

Exploring the integration of Civic Science elements in practical courses--Taking "Electronic Engineering Training 1" as an example

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Abstract: Practical courses are an important part of the training program for professional talents, and the introduction of thinking and politics education in practical courses is an important direction of the teaching reform of practical courses at the present stage, as well as the need to cultivate students' comprehensive quality. This paper discusses the current problems of the teaching of practical courses, the positive significance of integrating the elements of thinking and politics into the teaching of practical courses and the principles of integration, and takes "Electronic Engineering Training 1" as the entry point to discuss the ways of integrating the elements of thinking and politics into the teaching of practical courses.

Key words: Practical course; thinking political elements; course thinking political.

1. Introduction

In recent years, the state has continuously raised the importance of the work of thinking and politics education in colleges and universities, and issued relevant policy documents to provide clear directions for domestic colleges and universities to deepen their thinking and politics education. Therefore, all classes and courses in colleges and universities should not only meet the needs of students to learn relevant professional knowledge and "teach" and "solve problems", but also The training should not only meet the needs of students to learn the relevant professional knowledge and "teach" and "solve the problems", but also train and cultivate the good quality of students to "preach", and consciously inject the element of ideological and political education into the teaching[1]. Practical courses are an important part of the training programmes of all our majors. It aims to cultivate students' ability to analyse and solve real-life engineering problems through a large number of practical operations and training, combined with the theoretical knowledge learned, which can well make up for the shortage of classroom theoretical teaching. In order to promote the close integration of practical course teaching with the ideological education, to form a synergistic pattern of educating people in the same direction, and to achieve the goal of ideological education of "embellishing things in a silent manner", it is necessary to carry out exploration and research on the ideology of the curriculum based on the

characteristics of the audience groups and the characteristics of the curriculum. Therefore, this paper aims to explore the positive significance of the implementation of the practical course curriculum thinking politics, and take "Electronic Engineering Training 1" as an example to discuss how to integrate the practical course into the teaching of thinking politics elements.

2. Root causes of the imbalance in the teaching of current practical courses

(1) The practicality of the teaching concept of practical courses is not enough. Theoretical teaching is relatively simple to carry out, but practical course teaching cannot be achieved without the attention of schools, teachers and students in order to achieve good teaching results. In fact, the long-standing tradition of emphasizing research over teaching, especially practical teaching, has led to one of the main reasons why the current practical courses cannot be effectively promoted as expected. For universities, due to the long-standing research orientation of universities, they generally pay more attention to quantifiable indicators such as research rankings, the number of high level papers published and entrance examination scores, and pay more attention to teaching, especially practical courses, although the degree of attention has increased, but is still relatively insufficient. The lack of equipment for teaching practical courses makes it difficult for

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practical teaching to be carried out smoothly. Students are not fully aware of the importance of the practical courses. Students are the subject of the classroom, and only when they take the initiative and are motivated to learn can the teaching objectives be achieved and the effectiveness of the teaching be reflected. However, some students are prejudiced against the teaching of practical courses, believing that these courses are not as important as other professional courses, and they are unwilling to operate, unwilling to do, and adopt a perfunctory attitude towards the teaching of practical courses.

(2) Ineffective cooperation of teaching guarantee mechanism of practical courses. From the financial guarantee mechanism, some colleges and universities do not implement special funds for teaching practical courses and lack a financial management system. Practical course teaching is different from traditional theoretical course teaching, students need to buy devices and make them with their hands, and the process is bound to incur certain expenses. If there is no funding to match the educational function of the course, it will be very difficult to teach practical courses. Many universities also have special funds allocated for the teaching of practical courses according to the total number of students and the amount of per-student funding, but in practice, the funds are not earmarked for this purpose, so the lack of funds has become a major problem in the teaching of practical courses.

(3) The evaluation method of practical teaching is traditional and single. The assessment of teachers' teaching effectiveness in practice courses and the assessment of students' learning effectiveness are two aspects of the assessment and evaluation of practice course teaching, which complement each other and corroborate each other, and are important components of the education evaluation reform in the new era. The assessment of the teaching effectiveness of the teaching activities carried out by teachers is inadequate in many universities, and there is a lack of corresponding evaluation of whether the teachers of practical courses actually instruct, participate in the organisation and the effectiveness of the teaching achieved. The assessment of the quality of students' completion of practical courses is similar to that of theoretical teaching in that teachers give final grades based on the reports submitted by students, and students' performance in the process is not evaluated accordingly. There are no clear and standardised marking criteria for each practical session, and there are no various assessment methods to strengthen the examination of students' participation in the practical sessions, so the teaching effect of the practical courses is not properly assessed and evaluated.

