

Practice of Ideological and Political Education in Electrical Engineering Courses

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Abstract: Electrical practical training is an important practical course of majors of electric automation, electromechanical integration and applied electronics. The paper works out the ideological and political elements, and makes clear the moral connotation in the course. With the course assessment as the research focus, it is recommended to integrate ideological and political elements into the formative and summative assessment. Exploring the paths to combine the basic practical training with ideological and political education, the paper aims at cultivating students' craftsmanship of pursuing perfection and better quality and further enhancing students' professional accomplishment.

Keywords: Electrical practical training, Ideological and political elements, Integration path, Course assessment.

1. Introduction

At the National Conference on Ideological and Political Work in Colleges and Universities held in December 2016, General Secretary Xi Jinping stressed that we should adhere to the principle of "cultivating people by virtue" as the central link, run ideological and political work through the whole process of education and teaching, realize the whole process of education and all-round education, and strive to create a new situation for the development of higher education in China. Many colleges and universities have been actively exploring the construction of the "ideological and political education teaching system of the trinity of Ideological and political theory courses, comprehensive literacy courses and professional courses". Its core lies in tapping the ideological and political education resources of different disciplines, establishing an organic and unified curriculum system, forming a comprehensive and effective ideological and political education curriculum system, and realizing "knowledge imparting". Combining with Value Leadership, the curriculum objective [2]. That is to say, any curriculum should take moral education as the first priority, and any curriculum should shoulder the responsibility of educating people.

We should give full play to the moral education function of the curriculum, make all kinds of courses and ideological and political theory courses go in the same direction, and form a synergistic effect. This paper takes the course of "Electrical Engineering Practice Training" as an example to sort out the ideological and political elements in the course, condense the connotation of moral education, and explore the way to integrate it into practical teaching.

2. Characteristics of Electrical Engineering Training Course

"Electrical Engineering Practice" is a professional basic course of electronic information science and technology (four-year higher vocational education), applied electronic technology, electrical automation technology and other specialties. It is a highly practical and applied course. With the teaching concept of "students learn by doing, teachers teach by doing", the project-based teaching method is carried out

by adopting the teaching mode of "teaching, learning and doing as a whole", so as to cultivate students' practical ability, skill operation norms and professional accomplishment. On the premise of safe electricity use, students should master the knowledge and skills of selecting common electrical materials, using electrical tools and instruments correctly, analyzing and mastering the composition principle and maintenance of common low voltage electrical appliances, lighting circuit installation and debugging, motor control circuit installation and debugging, so as to enable them to have the level of elementary maintenance electricians, and cultivate students to use the knowledge they have learned. Ability to observe and analyze practical problems and innovative spirit of being brave in exploration and initiative.

3. Ideological and Political Elements of Electrical Engineering Training Course

Electrical practical training is a practical course. In the process of training, students' professional qualities can be better reflected by their behavior habits, such as the neatness of tools and instruments, the maintenance of environmental hygiene at work stations, and the wearing of work clothes. With the goal of improving students' professional quality, the ideological and political elements in the electrician training course are embodied in the spirit of craftsmen, the awareness of green environmental protection and the concept of safe electricity use.

3.1. The Spirit of Big Country Craftsmen in the Electrician Training Course

Craftsman spirit refers to the spiritual concept of craftsmen carving their products carefully and striving for excellence. The goal of craftsmanship is to create the best quality products in this industry, which can not be matched by other peers. Generally speaking, the spirit of craftsmen is the spirit of pursuing excellence in creativity, excellence in quality and customer-oriented service. Craftsmanship requires not only high skills and exquisite skills, but also a rigorous, meticulous, dedicated and responsible working attitude, as well as a sense of professional identity, responsibility, honor

