



Digital Electronic Technology Teaching Reform Based on the Perspective of Course Ideology and Politics

Zhongliang Luo^(✉)

School of Information Engineering, Shaoguan University, Shaoguan 512005, China
luozl66@126.com

Abstract. In view of the widespread phenomenon of valuing theory more than practice, separating value from knowledge in digital electronic technology course teaching, we carried out teaching reform of digital electronic technology based on course ideological and political perspective under the background of new engineering construction. Teaching reform has mainly explored and practiced from the following aspects, constructing teaching objectives of collaborative education, refining ideological and political elements, restructuring teaching content, improving teaching methods, improving their imparting ability and reforming course assessment methods, so that this course and the course ideological and political can go hand in hand to form a new pattern of collaborative education. The practice results show that students' learning enthusiasm has been significantly improved, their teamwork spirit and practical innovation ability have been well exercised, and the deep integration of explicit professional education and implicit ideological and political education has been achieved, which has given full play to educational value of specialized courses, which provides reference for digital electronic technology teaching reform .

Keywords: teaching reform · ideological and political education · digital electronic technology · cooperative education

1 Introduction

Digital electronic technology is the core course for electronic information majors such as communication engineering, computer science and technology. It has strong theoretical, practical, and practical applicability, and contains rich ideological and political elements. It plays an important role in the cultivation of high-level information technology talents. During course teaching, there is a common phenomenon of valuing theory over practice, moral education and intellectual education performing their respective duties. The teacher's teaching lacks of humanistic care, limited interaction between teachers and students, and their cultivation of innovation awareness and practical ability were affected. After the Ministry of Education proposed the requirement for universities to comprehensively promote course ideological and political construction, most teachers

have attached importance to it. But there are still some problems such as lacking of initiative in learning, emphasizing on learning over quality, and social values become dim. Multiple literature analyses have found that main reasons for these problems are [2–6]: ①Greatly influenced by traditional teaching models, teaching still stays at the stage of being able to do exercises and consolidating theoretical knowledge through experiments. ②There are insufficient understanding and investment in collaborative education of ideological and political education for some teachers. They feel that there is a large span between the content of specialized courses and ideological and political education, and their ability of ideological and political education is not strong, resulting in a situation where knowledge transmission, ability cultivation, and value guidance are mutually separated in course teaching. ③There are not many related ideological and political materials excavated, insufficient depth and breadth of extraction; ④The integration of ideological and political elements into classroom teaching is not flexible, and the attractiveness and expressiveness are insufficient, failing to achieve the penetrating and implicit education effect, which is not well recognized by students.

Course teaching is “the last mile” of major construction and talent cultivation, and the teaching model centered on teachers and guided by course knowledge transmission cannot meet the requirements of cultivating new engineering professional talents. Therefore, facing the above-mentioned problems and challenges, we comprehensively promoted course ideological and political construction, and constructed a pattern of educating by all staff, all processes, and all aspects of teaching. It is imperative to open up new fields and track for high-quality education development, and deepen course teaching reform.

2 The Exploration of Teaching Reform Paths from the Perspective of Course Ideology and Politics

Following new era development and the trend of higher education reform, we use digital electronic technology course teaching as carrier to deeply explore the spiritual connotation and educational value contained in course knowledge system. Teaching reform of digital electronic technology courses from the perspective of ideological and political education in course was carried out, shifting the focus on teaching process from simple knowledge imparting to ability cultivation and value guidance, and students’ enthusiasm for learning and patriotism were stimulated, their socialist core values were shaped. The function of digital electronic technology courses to cultivate morality and cultivate talents were fully utilized. Thereof the quality of training applied talents in new engineering were improved and the high-quality development of applied universities were promoted.

2.1 Constructing Collaborative Education Course Construction Objectives

Teaching of digital electronic technology course are facing new engineering construction, implementing the concept of course ideological and political education. The goal of course ideological and political construction has been determined to cultivate craftsman spirit of striving for excellence, strengthen engineering ethics education, and stimulate the sense of mission of serving country through science and technology. After

professional talent training plan is clearly determined, the course construction goal of integrating knowledge transmission, ability cultivation, and value guidance should be established. Adhering to teaching philosophy of cultivating morality and cultivating talents in digital electronic technology course teaching. We deeply explored course ideological and political connotations, and creatively integrate ideological and political elements into teaching objectives, cultivate students' correct understanding, analysis, and problem-solving engineering thinking, and cultivate their ability to solve practical digital system problems and complex engineering problems. Introducing teaching methods and modes, such as problem orientation, combination of lectures, and divided classrooms. By utilizing the Multisim virtual simulation platform to dynamically demonstrate the key and difficult teaching content, students can be guided to apply their learned knowledge to practical applications. Strengthen engineering ethics education, enhanced students' cultural confidence, broaden their horizons, improved their sense of responsibility for technological research, stimulated their sense of patriotism and national mission in serving country through science and technology. We took value shaping throughout entire process of teaching reform, thereby, it effectively cultivate the applied talents required by society.