3. The importance of integrating the ideological and political elements of practical courses

Curriculum thinking politics, in essence, represents a new comprehensive education concept, a new view of the curriculum, so that the ideological and political education in colleges and universities unknowingly into all aspects

of college curriculum teaching, all aspects of the construction of the whole staff, the whole process and the whole curriculum education pattern form, the various types of courses and ideological and political theory course integration development, and then form a synergistic effect, this is should be the need for the reform of college practice course teaching, is This is the need to improve the quality of teachers, the need for students to establish the correct values, and the need to cultivate the comprehensive quality of students.

(1) The reform of practical course teaching needs curriculum thinking and government

Colleges and universities are the front line of national training of talents and an important position of ideological construction. Ideological and political education in colleges and universities must firmly establish the educational concept of "building moral character" and answer the fundamental question of "what kind of talents to cultivate, how to cultivate talents and for whom to cultivate talents". With the development of society and technology, the new engineering science puts forward the new concept of "facing the future, planning the future, leading the future, and continuously deepening the cultivation of innovative, comprehensive, whole-cycle and open engineering talents"[2-3], which also puts forward new requirements for the current practical course teaching. According to the new talent cultivation concept, the practical courses not only impart knowledge, but also cultivate students' values and the ability of independent and lifelong learning. Therefore, it is an important direction for the teaching reform of practical courses at this stage to introduce Civic Education in practical courses, to walk in the same direction as ideological and political theory courses, to form a synergy effect, and to integrate moral education into the teaching of knowledge [4].

(2) Enhancing teachers' quality requires curriculum thinking and politics

Han Yu of the Tang Dynasty mentioned in "The Teacher's Discourse" that "A teacher is one who preaches, teaches and solves problems." This means that the role of teachers is not only to impart knowledge, but also to teach students how to be good to others, how to deal with others, and how to cultivate their active learning qualities and develop a correct outlook on life, worldview and values. However, in the current university teaching, some teachers of university practical courses pay attention to professional courses and neglect moral education, lacking the moral awareness and ability to consciously teach and educate people, forming a teacher-student relationship where they often meet in the classroom but do not meet in class, teaching but not educating people, meeting but not communicating. Teachers, who have always been called the "engineers of the human soul", are duty-bound to take up the sacred responsibility of "teaching and educating". It can be said that a teacher who only teaches professional knowledge is not a qualified university teacher. It is also necessary to improve the functions of teachers and enhance their quality.

(3) Curriculum thinking is needed to help students establish correct values

The focus of curriculum thinking politics is on guiding students' values, promoting their ideological and political quality, and interspersing content that can lead students to establish a correct outlook on life, worldview and values into all university courses to promote their healthy physical and mental growth. Any professional course is rich in resources to be developed, and all of them contain elements of thought politics that enlighten wisdom, inspire patriotism, a sense of social justice, a sense of social responsibility, cultural confidence, a humanistic spirit, and a professional ethic of dedication and commitment. In other words, while teaching professional knowledge, we can fully explore the potential elements of the curriculum, develop its educational function, infect students and inspire their empathy, so as to shape and establish students' correct outlook on life, worldview and values in a subtle way, and become firm believers, exemplary practitioners and active disseminators of socialist core values. They will be firm believers, exemplary practitioners and active disseminators of socialist core values.

(4) Improving students' comprehensive quality ability requires curriculum thinking and politics

China is vigorously promoting quality education, and quality education is often closely related to ideological and political education, to some extent, ideological and political education can even determine the effect of quality education [5]. We need to break the traditional talent training model, high scores and low ability or low scores and high ability, talent without morality or morality without talent, can not meet the current social needs is a comprehensive talent with both moral and talent. The integration of the concept and method of course thinking and politics into the learning process of practical courses will help students to improve their comprehensive ability and quality, and cultivate qualified builders and successors of socialism who can adapt to the development of society with both virtue and talent.

4. The principle of integrating the thinking and politics of the curriculum into the teaching of practical courses

The thinking and politics element and the practical teaching belong to two different systems, each has its own intrinsic elements and structure, and plays a corresponding function and role. The integration of thinking and politics elements into practical course teaching is not a simple process of addition, but should be examined and analyzed as a whole, respect the laws of education and teaching and talent training, and follow the basic principles of integration, so that the integration of thinking and politics elements and the development of practical course teaching can harmoniously coexist and complement each other.