and mission [3]. It is mainly manifested in five aspects: dedication, rigorous style, excellence, professionalism, trustworthiness and innovation. Made in China urgently needs the spirit of craftsmen. Why can't China produce the same products with the same raw materials, the same production line and management system? The action plan of "Made in China 2025" issued by the state clearly states that through years of efforts, China will move from a big manufacturing country to a powerful manufacturing country, which requires our vocational colleges to cultivate a large number of highly skilled talents with craftsmanship spirit. Electrical practical training course is a practical operation course. The instructor can reasonably guide students to pursue the craftsmanship spirit of meticulous carving, excellence and Transcendence in the course of training. For example, when connecting electrical lines, students are required to be horizontal and vertical in technology, not to cross wires, not to expose copper at the junction of wires and components, and not to damage the insulating layer. Fan. By refining the craftsmanship spirit in the electrician training course, and in the course of implementation, let students experience and feel the essence of the craftsmanship spirit by themselves.

3.2. Green Environmental Consciousness in Electrical Engineering Training Course

General Secretary Xi Jinping clearly pointed out in the report of the Nineteenth National Congress of the Communist Party of China that "we must adhere to the principle of giving priority to conservation, protection and natural restoration, and form a spatial pattern of saving resources and protecting the environment, industrial structure, mode of production, way of life, and natural tranquility, harmony and beauty" [6]. This is the basic path and key task of building a beautiful China. Every training project in electrical engineering will consume some electrical consumables, such as wires, straps, screws, etc. In order to make full use of the old wires and screws to reduce the loss of electrical consumables in the process of training, and to make the electrical consumables recycled under the condition of ensuring safety, students' awareness of saving and environmental protection can be cultivated.

3.3. The Concept of Safe Electricity Use in Electrical Engineering Training Course

In the electrician training course, 220 V AC power supply is used in the lighting circuit installation and debugging project, 380 V AC power is used in the motor control circuit installation and debugging project, incorrect circuit installation may lead to short-circuit fault and leakage accident, which may lead to device damage and even personal safety accident. Therefore, in the course of class, students are required to abide by the rules of wearing insulating shoes and safety hats; before the power test, students are required to check whether there is short circuit or leakage in the circuit by using multimeter; and during the function test, students are required to standardize the operation sequence of switches, so that students always pay attention to the safety of electricity use and cultivate the concept of safe electricity use.

4. Practice of Integrating Ideological and Political Elements into Electrician Practice Teaching

4.1. Improving the Curriculum Standard and Integrating the Ideological and Political Elements into the Curriculum Standard

The curriculum standard (syllabus) stipulates the nature, objectives, contents and Implementation Suggestions of a course. It is a guiding document, the main basis for teachers to implement curriculum teaching, and an important criterion for examining and evaluating students' academic performance. Based on the characteristics of the electrician training course and the condensed ideological and political elements, the curriculum standard was revised, and the contents of electric shock first aid, electric fire prevention and treatment were added. The teaching objectives of teamwork and cost saving were clearly put forward. According to the new curriculum standards, teachers allocate the teaching hours reasonably to ensure the effective implementation of the ideological and political elements of the teaching content, so as to enhance students' awareness of safe electricity use, environmental protection and social responsibility.

4.2. Revise the curriculum evaluation system and incorporate the contents of vocational literacy into the curriculum assessment

As the baton of students' curriculum learning, only by incorporating the contents of vocational literacy into the curriculum assessment can students attach importance to basic norms and professional literacy. The evaluation of electrical engineering practical training curriculum refers to the scoring standards of automatic production line installation and debugging competition in national vocational college skill contest, installation and debugging competition of modern electrical control system, and can promote vocational literacy and life. Production safety is included in the process evaluation of the curriculum, and the scoring criteria of each training project are adjusted. The original evaluation criteria that emphasized function and neglected literacy were adjusted to focus on both project technology, professional literacy and technical functions, and on literacy. In the adjusted project scoring criteria, 70% of the project process scores and professional accomplishment scores and only 30% of the project function scores really put the ideological and political elements into professional courses.

