Ideological and Political Construction and Practice of “Machinery CAD Fundamentals” Course

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Abstract: *The curriculum ideological and political teaching practice for “Machinery CAD Fundamentals” has been established in this paper. Firstly, the guiding ideology of ideological and political teaching design has been proposed. Then the ideological and political elements contained in the knowledge points have been excavated out. Finally, the teaching roadmap of the curriculum ideological and political implementation has been developed and the teaching practice has been carried out. Teaching experiments demonstrated good results by performing ideological and political teaching reform.*

Keywords: Mechanical CAD fundamentals, Curriculum ideology, Teaching practice, Teaching reform.

1. Introduction

“Machinery CAD Fundamentals” is an important technical foundation course for engineering majors in high education. Through course learning, students are trained to use CAD technology to achieve engineering design capabilities. The teaching team of this course has long paid attention to the ideological and political construction of the curriculum during the teaching process, and formed the guiding ideology of the ideological and political construction of the curriculum, which is “guided by the core values of socialism and caring for the mental health of college students as the starting point”. Based on this idea, the teaching design is carried out. The course ideological and political teaching path is constructed. The teaching practice is performed and achieved good teaching results.

2. The Guiding Ideology of Teaching Design

2.1 Accurately Grasp the Connotation of “Curriculum Ideological and Political”

General Secretary Xi Jinping pointed out at the National Conference on Ideological and Political Work in Universities: To make good use of the main channel of classroom teaching, each course must maintain a good channel and plant a good field of responsibility, so that all kinds of courses and ideological and political theory courses are in the same direction to form a synergistic effect[1].

The speech of General Secretary Xi Jinping pointed out the direction for the ideological and political work of universities to realize the education of all employees and the whole process. Ideological and political education courses in universities are divided into two categories, explicit and implicit, the explicit ones are the ideological and political theory courses, and the implicit ones include comprehensive literacy general courses and professional courses[2]. “Machinery CAD Fundamentals” belongs to the category of professional courses and should play an “expanding” role in the ideological and political work of universities. The role played in the whole education process is “curriculum ideological and political” rather than “ideological and political courses”. “Curriculum Ideological and Political” through deepening the reform of curriculum objectives,

content, structure, and models, organically integrates political identity, national awareness, cultural self-confidence, personality development and other ideological and political education with the inherent knowledge and skills of various courses to promote the all-round development of students, highlight the responsibility of teaching and educating people[3].

2.2 The Course Objectives of “Mechanical CAD Fundamentals”

The syllabus of “Machinery CAD Fundamentals” points out: “This course teaches the basic principles and methods of CAD technology and the application of related design software, cultivates students’ ability to use CAD tools and software for drawing, modeling and engineering design, make students understand CAD and other digital technologies and stimulates students’ sense of engineering to use software for independent innovation.” As can be seen from the requirements of the course syllabus, the main goal of this course is to introduce students to the principles of drawing, two-dimensional drawing skills, and three-dimensional modeling methods, and to cultivate students use 2D and 3D software to realize the ability of design expression, as well as the ability of practical engineering application and innovative design. In the teaching process, attention should be paid on the integration of ideological and political content such as patriotism and dedication, craftsmanship, and healthy personality cultivation, so as to better serve the realization of the curriculum goals.

2.3 The Determination of the Guiding Ideology of Instructional Design

By analyzing the connotation of “curriculum ideological and political”, we realize that the curriculum ideological and political teaching of professional courses should not be a simple repetition of the explicit ideological and political curriculum content, but should use professional knowledge to play a good role in the whole process of educating people for the role of “expanding education”. The teaching team of this course has long been committed to using the classroom to nourish students. Since 2010, we have taught students content of personality health growth through classrooms and platforms such as “Renren.com” website. We encourage college students to take postgraduate entrance examinations in

our teaching, based on the sense of responsibility and mission in the development of domestic software and chip industry in the course content “Software and hardware composition of CAD technology”, and introduce how to deal with broken relationships through the teaching link of “threaded connection drawing”. It is based on the painful lesson of college students committing suicide due to a broken relationship. These contents are all based on caring for the comprehensive and healthy growth of college students’ personalities, and cultivating students’ correct outlook on life and values as the guidance to realize “curriculum ideological and political” education.