The first principle is that the integration of the thinking and political science elements should not dilute the main work, not dilute the profession. The "course thinking and politics" is not the same as the ideological and political theory class. The main purpose of teaching practical courses is to make up for the shortcomings of theoretical

courses through extensive practice, and to improve students' hands-on ability and ability to solve engineering problems. The introduction of the ideological and political elements into practical courses requires comprehensive consideration and overall design, and according to the actual needs of the practical course teaching system, different ideological and political elements should be effectively integrated into the different processes and links of practical course teaching to prevent weakening the overall effectiveness of the ideological and political elements. It is also necessary to make timely and dynamic adjustments according to the different requirements of the target content of the Civic and Political Science elements, combined with the needs, characteristics and cognition of students, as well as the actual needs of the practical course teaching, so as to implement the Civic and Political Science elements in detail and avoid random or misplaced integration.

The second principle is not to dilute the main position of students, and teachers should not "indoctrinate" in a one-way manner. High-quality classroom teaching cannot be achieved without the active participation of students. It is against the laws of education and cognition for teachers to 'fill the classroom' with 'filler teaching'. Teachers are the organisers and implementers of teaching, and they are in charge of the teaching process. While taking into account the needs of teaching in practical courses, they must follow the cognitive laws of students, the laws of thought formation and development, and the laws of education and teaching, and effectively stimulate the subjectivity and initiative of students in the cognitive identification of the Civic and Political Science elements. Students should take the initiative to understand the intention of the integration of Civic and Political Science elements, change "I want to learn" to "I want to learn", actively participate in the organisation and design of the teaching of Civic and Political Science elements into practical courses, take the initiative to educate themselves, and organically combine knowledge learning, value shaping and behavioural development. The students should actively engage in self-education and integrate knowledge learning, value shaping and behavioural development.

The third principle is "Thinking about politics in the curriculum" is never a "one-man show" for teachers, nor is it a "battle" for teachers of practical courses alone. Rather, it is a teacher-led, student-led process of teaching and learning. The laws of education reveal that student participation is directly proportional to the quality of classroom teaching. The "curriculum thinking and government" must form a synergy with ideological and political theory courses and counsellor management education, and go in the same direction, in order to achieve the goal of "three whole education".

The fourth principle is not to forget about educational research and the lack of educational evaluation of "course thinking politics". "Curriculum thinking and government" is a unique concept of nurturing people in Chinese higher education, and is an educational and teaching activity with a very distinctive nurturing value orientation. From the point of view of educational research, the educational effectiveness of the programme, such as students' satisfaction with their studies, their sense of acquisition,

their mastery of professional knowledge and whether their "four self-confidences" have been enhanced, and whether they have a strong desire to become talents who are both red and professional, are all indicators of the success of the programme. All these indicators should be included in the evaluation system of "Curriculum Civics", and quantitative and qualitative methods should be used to evaluate the effectiveness of "Curriculum Civics". At present, there is little evidence of educational evaluation of the practice of "curriculum thinking and politics" carried out by universities.

The fifth principle is not to dilute the professions, and to treat "curriculum thinking and politics" as a hodgepodge. Our practical courses are open to all majors in the university, and in science and technology, for example, "thinking about politics in the curriculum" is not the same as implanting the spirit of science, engineering/medical ethics, humanism, rule of law and ecological civilization in the education and teaching of professional courses. All these elements can be practised in the education and teaching of a professional teacher. The political orientation of "Curriculum Civics" is very clear, and politics is the soul of "Curriculum Civics", and the "Four Confidences" should be organically integrated into the education of professional courses.

5. The excavation and integration of thinking and political elements way

Take "Electronic Engineering Training 1" practical course as an example, the course is mainly divided into two stages, the first stage is mainly for PCB board design and production, the second stage is small electronic products manual soldering and debugging. The teaching of the course is mainly hands-on for students, supplemented by classroom lectures by teachers and self-learning by students on the online platform. The aim of the course is to develop students' sense of innovation through extensive hands-on training, to involve them in the whole production process, to understand the various factors that affect the production process, and to master the technical processes of the relevant product processes and the factors that affect the cost of plate making. The introduction of ideological and political elements is not simply adding ideological and political education to the curriculum, but should be subtle in the process of imparting knowledge and inspiring students to pursue truth, goodness and beauty.