2.2 Revising the Course Syllabus, Extracting Ideological and Political Elements from Multiple Dimensions, and Reconstructing Teaching Content

The development of digital electronic technology is very rapid, it is difficult to ensure the achievement of teaching objectives if teaching contents is not adjusted and updated in time. Teachers will reconstruct teaching content based on contemporary and frontiers of course content. They will introduce the frontier technology development, new theoretical applications, scientific research achievements, and ideological and political elements of digital electronic technology into classroom [7]. The specific reform measures were as follows: firstly, we carried out modularized teaching, and added new frontiers knowledge points in course teaching. When we learn logic gate circuits, SOC on chip systems was introduced, so that students' horizons was broadened, which reflects the high order, innovation, and challenge of course [8]. Secondly, we incorporated engineering practice content into teaching contents. For example, as students study analysis and design of combinational logic circuits, alarming circuit design can be chosen as experimental teaching contents, which is widely used in daily life. Thirdly, on the basis of original syllabus, we revised the syllabus and established an ideological and political resource library combining with characteristics, ideological and political course connotations, and teaching experience. The ideological and political education elements in each chapter were extracted from multiple dimensions, mainly gathering six aspects of ideological and political elements, such as patriotism, craftsmanship spirit, cultural self-confidence, engineering ethics, patriotism, and mission responsibility. The core values, traditional culture, spirit of the 20th National Congress of the Communist Party of China are integrated into the professional knowledge teaching of course hidden but influential, brought its educational effectiveness into full play. It enhanced their sense of professional identity and mission, and promoting teaching and education to go hand in hand while students' professional abilities and cultural literacy were cultivated.

2.3 Improving Course Teaching Methods and Means

The teachers should strengthen teaching design, reform teaching modes, enrich classroom forms, and transform traditional teaching mode dominated by teachers into student-the main body, teacher-the leadership, and take information education technology as means. The role of teachers has shifted from being mere disseminators of knowledge to being shapers of sound personalities and guided by correct values. The teaching adopt a combination of various methods such as classroom lecture, problem-solving, discussions, and self-learning, it played a value-oriented role through implicit, infiltration, expansion, deepening and other means. We explored teaching methods by using of mixed offline and online ways, and students' learning enthusiasm would be inspired to maximize by integrating OBE concepts, and they were made to the truly masters in class. During teaching process, we tried to simplify the tedious theoretical derivation and provided only comprehensible explanations, so that students can master basic analysis and design methods of digital electronic systems and avoid falling into tedious mathematical derivation. Knowledge points can be visually and dynamically displayed by utilizing a virtual simulation platform, thus the key and difficult contents in teaching can be brought through and improved teaching efficiency. We changed traditional teaching method, choose expressions that students enjoy, used simple and easily language. The teaching ways of situational introduction, made a start, extraction and sublimation, adapting to transfer, case inspiration, citing classics, and analogical transfer were integrated into course [3, 5], so that the distance between teachers and students was eliminated, the affinity was improved, and it played its role of "salt dissolves in water". We cultivated students' rigorous academic attitude through practical research projects, both feet on the ground practical spirit, and honest and trustworthy style. Ultimately, it achieved the integration of knowledge transmission, ability cultivation, and value guidance, got the effect of "1 + 1 + 1 > 3".

2.4 Focusing on Fostering the Main Teaching Force and Improving Teachers' Educating Ability

Specialty teachers are an important subject in implementing course teaching and fostering spirit and morality of students. Teachers meet great challenges when they integrated ideological and political education into professional course teaching. Thus, it requires teachers who undertake teaching tasks of digital electronic technology courses to establish a new concept of course ideological and political education, consciously enhanced the awareness and responsibility of course education, the concept of ideological and political education can be deeply rooted in their heart, and cultivate excellent talents with an all- round moral, intellectual, physical and aesthetic grounding for our country [10]. At the same time, a "great ideological and political" education structure is needed to be constructed. And efforts should be made to build a high-quality course teaching team and improve their imparting ability.

