

# Research on the Integration of Curriculum Ideology and Politics into Electronic Practical Teaching Based on OBE

Xiaolan Lu, Yupeng Xie, Delong Cui\*

*School of Electronic Information Engineering, Guangdong University of Petrochemical Technology, Maoming, Guangdong 525000, China*

*delongcui@163.com*

*\*Corresponding author*

**Abstract:** *Practical teaching is an important means to cultivate application-oriented talents and an important link to conduct the curriculum ideological and political construction in colleges and universities. Especially in a modern society with advanced technology and information and a fast-paced life, higher education must not only improve students' professional skills, but also improve their comprehensive literacy. Based on the educational concept of OBE, this paper starts from the top-level design and the source, combines professional skills education, integrates ideological and political elements into the practical teaching process, and integrates ideological and political education into the whole university education. Through the intangible ideological and political education to achieve tangible overall quality improvement, especially in the political awareness and moral levels, it can lay a solid ideological and political basis for students to enter the society in the future.*

**Keywords:** *Curriculum ideology and politics, Practical teaching, OBE*

## 1. Introduction

In the 1980s, American scholar William Spady first proposed Outcome Based Education (OBE), which is an education model based on learning output. Since 1994, OBE educational concept has been formally implemented in American educational circles. Educational systems in many countries have conducted and experimented with the OBE concept in different aspects and at different levels, which emphasized that educational evaluation is based on learning output, focused on if the training goals and graduation requirements for students are clear, and if the set goals and requirements are achieved. In 2016, China has become a preliminary member of the "Washington Agreement", and OBE has become the focus of China's engineering educational certification, which would improve the quality of engineering education, promote international mutual recognition and enhance competitiveness. In the same year, General Secretary Xi Jinping stressed at the National Conference on Ideological and Political Work in Colleges and Universities that ideological and political work should run through the whole process of education and teaching and create a new situation for the development of China's higher education. In 2019, Guangdong Department of Education issued the "Opinions of the Guangdong Department of Education on Strengthening the First-class Curriculum of Curriculum Ideological and Political Construction". This set the overall requirements for Guangdong ideological and political construction and formulated relevant steps and safeguard measures. In the new era of integrating with internationalization, higher education must shoulder the responsibility of training professional and technical talents not only to adapt to the economic and social development, but also with international vision and profound national feelings in the new era. The improvement of students' sense of social responsibility, political consciousness, moral level, cultural literacy, professional ethics are invisibly integrated into daily teaching through professional courses. "Silence speaks louder than noise." Details make a difference. In this way, the improvement of the overall quality of students will play an unexpected effect, which will truly achieve the whole-process education, all-round education and all-staff education.

## **2. The Ideological and Political Top-level Design of Practical Teaching Based on OBE Mode**

OBE emphasizes "output", that is to design reasonable teaching modes, teaching content and teaching methods through reverse design under the condition of clear goals. As a second-class undergraduate university, our school aims to cultivate application-oriented talents. The goal for electronic majors to cultivate front-line senior technical engineers with certain innovative ability, application ability and hands-on ability is very clear. According to the educational concept of OBE, practical teaching has become an important teaching link and a necessary approach for engineering majors in our school. Especially for the majors with high application requirements, like electronics, the teaching hours of practical teaching is even higher than that of theoretical teaching. Guided by the industrial needs, our school not only designs the practical curriculum system from the top level, but also integrates the ideological and political education into the top-level design of the practical teaching system and the whole process of practical teaching. Only by organically combining engineering education and ideological and political education under the concept of OBE can we truly cultivate engineering and technical talents of the new era with international competitiveness who are equipped with international vision, noble ideology and morality, profound national feelings and social responsibility.

## **3. The Design of the Curriculum Ideological and Political Program in Practical Teaching**

Scientific, strict and targeted implementation program and system are the premise to guarantee the curriculum ideology and politics of practical teaching. According to students' levels, learning attitudes, overall comprehensive qualities, as well as the current school requirements of OBE concept, student development is treated as the center and the electronic practical curriculum is progressive into five levels of curriculum experiment, curriculum design, comprehensive experiment, practice and project innovation. All of them adopt the "progressive" teaching mode, which starts from shallow to deep, proceeds step by step and deepens layer by layer. Similarly, based on the "progressive" practical teaching system, its ideological and political education is also a deepening process. From personal cultivation to national feelings, from noble ideology and morality to strict scientific research attitude, the establishment of the correct outlook on life and values also adopts the progressive form. During practical teaching, through the invisible ideological and political education, the comprehensive quality of students is finally reflected, and the "seamless connection" between the two aspects.