(1) Start with the teaching design, strengthen the overall design, and integrate the elements of ideology and politics throughout. The practical course is about rigor and perseverance, so it is necessary to strengthen the overall design of the practical course in teaching, so that the ideological and political elements are always present. First of all, in the construction of the teaching materials system, the ideological and political elements should be used as a general guide. Practical skills should be integrated into the ideological and political elements, highlighting the educational nature of the content, to achieve a greater ideological and political effect of the course teaching. Secondly, in the determination of

teaching objectives, the ideological and political elements should be the core. Practical courses should be more to allow students to understand, master the latest knowledge, technology, equipment, and therefore in the teaching objectives should guide students to establish a correct world view, outlook on life, values, existing knowledge and technology is a professional requirement, work requirements, students should also be pioneering spirit, reform and innovation consciousness, to promote the further development of technology, dedicate their youth to the country, to achieve the value of life. Again, in the way of teaching evaluation, the ideological element is used as a yardstick. To achieve reform in the way of teaching evaluation is an important link to promote the Civic and Political Science course to course Civic and Political Science, the evaluation method has changed, it will force the reform and innovation of classroom teaching, course Civic and Political Science requires all courses to take nurturing and teaching at the same time as the goal of classroom teaching, in education and teaching to do and behave organically combined, to cultivate moral and professional talents. Therefore, in the course teaching evaluation of the practical courses, it is appropriate to use the Civic Science elements such as conscientiousness, rigour, solidarity and collaboration as the yardstick to make appropriate evaluation of students' knowledge skills and professionalism and promote their comprehensive development.

(2) Professionalism and ethical requirements are introduced in the curriculum. Professionalism and ethics should be mentioned from time to time in the curriculum. For example: to have a sense of responsibility and professional ethics; to have a sense of teamwork and solidarity; to have a spirit of hard work and perseverance and a serious and rigorous working attitude; to have the ability to innovate and learn continuously and to be proficient in business; to strictly implement the technical specifications of surveying work, every data obtained must be actually measured and correctly calculated, and must not be falsified; survey information and results involving confidential information must be Strictly confidential measurement information and results must be kept confidential and must not be divulged; external work should be proficient in the use of various surveying and mapping instruments; internal work should be proficient in the use of various common software and equipment, etc. The course also combines real-life cases to discuss among students and deepen their understanding of the serious impact of falsification and plagiarism on the life of a person.

For example, in sessions such as PCB design and production, students are allowed to independently complete the circuit design of the product, cultivate their sense of innovation, involve them in the whole process of production and production, and gain a clear understanding of the various factors affecting the production process of the product, design a system or unit to meet specific needs under realistic constraints, and be able to evaluate the rationality of the design solution. In such areas as soldering and debugging of electronic products, students will have a clear understanding of commonly used electronic components and the production process of

electronic products, be able to acquire knowledge of electronic processes and skills in the assembly of electronic products, understand the multidisciplinary technical background and characteristics of electrical engineering problems, have basic professional knowledge of relevant disciplines, be able to assume the role of individual, team member and leader in a team in a multidisciplinary context, and have teamwork A professional foundation for effective communication and cooperation with other disciplines.

(3) The introduction of Civic and Political elements in the teaching process of the course.

In the teaching content to introduce elements of thinking and politics, such as: small electronic products manual welding and debugging link, so that students in the design and assembly of electronic products, while experiencing technological development, social progress, establish the belief that science and technology is the first productive force. 9 August 2019, Huawei officially released the Hongmeng system, the media or individuals can be described as "happy "The Hongmeng system is a full-scope, all-scene system. Hongmeng System is a full-scene distributed OS that can be scaled on-demand to achieve broader system security, mainly for the Internet of Things, and features low latency. Hongmeng system from birth to development marks the beginning of China's self-research operating system popularity and application, it gradually change the operating system global pattern, perfect to get rid of the European and American countries on our country's technology blockade, effective to prevent the emergence of "neck" situation, etc. are of great strategic significance. Knowing shame is better than being brave, and the nation should be self-improvement. The promotion and popularisation of the Hong Meng operating system is of epoch-making significance to China's telecommunications industry and will break the status quo of China's information industry, which is "lacking in core and soul" in one stroke. The launch of Huawei's Hongmeng operating system has freed us from dependence on foreign operability, so that even if foreign sanctions escalate and impose a complete technological blockade on China, we can use our self-developed Hongmeng system. In addition, the Hongmeng system is breaking the monopoly of Android for mobile phones, and is expected to form a tripod with Android and IOS in the future, which can become a "life-saver" for domestic mobile phone manufacturers at critical times. Here we introduce the Huawei Hongmeng scientific research spirit, so that students can overcome the difficulties in their studies, strive to climb the peak of science, study hard and contribute to a strong country in science and technology. As a well-known national enterprise, Huawei is constantly innovating and gradually growing into a world-class brand. "Iron needs to be hardened", and thick accumulation leads to thin development. This is true for the development of enterprises, as well as for one's current studies and future development; the fate of enterprises and the fate of the nation are closely linked, establishing a correct patriotic concept and inspiring students to contribute to the development of the country.

