elevation needs to be measured very precisely? What is the significance of the measurement? We can mention the exciting story of it to trigger students' curiosity. Let students consult information in groups to learn the history of the Everest elevation measurement to stimulate their interest.

(2) Rising Heuristic questions to develop students' independent learning ability. Take the measurement of Mount Everest as an example, through the question “What technical methods and instruments are used to measure the elevation of Mount Everest?” Guide students to understand the various methods of elevation measurement, and what are the differences between these methods? Why were the data measured in 1975, 2005 and 2020 different? What are the main difficulties encountered in each measurement and how to solve them, etc.? Train students' ability to learn level measurement, triangulation and satellite elevation measurement independently through questions.

3. Construction of Curriculum Ideology and Politics

3.1 Implementation of Curriculum Ideology and Politics

According to the nature and characteristics of the course of “General Surveying”, the ideological and political education objective is to cultivate “surveying craftsmen”, who are “dedicated to survey and draw a map, enjoy their work and dedicate to their work, rigorous and realistic, united and collaborative”, to cultivate students' awareness and ability to serve the national development strategy, and to firmly establish the ideal belief of striving for the great rejuvenation of the Chinese nation^[6-7].

The idea of Ideology and Politics are clarified in the teaching plan, so that students can pay attention to the study of Curriculum Ideology and Politics. According to the arrangement of the lecture content, combined with the ideological and political elements in the core chapters, the construction of Curriculum Ideology and Politics is arranged as follows:

(1) Introduction section

We will include the introduction the history of the development of surveying in China and in other countries. It will help them to understand the process of the development of surveying and mapping science and the current situation. Let students take the initiative to look up typical figures and works in the history of surveying and mapping, such as the Dujiangyan project built by Li Bing and his sons which is still functioning today, Guo Shoujing's first proposal and use of the mean seawater surface as the elevation starting datum, Shen Kuo's first proposal of magnetic declination, Zheng He's nautical charts for his voyage to the West, the Beijing 54 coordinate system and the BeiDou global navigation satellite system. Ask students to think about how the ancients performed their measurements in the context of the time and what the significance was. It will stimulate the students' national pride and cultural confidence.

(2) level gauge and leveling part

We will include the introduction the case of Qinghai-Tibet Railway level survey. Students were asked to find out the details of the project, including how to solve the great difficulties encountered in the special geographical environment, the manpower and material resources spent and the time spent, leading to the importance of solidarity and collaboration, with emphasis on the spirit of dedication and integrity. Combined with the code of ethics of the surveying profession, the students were warned that as surveyors they should take the “code of ethics of the surveying profession” as their code of conduct. It will reflect the core socialist values, and establish the professional consciousness of students to strive to become socialist builders.

(3) Measurement error part

The measurement errors have a significant impact on measurement results and subsequent works. We will assign students to find typical cases of measurement accidents before class, such as a railroad project where measurement errors caused bridge misalignment, resulting in important economic losses and schedule delays, and disciplined the relevant personnel. Let the students keep in mind that measurement is a very scientific and rigorous discipline that cannot be sloppy and cannot make any mistakes. Otherwise they will pay a serious price, which is a rigorous attitude that must be cultivated. The whole process of measurement has corresponding specifications, and the results should meet the requirements of accuracy and quality of the relevant “Technical Specifications of Measurement”. The measurement personnel should take the “Technical Specifications of Measurement” as their working guidelines. Under all circumstances, we must abide by professional ethics, face our work with the strictest attitude, and be loving our work and dedicated socialist builders.

(4) Theodolite and angulation part

Introducing the case of Xi'an 80 national plane control network construction, we firstly introduce that the plane control network was established based on angular survey, which was laid out since 1952 and completed in 1978, a period of 26 years, with a large number of silent mapping workers devoting their lives to this undertaking. Then The specific cases of willingness to dedicate their youth and lives to the cause of surveying and mapping for the motherland will be demonstrated, focusing on the advanced deeds of Academician Li Deren, Academician Liu Xianlin and others. So that students will sincerely admire these surveying and mapping experts. Through the spirit of dedication

and the belief of building the motherland embodied in the typical case, the students will establish a sense of mission and responsibility for the cause of surveying and mapping, and understand that the present material foundation is not easy to come by and that they should study hard and work hard to achieve socialist modernization in China.

(5) Range measurement and total station part

Starting by introducing the development history of measuring instruments, from vernier theodolite - optical theodolite - electronic theodolite - photoelectric range finder - total station - measuring robot, etc. We will rise the question “What is the difference in price between 5” and 0.1” accuracy total station”? The price of the same brand with different accuracy can vary ten times, inspiring the students to understand the difficulty of making precision instruments. Modern industry requires high-precision instruments whose development and production is the result of decades of focus by shop floor engineers on parts processing and debugging to produce them. Students will be able to establish the “Great Country Craftsman” spirit of rigor and quality first.

(6) Control measurement and trigonometric leveling part

Popularize the knowledge of “Survey and Mapping Law” through cases of survey control point protection and surveying and mapping violations. Let the students find typical cases of mapping violations and know the serious consequences after mapping violations, such as destruction of control point markers, illegal mapping, topographic maps, control points and other confidential mapping data leakage, etc., to cultivate students' awareness of mapping confidentiality and the legal system.

The trigonometric leveling part continues to use the case of the 2020 Everest elevation measurement. A video is shown to introduce the story and technology behind it, promoting the scientific spirit of challenging the limits and climbing the peak.

(7) Global satellite navigation system part

Students will be introduced to the BeiDou global navigation system and the struggles of several generations of mappers behind the system. In particular, students will be introduced to the difficulties of building the BeiDou system and the hardships of the scientists around the question of “Why build BeiDou when there is a GPS system in the United States?” This will promote the BeiDou satellite navigation system, build awareness of guarding national security, and cultivate in students the spirit of independence and the idea that core technologies should be in their own hands.