Liu[4] pointed out that curriculum ideology must be involved in the daily life of students in the education process, combined with their current life experience and spiritual confusion, and truly touch the depths of their tacit knowledge or their beliefs. Therefore, this course starts from the mental health growth that students care about, and determines the guiding ideology of the curriculum ideological and political construction as “guided by the core values of socialism, and caring for the healthy growth of college students” personality as the starting point to realize the ideological and political teaching of the Machinery CAD Fundamentals course’. The combing of the teaching content of this course, the development of teaching design, the realization of teaching paths and the design of teaching evaluation will all be carried out around this guiding ideology.

3. Sorting Out the Content of Ideological and Political Teaching of This Course

3.1 The Main Content of the Core Values of Socialism

The 18th National Congress of the Communist Party of China proposed to advocate “prosperity, democracy, civilization, harmony, freedom, equality, justice, rule of law, patriotism, dedication, integrity, and friendliness”, and actively cultivate and practice the core values of socialism. Prosperity, democracy, civilization, and harmony are the value goals at the national level. Freedom, equality, justice, and the rule of law are the value orientations at the social level. Patriotism, dedication, integrity, and friendliness are the values at the individual level of citizens. These 24 characters are basic content of core values reflecting the fundamental nature and basic characteristics of the socialist core value system.

3.2 Analysis of the Focus of the Healthy Growth of College Students’ Personality

Contemporary college students grow up in the era of the internet and smart phones, and they should have as scientific and accurate grasp of their psychological conditions as possible, so that they can be targeted and find the entry point of the ideological and political curriculum. Wu[5] combed the content of college students’ mental health concerns and found that the mental health concerns of students are social adjustment and interpersonal communication, love psychology, career development, psychological adjustment of broken relationships, and national identity.

Ding[6] conducted a research on the cultivation of healthy personality of college students in the new era. The survey results showed that 59% of students have occurred the conditions that they do not want to meet people, 54% of students lack stamina and decision-making ability, and 53% of students are easily restless, 51% of students lack self-confidence, 39% of them tend to lose concentration, and 22% of them hold a pessimistic attitude towards life. The survey also found that 41% of classmates felt that they had problems with their mental health, but only 0.07% of them had received psychological counseling and treatment.

Sun[7] used Adam Smith’s sympathy theory to reflect on the lack of personality development of contemporary college students, and pointed out that the main problems of contemporary college students are: loss of ideals and beliefs, manifested as lack of lofty ideals, not caring about current affairs and politics; unbalanced psychological state, manifested as negative, low self-esteem, depression, impetuosity; lack of good morals, manifested by lack of integrity, lack of diligence and virtue; weak willed, manifested by poor independence.

3.3 Ideological and Political Teaching Content of “Mechanical CAD Fundamentals” Course

There are many factors that affect the healthy growth of college students’ personality. This course cannot cover all the issues. We should start from the characteristics of the course, carefully sort out the teaching content and the value elements that can be cut into, and form a distinctive course thinking suitable for the characteristics of this course. The combination of ideological and political elements and course knowledge elements is summarized in Table 1.

Table 1: Ideological and political teaching content of “Mechanical CAD Fundamentals” course