## **4. Specific Strategies to Implement "Curriculum Ideology and Politics" in Practical Teaching**

### ***4.1. Combining the Characteristics of Practical Teaching and Exploring the Curriculum Ideological and Political Elements***

The university laboratory is just like a small talent training processing plant, including various system training, professional skills training, collaboration training, harmonious human relations training, etc. Based on OBE, with students as the center and combined with the requirements for engineering graduates, practical teaching should start from levels of professional skills and knowledge, practical application ability and ideological and political literacy. Thus, as a part of students' four-year study and life, the laboratory should fully explore its ideological and political educational elements.

From the first year of cognition practice, students start to enter and understand the laboratory. At this time, students must accept laboratory safety education, study laboratory safety rules and equipment usage norms and other regulations. The ideas of laboratory safety first, discipline and harmonious laboratory culture should be integrated into students' daily life. It is necessary to extend from laboratory safety to the reverence for life, from following laboratory disciplines to abiding by laws, from creating a harmonious laboratory culture to building a harmonious society. Starting from small things, we should strengthen the overall awareness and public service awareness.

All the experiments of telecommunication courses involve hardware, which basically includes related introduction of hardware, integrated circuits and chips. This link not only enables students to understand the hardware chips involved, but also enables them to understand the rapid development of China's electronic industry, integrated circuits and chip industry. We should let them know that mechatronics, one of the four pillar industries of China, plays a decisive role in our future development and world economic status, especially in our political status in the world. In this way, students can deepen their sense of honor and self-confidence in learning professional skills, and stimulate their

motivation and enthusiasm for learning practical courses. Meanwhile, students should also understand our deficiencies in the field of integrated circuits and chips, like "ZTE incident". Thus, students should be guided to have a sense for unexpectedness, realize the importance of scientific and technological power, enhance the sense of learning mission and responsibility, cultivate the sense of social responsibility and national honor.

Comprehensive experiments, curriculum design, comprehensive ability training, and project innovative and entrepreneurial internships are all based on results. These links take teams as units, adopt team leader responsibility system and conduct "project-based" practical teaching. The purpose is to cultivate students' organizational skills, teamwork skills and team communication skills. Besides, through the classic cases of innovation and entrepreneurship of some previous teams in practice, it can stimulate innovative and entrepreneurial enthusiasm.

Meanwhile, in the concrete practical teaching, based on the OBE concept, the "student-centered, problem-oriented" guidance teaching is adopted. The whole experiment follows the principle of "student-oriented, independent completion", and teachers only act as assistants. In the case that problems cannot be solved, teachers only give the direction and guidance and students explore solutions by themselves to cultivate their ability to think, study and solve problems independently. Especially through the students' independent thinking, research, and ultimately solutions, it can cultivate their serious attitudes and rigorous styles in the future work.

#### ***4.2. Reforming the Assessment of Practical Teaching, and Promoting Ideological and Political Education through Assessment***

According to the flexible characteristics of practical teaching, a diversified assessment mode is adopted. The assessment subjects have been changed from the original teachers to teachers, team leaders and students. The past assessment mode focusing on final results is changed to stress the whole process and to implement the two-level evaluation of "process + result". Combining the curriculum ideology and politics in the practical teaching, the assessment content adopts the combination of professional skills and individual ideological and political literacy as well as the combination of individual assessment and team assessment.

#### ***4.3. The Two-level Evaluation of "Process + Result"***

The three-dimensional evaluation of "process + result" can comprehensively assess the overall quality of students. It has changed the past assessment mode focusing on final results to stress the whole process and to implement the two-level evaluation of "process + result". Apart from professional skills, it evaluates students on their personal practical classroom performance, including attendance, discipline, personal speech, and personal ethics. The "process" assessment is more comprehensive to assess individual ideological and political accomplishment and comprehensive quality.

#### ***4.4. The Combination of Individual Assessment and Team Assessment***

The "project-based" practical teaching acceptance adopts a combination both team and individual assessment. The final assessment result of an individual should be determined by both the individual and team results, which influences each other. If the individual assessment of the team members is relatively average, it means that the cooperation among the members is good and the overall performance of the team will be higher. If the individual assessment of members varies greatly, it indicates that there are problems in team cooperation and the overall assessment is not ideal. The combination of team and individual performance can promote the cooperation, cultivate the sense of collective honor and responsibility, enhance the collective cohesion and enhance the team awareness.

#### ***4.5. The Assessment of Teachers, Team Leaders and Students***

It changes the traditional teaching assessment which is decided by teachers alone, and the final result is decided by "teachers + project leaders + project members". The "project-based" practical teaching is usually based on teams, and both leaders and members have a better understanding of the specific practical process than teachers. Through leader evaluation and group mutual evaluation, it can truly reflect the participation and contribution in practice. This can promote the improvement of individual ideology and moral cultivation, and contribute to mutual learning, mutual discussion and common progress among members.