4.2.1. Assessment of Professional Literacy and Safety Awareness

Professional literacy and safety awareness focus on the standardization of students in the actual operation process. For example, in the process of instrument measurement before power-on, the selection of instruments, the determination of measuring range, the operation sequence of power-on and power-off, the environmental hygiene maintenance of workstations in the process of training of each project, the use of consumables and so on.

4.2.2. Assessment of process specifications

In the installation and debugging of household lighting circuit and the control circuit of three-phase asynchronous motor, the teaching units focus on examining the quality of students' circuit connection technology. Through the process scoring, students can understand the spirit of

craftsmen who strive for excellence and elaborate craftsmanship. Each project formulates a scoring table for circuit installation wiring, scoring the process of each wire, and finally collecting the deduction points. Through the scoring table, each student in the group can evaluate each other according to the scoring criteria, so that classmates can participate in the evaluation, on the other hand, it can also reduce the evaluation workload of teachers [2].

4.3. Improving the Ideological and Political Consciousness of Teachers

As the leader of classroom teaching, teachers' moral and ideological and political awareness has been strengthened, so that the connotation of moral education and ideological and political education can be truly included in classroom teaching.

"Virtue is a teacher and integrity is a model". Teachers in Colleges and universities have received good teaching of science and culture. Education and ideological and moral education have higher cultural quality and better moral quality. Most teachers have good study habits, diligent learning attitude and Serious attitude, if teachers can make use of a few minutes in class, to show students. Show your college transcript, tell me about your hard working experience and your school. Examples of excellent students from past and current students are influenced by storytelling. Students and inspiring students can effectively communicate the feelings between teachers and students and make students happy. Accept education in fast emotional experience to receive the effect of "kissing their teachers and believing in their ways".

4.3.1. Improving the Ideological and Political Understanding of Electrician Practical Training Teachers

Electrical engineering training is the earliest practical course that applied electronics technology, electrical automation technology, mechatronics and other specialties come into contact with. The vocational quality and skill standard of students in electrical engineering training course play a very good foreshadowing role in the next three years' study. Therefore, curriculum groups, secondary colleges and schools should actively carry out a variety of ways of discussion, encourage teachers to actively participate in the ideological and political training of the curriculum, strengthen their understanding of the ideological and political curriculum, and enhance the practical training of electricians.

Teachers' ideological and political literacy can deepen their understanding of curriculum education and facilitate teachers to carry out ideological and political education in accordance with students' actual aptitude in the course of class.

4.3.2. Improving the Recognition of the Importance of the Course Ideological and Political Evaluation of the Electrician Practical Training Teachers

Although curriculum ideological and political education pays attention to recessive and intrinsic consciousness and the cultivation of students' professional accomplishment, it should also be aware of the importance of curriculum ideological and political evaluation to the cultivation of professional accomplishment. The author believes that the evaluation of Ideological and political education in curriculum has two main functions: first, to improve the design of evaluation of Ideological and political education in

curriculum. The comprehensive evaluation of students' performance in electrician practice teaching can trigger teachers' reflection on whether the implementation point of Ideological and political education is appropriate, whether the scores of each deduction point are appropriate, and whether the combination degree with professional accomplishment is appropriate. This reflection plays an important role in summarizing and optimizing the ideological and political elements of the curriculum and its integration into the teaching path. Second, we should improve the ideological and political education in the curriculum. In the process of curriculum ideological and political implementation, whether it is a process evaluation or a summative evaluation, its main purpose is to reflect on teaching from the aspects of mobilization of students' learning initiative, teachers' teaching methods and students' learning effectiveness. Teachers should make full use of information-based teaching methods and adopt teaching methods such as demonstration of training results. At the end of each training project, the instructor asks each student to take pictures of his or her completed works and file them on his or her mobile phone. At the end of the electrician training in each class, the instructor edits the pictures of each student's training results and uses color printers to edit the documents and graphs. The film is printed and displayed on the propaganda board of the college or the training room. Students can write their own training comments under the works displayed. Through the demonstration of the training results, the students have a sense of achievement, honor and pressure. At the same time, it also plays a very good guiding role for the next batch of students.