(8) Mapping of large-scale digital topographic map part

Introduce the role of topographic maps in national economic construction and the correct expression of national boundaries in swearing national sovereignty. This will instill the awareness that national territorial integrity is inviolable, cultivate patriotism. This explains cases such as the South China Sea boundaries and the Sino-Indian borderline, and suggest that students watch the documentary film “Chinese surveyors Soldiers” so that they can deeply appreciate that it is the responsibility of every Chinese to maintain the integrity of the motherland's map.

3.2 Evaluation of the ideological and political teaching effectiveness

Curriculum Ideology and Politics reform need to evaluate the effectiveness of shaping students' values after the integration of ideological and political points^[8]. There is no clear system for teaching evaluation of Curriculum Ideology and Politics. The evaluation of ideological and political in the measurement course of this study is carried out by the following methods.

(1) Improving the examination and assessment links and reflecting the requirements of the curriculum ideological and political education. It is necessary to integrate the content of Curriculum Ideology and Politics into the process examination and assessment of professional courses, and to include Curriculum Ideology and Politics as one of the contents in the process assessment of course assignments and course papers to test students' mastery of knowledge. Based on the professional and practical characteristics of the course, the team spirit and collaboration ability of students are taken as the examination and assessment contents in the organization and implementation of internship experiments and other teaching links, so as to guide students to pay more attention to the cultivation of professionalism, scientific spirit and craftsman.

(2) Strengthening the course to achieve the goal of educating people in the examination in the

course of thinking and politics. According to the content of Ideological and Political Science set in the course syllabus, in the various types of questions in the examination of professional courses, in an appropriate way, the main theme and the content of education and teaching are included in the examination questions. So that the theoretical knowledge of professional courses and the content of Ideological and Political Science of the courses are effectively connected. The Ideological and Political Science assessment is included in the professional examination, focusing on understanding the students' mastery of the content of educational development.

4. Conclusion

This paper presents the pedagogical reform and exploration of the measurement Curriculum Ideology and Politics. By combining “knowledge transfer”, “skills training” and “moral education”, the course aims to let students master basic surveying knowledge and surveying skills, understand the great achievements of China in surveying and mapping disciplines, focus on inspiring students' national pride and patriotism, and cultivate the spirit of surveying and mapping and craftsman of students' serious and pragmatic, devotion of work, keep improving, dedication to excellence, and contributions for the country.

The integration of the concept of Curriculum Ideology and Politics in the process of teaching professional courses does not mean that the teaching of students' professional courses is directly turned into a place for teaching ideological and political theory, but to explore the educational elements related to the concept of thinking and politics in professional courses, which can also shape the correct value concept in the process of professional skills improvement^[9]. As a partial engineering course, the content is mainly theoretical and practical operation. The teaching content is boring. Adding the Ideological and Political Science case are with interesting and story. Ideological and Political Science reform has added the attractiveness of the course. Ideological and political education is not forced indoctrination. The project focuses on solving the organic connection between the teaching content of professional courses and ideological and political education content to achieve the effect of core values infiltration and professional knowledge in the same frequency resonance. Compared with the traditional teaching design, the teaching design under the perspective of curriculum thinking and politics places more emphasis on students' independent learning style and professional learning effectiveness, which implicitly cultivates the spirit of great country craftsman in the teaching process. This also inspires the sense of mission and responsibility to serve the country in science and technology, cultivates the awareness of homeland security, and the professional quality, ethics and awareness of industry norms in the process of teaching.

References

- [1] Huifang Chen and Guixiu Qin.(2019)The Theory and Practice of“Curriculum Ideology and Politics”and“Ideological and Political Course”in the Same Direction[J].China Higher Education, (9):53-55.
- [2] Lihua Xu,Qinghong Sheng,Bing Li.(2020)Exploration on the teaching of“Curriculum Ideology and Politics”in Surveying and Mapping courses in colleges and universities[J].Journal of Southwest China Normal University(Natural Science Edition),45(9):168-172.
- [3] Zhengguang Zhang,Xiaohua Zhang,Shumei Wang.(2020)Discerning the concept,principles and practice of“Curriculum Ideology and Politics”[J].University Education Science,(6):52-57.
- [4] Xianming Lin.(2020)Research on the reform of“Ideological and Political Education Course” and “Curriculum Ideology and Politics Education”based on the fundamental task of establishing moral education[J].Journal of Higher Education,(3):191-193.
- [5] Jinsheng Ning and Kai Yang.(2007)New progress of mapping discipline from digital mapping to information mapping[J].Science of Surveying and Mapping,32(2):5-11.
- [6] Aihua Zhou,Yanling Lu,Xiao Fu.(2020)Exploration and practice of“Fundamentals of Surveying

and Mapping”course in GIS[J].Beijing Surveying and Mapping,34(10):1481-1484.

[7] Peng Li,Jing Zhang,Jifeng Huang,Dong Ding,Lihua Cao.(2019)Research on the teaching reform of“engineering surveying”for non-mapping engineering majors[J].Geomatics&Spatial Information Technology,42(1):24-26.

[8] Dan Ma,Shezhou Luo,Ting Wu.(2020)The reform and practice of teaching ideological and political in the course of“Surveying”in agricultural and forestry colleges[J].Agricultural Engineering, 10(10):100-104.

[9] Hui Liu,Lijuan Su,Juan Li,Jie Wang,Xiaojun Zhu.(2020)Exploring the Construction of Ideological and Political in Surveying Courses[J].Journal of Yellow River Conservancy Technical Institute,32(4):85-88.