#### 4.6. Enhancing the Ideological and Political Awareness of Practical Teachers

As the saying goes, "educating comes before teaching", which reflects the importance of ideological and political education. Teachers are the leaders for curriculum ideology and politics, especially young teachers, who basically have doctor's degrees and are the models for students to worship and learn. Every word, every act and every move of them has a huge impact on students. These teachers conduct face-to-face practical teaching guidance with students, and communicate with students the most in daily learning. They should understand the connotation and significance of the ideological and political education more deeply, better explore its elements and strategies, and refine the ideological and political culture contained in professional practical courses. In the teaching design of practical professional courses, they should put ideological and political education in the first place while combining professional skills education and adhere to the principle of integrating theory with practice. They should discover the entry point and fit degree between professional practical guidance and curriculum ideology and politics, extend professional guidance to spiritual guidance in "silently", cultivate students' correct values, outlook on life and political belief and cultivate talents with both political integrity and ability to adapt to social development.

Preacher should first understands truth and believes it. As the guide in students' growth, teachers should set an example, insist on the principle of "educating with morality, establishing themselves with morality, learning with morality and teaching with morality", and enhance their awareness and ability of curriculum ideology and politics. Teachers should change the traditional teaching concept ideologically, increase the ideological and political education in the practical curriculum guidance, enhance the awareness of "three-aspect education" and fully realize the "main channel" role of classroom teaching. Moreover, they should conduct practical teaching and evaluation reform with "students as the center and ideological and political education first", stimulate students to enhance ideological and political level, improve ideological and moral cultivation, promote the correct value orientation and achieve the simultaneous educational effect of professional skills and ideological and political education.

#### 5. Conclusion

"It takes ten years to grow trees, but a hundred years to cultivate people." It is a long process to cultivate excellent habits, good cultivation and noble morality. Once formed, it will be passed down from generation to generation automatically and unconsciously, forming a virtuous circle. Practical teaching plays an irreplaceable role in the teaching of science and engineering, and it is a good opportunity to implement curriculum ideology and politics in this process. The ideological and political education in practical teaching can truly cultivate applied talents whose both ideology and politics and professional skills can meet the requirements of economic and social development.

#### Acknowledgement

2018 Experimental Research Project of Guangdong University of Petrochemical Technology: "Research on Practice Teaching Mode of Telecommunication Major Based on OBE Mode"(No.: 215256); 2018 Teaching Reform Project of Guangdong University of Petrochemical Technology: "Research on the Step-by-Step Experimental Teaching System Based on OBE"(No.: 234270); 2019 Guangdong Education Reform Project: "Research on the Step-by-Step Practice Teaching System Based on OBE-Taking Electronic Information Engineering as an Example"(No.: 411); School-level Key Training Team of Guangdong University of Petrochemical Technology(No.: TDPY201918).

#### References

- [1] SPADY W G. *Outcome-based education: Critical issues and answers*[M]. Arlington: American Association of School Administrators, 1994:1-10.
- [2] Xi Jinping on governance [M]. Vol.2. Beijing: Foreign Language Press, 2017.
- [3] Zhou Chunyue, Liu Ying, Zhang Hongting, et al. *The Research of Laddered Practical Teaching on Outcomes-based Education* [J]. *Research and Exploration in Laboratory*, 2016, 35(11): 206-208.
- [4] Zhao Jiwei. *The Meaning, Concept, Problems and Countermeasures of "Curriculum Ideological and Political Education"*[J]. *Journal of Hubei University of Economics*, 2019,17(2):114-119.
- [5] Yu Jiangtao, Wang Wenqi, Xu Yanqing. *The Logic and Essentials of Professional Teachers'*

*Practice of "Curriculum Ideological and Political Education"-Taking Science and Engineering Courses as Examples[J]. The Party Building and Ideological Education in Schools, 2018(1):64-66.*

[6] Zhang Zhenkai, Wang Min, Lu Nan, et al. *Research on the Reform of Analog Electronic Technology Course under the Background of Engineering Certification[J]. Journal of Higher Education, 2019(1):127-129.*

[7] Shen Shuangqin. *Reform and Practice of Experimental Teaching of Digital Electronic Technology [J]. Education Forum, 2018(30):265-267.*

[8] Zhang Guoqin. *Teaching Practice and Exploration of "Curriculum Ideological and Political Education" in Electronic Technology[J]. Curriculum Education Research, 2018(46):244-245.*

[9] Zhou Yingre, Li Shiwei. *On the Application of Digital Electronic Technology in the Network[J]. China New Telecommunications, 2018,20(5):93.*