The imparting ability of teachers mainly includes abilities to impart knowledge, values guiding, and ideological and political elements mining and refining. Teachers are required to achieve basic requirements of strong politics, deep emotions, new thinking, broad vision, strict self-discipline, and positive personality [11]. They should not only

serve as guides for students' academic pursuits and intimate and enthusiastic individuals in daily life, but also master skillfully course ideological and political education and it was achieved a deep integration of digital electronic technology course content and ideological and political education. For example, teachers extract key knowledge points when they taught the chapter of semiconductor memory. We help students understand the importance of science and education to revitalize country and independent innovation by combining them with real examples such as the "ZTE crisis", and let it plays the role of ideological and political education, the course team urge teachers to strengthen the building of teachers' morality and style, inspires them to implement the goal of cultivating students through moral education and teaching in combination with teaching process. Their moral cultivation was strengthened by participating in teaching workshops, watching teaching, seminar of ideological and political, and teaching-researching, so their course ideological and political abilities were enhanced.

2.5 Adding Moral Education Examination Points and Optimizing Assessment Methods

In order to evaluate the effect of teaching reform, it is necessary to optimize course assessment methods. It is closely combine knowledge ability cultivation with talent cultivating, and strive to explore whether students' professional knowledge and values added or not, so that it can meet the requirements of new engineering talent training assessment. Reforming the single assessment method, strengthening process check, further highlight the importance of learning processes. Teaching effect was evaluated from multidimensional ways, it broke traditional assessment method that relying mainly on final exam scores, and supplemented by attendance and homework scores, incorporating interaction and theme discussions in class teaching into course examination scores. The assessment mainly focuses on three aspects: theory, practice, ideological and political education, closely linking moral spirit and values with practical teaching. Short written answers on course ideological and political education can be added to final exam, it can be tested whether students have developed their thinking ability, values, teamwork ability that ideological and political content contained in course. This better reflects the engineering education concept of emphasizing theoretical, practical, and value leading course aspects.

3 The Effectiveness of Course Teaching Reform

We carried out teaching reform in digital electronic technology course from the perspective of ideological and political education. They have achieved the collaborative teaching goal of knowledge impartation, ability cultivation, and value guidance, which is a trinity of education. The specific teaching effect is reflected in the following aspects: firstly, teaching reform adheres to students development being the core, rejecting traditional teaching method, making course more interesting, significantly improving students' attention in class, activating class atmosphere, promoting teacher-student interaction, increasing the number of extracurricular interactions, and making students more confident. Secondly, the multi-dimensional evaluation method has stimulated students' enthusiasm for learning and patriotism. Compared to students in CE class of 2020, students

Table 1. Comparison of examination scores

| Class | Pass rate (%) | Number | The highest score | The number of score above 90 | Average score |
|-------------------|---------------|--------|-------------------|------------------------------|---------------|
| IOT class of 2020 | 80.6 | 103 | 96 | 8 | 69.8 |
| IOT class of 2021 | 84.4 | 90 | 100 | 14 | 74.1 |
| CE class of 2020 | 71.4 | 49 | 81 | 0 | 61.4 |
| CE class of 2021 | 88.1 | 38 | 96 | 11 | 76.5 |

Note: IOT is The Internet of Things, CE is Communication Engineering

in CE class of 2021 have increased pass rate by 15%, and the number of students with scores above 90 has significantly increased, as can be seen in Table 1. Thirdly, ideological and political education in course have gradually become normalization. We constructed an ideological and political cases library. The ideological and political elements contained in course, such as patriotism, legal awareness, engineering ethics, craftsmanship spirit and social responsibility are integrated into teaching content. It helps students form correct worldviews, outlooks on life, and values from different perspectives, which plays a collaborative role in professional course teaching and ideological and political education.

4 Conclusion

Under the perspective of course ideological and political education, digital electronic technology course carried out teaching reform. It allowed moral education to penetrate mind and heart, highlighting the teaching effect of cultivating people and shaping their souls, by transforming teaching concepts, strengthening course education awareness, reconstructing teaching contents, and expanding education channels, course ideological and political education is integrated into classroom and evaluation system. The results of survey, feedback, and assess measures shown that students' learning enthusiasm, academic performance, practical skills, teamwork awareness, and social responsibility have significantly improved, so the teaching effect is good. The collaborative education between ideological and political education and professional course teaching has been fully utilized. The situation of specialty course teachers who only teach but have no moral introduction has been changed, and a teaching effect that hidden but influential can be achieved.

Acknowledgments. Guangdong

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