5. Teachers Should Carry Out Teaching Design and Reform to Promote the Development of Students' Intelligence and Ability.

As a teacher, first of all, he constantly learns advanced educational concepts, learns the teaching methods and the current situation of teaching reform in famous schools at home and abroad, and infiltrates his thinking of doing scientific research into teaching work.

5.1. Constructing network course, introducing "TSEP" teaching mode and implementing mixed teaching and evaluation mode

With the development and popularization of multimedia technology and mobile terminal technology, a lot of teaching materials can be put on the network teaching platform. Students can learn a single chapter according to their own needs. They can also communicate directly with teachers through Super Star Learning App on mobile phones, reflecting their learning situation and problems in time, and get the fastest reaction from teachers. Feed. In the teaching of electrical and electronic technology course, we can use the network course platform to introduce the "TSEP" teaching method of "test, summary, example, practise" (the original classroom teaching mode of excellent mathematics). Under the premise that students' attention is only 6 minutes, we can use the superstar on the mobile phone to study through APP to issue test questions, practice in class, and test results according to students' practice. Result: Summarize the

existing problems, introduce the relevant principles and methods to solve the problem, give specific examples to explain, and then use the superstar learning app on mobile phones to issue questions for testing, in-class testing of students' learning effect. This can attract students' attention as much as possible and achieve the best classroom learning effect. In order to encourage and cultivate students' self-study ability, a hybrid teaching method combining classroom teaching and online courses is adopted. Each chapter of the course will designate individual self-study content and homework. Students will complete these contents according to their own situation and different ways. In the course assessment, the following methods can be used to assess the performance of the course: network platform access accounts for 10% of the total score, video learning accounts for 20% of the total score, quizzes distributed and ended in class, homework accounts for 40% of the total score, mobile app attendance call accounts for 10% of the total score (online), final exam in class test scores account for 10% of the total score (online), classroom. The performance (offline) of students who come to the stage to explain a knowledge point or example accounts for 10% of the total score. Examinations usually account for 30% of the results in the ordinary time and 70% in the closed-book examination. Therefore, in the ordinary time, this section can be set up as follows: network platform visits.

Questions accounted for 10% of the average score, video learning accounted for 40% of the average score, quizzes distributed and completed in class, homework accounted for 40% of the average score, mobile phone learning through APP attendance call accounted for 10% of the average score (online).

5.2. Combining the Teaching Content of Electrical and Electronic Technology Course to Develop "Course Ideology and Politics"

As a teacher of general electrician and electronics technology course, we naturally interpose some principles about life from the teaching process of this course, so that students can feel the same and arouse resonance. From Kirchhoff's current law and voltage law, telling students that things in their lives are the same as the basic laws in the circuit. Without rules and square circles, they should abide by certain laws and regulations and a series of rules within a certain framework, so that they can work and live in a normal and orderly way in society. From the applicability of the law of route change, students can be guided to know that any rule needs preconditions, and only on the basis of satisfying certain preconditions can a certain rule come into being. On the premise of not interfering with the freedom of others, respecting the rights of others according to law and obeying the needs of morality and public order, talents can enjoy the right to freedom. With the improvement of power factor, students can be guided to know that when they encounter problems in production practice, they should not only analyze how to solve the problems theoretically, but also consider the economic cost comprehensively from the perspective of national economy and people's livelihood. From the superposition theorem, we can see that under the premise of conforming to the linear circuit, a complex circuit with multiple power sources can be divided into several power sources acting alone.