Chapter Module	Knowledge Points	Ideological and Political Elements	Personality Elements	Cut-in Forms
Introduction	Software, hardware	Patriotism	Patriotic and responsibility	Encourage Msc. learning
AutoCAD drawing commands	Line, text, block	Patriotism	Character education	Writing core values
AutoCAD editing commands	Cut, translate, rotate, decompose	Dedicated	Frustrate education	Brave scientific spirit
AutoCAD dimensioning commands	Engineering drawing generation	Dedication, integrity	Obedience to laws and regulations	Traffic accidents
AutoCAD block commands	Block construction	Patriotism	Team spirit	Women’s volleyball team spirit
Principles of Drawing	Imputation, coding, cutting	Patriotic, friendly	Communicate with others	Listen academic reports
Assemble drawing.	Assemble drawing	Friendly	Face broken love correctly	Take the nut as an example
Solidworks sketching	Intelligent dimension, geometric relations	Friendly	Consideration for others	Helping others
Solidworks feature modeling	Feature Generation and Editing	Dedication	Youth is Struggle	Dude’s “Last Lesson”
Solidworks assembly	Interference detection	Friendly	Teamwork	Participate competitions
Solidworks engineering drawing	expression methods	Patriotic, dedicated	Independent thinking	Story of a pony crossing the river

4. The Realization Path of Curriculum Ideological and Political Teaching

Curriculum ideological and political teaching is not suitable for rigid idioms and talking about boring ideological and political theories. It is necessary to be close to university life, to be grounded, to think what students think, to touch the hearts of university students, and to help them solve practical problems, so that they can be accepted by university students and truly have the effect of ideological and political education.

4.1 Insert in Real Time in the Process of Teaching: Classroom Teaching Must Be Passionate

Real-time entry of classroom teaching is one of the best ways of ideological and political teaching. This method is not obtrusive, the teaching content is not boring, and it is easy for students to accept. For example, when you want to use the DTEXT command section text demonstration command function in AutoCAD text annotation, you can enter "patriotism, dedication, integrity, friendliness" and other content that reflects the core values of socialism. For another example, when drawing a Solidworks sketch, a straight line is tangent to a circle. When the graphic is infinitely enlarged, the graphic will still be displayed as not tangent. This can lead to "cannot magnify the shortcomings of others, be kind to others, and look at the advantages of others". Curriculum ideology and politics don't have to be a long story. A simple sentence can play a good role in educating people.

In addition, teachers must be full of passion when giving lectures. Passion shows the teacher's love for teaching and his confidence in ideological and political content and values. The lecture should be full of confidence, the voice should be loud, the eyes should have communication and interaction with the students, and there should be a sense of humor.

4.2 "Moisturize Things Silently" in the Process of Tutoring Class: Tutoring with Love

On the 30th Teacher's Day, General Secretary Xi Jinping pointed out: "A good teacher should follow the best practices, learn from the best, constantly improve moral cultivation, enhance the quality of personality, and teach the correct moral values to students[8]." Teachers of professional courses must first set an example for students through their own words and deeds. While teaching, they should win the respect of students with their own personality charm, and then subtly influence students' outlook on life.

This course has a tutoring class, which is the best time for "Moisturize things silently" to conduct ideological and political teaching of the course. In the tutoring class, the teacher must be caring, because a word, an action, and a glance in the teacher's unconsciousness may have a profound impact on the life of the student. The tutoring class is a close face-to-face teaching situation where the teacher and the student are close to each other. Only if teacher is loving and generous to the students that the students will surely keep it in mind and will have infinite motivation to learn this course.

4.3 Make Use of Network: Having a Sense of Responsibility When Preparing Lessons

With the rise of internet technology and the use of smart phones, technologies such as blended teaching and flipped classrooms are also used in the ideological and political aspects of this course. This course uses Cloud Classroom to publish preparatory homework before class, discuss ideological and political content with students during class, and ask students to submit related homework after class. The use of network tools puts forward higher requirements for teachers' network lesson preparation content. Teachers should have a strong sense of mission and responsibility, and the content posted on the internet should reflect the core values of socialism and play a positive role in the cultivation of students' personality.

5. Conclusion

The essence of education is to nourish people. By concentrating the healthy growth of students' personality the course team of "Machinery CAD Fundamentals" carried out the research and practice in the ideological and political teaching of the course, which is recognized and supported by the students and achieved good teaching results. Future research work will further refine the teaching design, formulate scientific teaching evaluation methods, and continuously improve the level of curriculum teaching and education.

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