Unlike the learning of theoretical courses, practical courses are subject to a high degree of uncertainty when

learning and implementing operations. Whether experiments can be carried out successfully is greatly influenced by objective and subjective factors such as experimental procedures, environmental conditions and experimental materials, and many difficulties are bound to be encountered in the actual operation process, or worse, may result in the experiment not being able to continue. However, the more difficulties you encounter, the more you will gain, and overcoming problems in the process of operation is a necessary part of learning in a practical course. From ancient times to the present day, those who have achieved great things have had to go through trials and tribulations. To gain more knowledge, one needs perseverance, the courage to overcome difficulties and perseverance. "This is the encouragement and expectation of General Secretary Xi Jinping for students in universities. Don't give up when facing various difficulties in practical operations, actively look for solutions to problems, cultivate your courage to overcome difficulties, as well as the spirit of not giving up lightly. In the PCB design and fabrication session, students will be able to experience the scientific spirit of not fearing difficulties and being brave enough to explore in the practical training. The example of Haier's constant attention to changes in the external environment and consumer needs to innovate and position itself as the "leader in the Internet of Things". Students are guided to understand the importance of "planning for the trend, responding to the trend and acting in accordance with the trend" for enterprises, so that they can always pay attention to the development and strategic adjustments of the country, build up pride in the Chinese brand and confidence in China's intellectual manufacturing, keep pace with the times, pioneer and innovate, and closely link their personal growth and development with the development of the motherland.

(4) Expanding teaching carriers and putting the elements of thinking and politics into practice. By expanding the teaching carrier and integrating the Civic and Political Science elements into it, not only can the teaching effect be effectively enhanced, but it is also conducive to putting the Civic and Political Science elements into practice. In the actual teaching process, a variety of teaching methods can be integrated and coherent, such as flipped classroom teaching, and combined with Wisdom Tree and Rain Classroom to provide students with more space for independent learning, and also provide a wider range of ways for teachers to implement the ideology of the curriculum. In addition to guiding students' professional knowledge and experimental skills in all aspects of practical operation, teachers should also take teamwork, programme optimisation, data analysis and other various competencies cultivation and scientific research spirit as the ideological education points throughout the experimental teaching, so as to cultivate talents who meet the requirements of the new era and the new engineering disciplines. No matter what teaching mode and teaching method, we need to fully mobilise students' enthusiasm and initiative in order to effectively complete the teaching tasks of the course and Civics, achieve the objectives of the course implementation and realize the transformation from "teaching" to "education".

For example, in this course, we can use the flipped classroom to exercise the overall quality of students. The flipped classroom format emphasises student initiative, from being 'taught' in the classroom to actively learning knowledge, which not only deepens the understanding of professional knowledge, but also develops the overall quality of students. The flipped classroom is a great way to develop your overall skills. In the process of searching for information, students gain a better understanding of the textbook and learn about research developments in the field, broadening their horizons. They can also be divided into small groups to complete the topic tasks, with each group's presentation divided into two sessions: a topic presentation and questions from teachers and students. In the topic presentation session, students are required to collect information in as much detail and comprehensively as possible, which exercises their ability to consult and collate information and distil the essence from a large amount of information. In the teacher-student questioning session, students are required to understand the content of the presentation thoroughly and express it clearly, which improves students' thinking skills to a certain extent.

6. Conclusion

This article has discussed the positive significance and principles of integrating the elements of thinking and politics into the teaching of practical courses, and has taken "Electronic Engineering Training 1" as the starting point to discuss the ways of integrating the elements of thinking and politics into the teaching of practical courses. The purpose of carrying out course thinking and politics is to cultivate socialist builders and successors with family sentiment and responsibility, who meet the current needs of social development and are morally and intellectually competent, so they should be positively guided and inspired, which is also the direction of course thinking and politics efforts.

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