The road is processed separately and then the calculation results are superimposed. This theorem is widely used in knowledge deduction, life and learning of many disciplines. For example, when explaining the deduction of the three-element method of the first-order circuit in DC circuit, the superposition theorem is used to understand the deduction of the calculation formula of the total response. In life, there are examples such as the accumulation of sand into a tower and the accumulation of armpits into a fur. In learning, the accumulation of a little knowledge will be superimposed. Quantitative change leads to qualitative change. There are similar paths of change in our knowledge, wealth and health accumulation in life. From the point of view that different types of basic amplifier circuits have different characteristics, common emitter basic amplifier circuit has larger absolute magnification, but smaller input resistance and common collector basic amplifier circuit (emitter output), whose magnification is less than or equal to 1, but its input resistance is larger and output resistance is smaller. From here, we can see that there are also some principles in professional knowledge. It is said that:

God is fair, it gives you beauty, may not give you wisdom, give you wisdom, may not give you a sound body, give you a healthy body, may not give you beauty. A person will always have some advantages, but there are also some shortcomings. In life, we should pay attention to be good at developing strengths and avoiding weaknesses, and play its due role. In the process of teaching, teachers should always warn students that learning should be based on some knowledge they have already mastered. If they do not understand the basic theoretical knowledge and formulas, they can not remember them and solve problems by using methods at all. In the process of learning, only when students internalize their own learning from the inside, can they help them improve from the pure knowledge level to the wisdom level.

5.3. Questionnaires on classroom quality are distributed in class to promptly reflect on teaching.

The effectiveness of the construction of "curriculum ideological and political education" lies in students. The fundamental purpose of all educational and teaching activities in schools is to cultivate higher quality talents. Therefore, students' sense of acquisition must be taken as the test standard. Teachers can use Superstar Learning App on the mobile phone to send questionnaires on classroom quality to students and expert group teachers attending classes. They can find and solve problems in time, so that students and teachers can get timely feedback. On the one hand, to issue questionnaires on classroom teaching quality is to teach teachers.

The affirmation of the effect, on the other hand, is to promote teachers to reflect on the problems in teaching. To be a university teacher, we have all been tested by higher education. Our outlook on life, world outlook and values are more positive. Every teacher is more conscientious and responsible. Teachers' seriousness to a course depends entirely on teachers' personal accomplishment and students' desire for knowledge. Positive encouragement is better than total negation. Whether it is for teachers or students, we should be guided by a positive purpose and try to encourage guidance rather than total negation and suppression. We should affirm its achievements and outstanding performances, and point out its shortcomings

calmly. Teachers should be open-minded to the comments of students and expert groups. Price and adjustment of mentality should not give up the enthusiasm for teaching completely because of one criticism, nor should we lie on the merit book for one praise and eat the old books. There is no end to learning, and so is teaching. In the age of information technology, teachers should not forget their first intention, keep pace with the times and strive to be qualified people's teachers.

In order to realize the whole process and all-round education, every teacher should make good use of the position of classroom. In the course of teaching, combining the characteristics of curriculum and specialty, condense the ideological and political elements of curriculum, combine professional knowledge, professional accomplishment, engineering application with the requirements of the times, and design and embody the characteristics of Ideological and political education by improving teaching content, teaching methods and teaching means. Course evaluation criteria, and in the teaching practice of continuous bold reform and innovation, the real integration of Ideological and political elements into the teaching of professional courses, so as to cultivate ideological and political concepts correct, advanced concepts, skilled professionals.

ideological and political elements fully reflects the educational function of each course and every teacher.

The responsibility of educating people and improving the ability and consciousness of moral education of all teachers will help to change the current situation that professional teachers only teach infertile morality and ideological and political education teachers fight alone.

To construct the whole curriculum personality education bureau. Student-centered Electrical and Electronic Technology Course

In the construction of "Cheng Sizheng", teachers must make clear their sense of responsibility and mission, firmly establish the concept of student-centered, highly responsible

to students, all for students and for all of them, constantly improve their ideological and moral quality, enrich their knowledge structure, so that they can not only impart theoretical knowledge to students, but also cultivate their learning. Students' practical ability should also be understood and respected. Through various educational and teaching links and teaching processes, students should be guided to establish correct outlook on life, world outlook, values and norms of life, to guide students how to behave, do things and learn, and to train talents who are "red and professional, have both moral and talent, and develop in an all-round way", so as to learn. The construction of the school has contributed a lot to the strong contribution of the Chinese celebrities.

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