Practice and Evaluation of Blended Teaching in Design Research Course

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Abstract: This course is the core professional course of product design major, which integrates the theoretical knowledge learned in the early stage, and pays attention to the frontier and hot spots of design, such as the interactive forms of products and user experience research and social innovation in the intelligent era. In-depth research combined with practical issues, establish the ability to think, analyze and solve problems, strengthen traditional culture and ideological and political education, and integrate them into professional fields to improve comprehensive design practice ability. The course teaching process adopts the combination of online and offline. By introducing enterprise practical topics and participating in subject competitions, it pays attention to cultivating students' practical design ability and innovative practice ability, mastering the whole process of product development, cultivating students' comprehensive design ability to find, analyze and solve problems in the design process, establishing a correct design concept, fully implementing OBE teaching philosophy, and establishing a teaching mode in which "school", "enterprise" and "society" are linked and coordinated with each other.

1. Overall Thinking of Curriculum

The curriculum teaching conforms to the concept of "taking students' development as the center" and emphasizes the curriculum goal of high-level ability and emotional value

1.1 Teaching Philosophy of This Course

This course pays attention to integrating theory with practice, paying attention to the management of the whole teaching process, carrying out teaching in the form of teaching team, combining online and offline, and cultivating students' practical design ability and innovative practice ability, integrating traditional culture and ideological and political education, mastering the whole process of product development, cultivating students' comprehensive design ability of discovering, analyzing and solving problems in the design process, establishing a correct design concept and fully implementing OBE teaching philosophy.[1]

1.2 The Teaching Goal of This Course

The purpose of curriculum is to further deepen the study of design theory and the training of design practice, and pay attention to the frontier and hot spots of design, such as the interactive form of products and the research of user experience and social innovation in the intelligent era; In-depth research combined with practical topics, based on the previous study of product design related courses, further improve students' ability to think, analyze and solve problems, strengthen traditional culture and ideological and political education, establish cultural self-confidence, pay attention to the cultivation of students' feelings of home and country, science and humanistic spirit, and integrate them into professional fields to improve comprehensive design practice ability.[2]

1.2.1 Knowledge and Skills Objectives

Deepen the study of design theory and the training of design practice, and pay attention to design frontiers and hot spots, such as product interaction forms and user experience research and social

innovation in the intelligent era; In-depth study combined with practical issues.

1.2.2 Ability Training Objectives

On the basis of studying the related courses of product design in the early stage, the students' ability of thinking, analyzing and solving problems can be further improved, and the comprehensive design practice ability can be improved by introducing practical topics of enterprises and participating in subject competitions.[3]

1.2.3 The Objective of Sentiment Cultivation

Comprehensive curriculum design training is divided into directions and teams to study, establish curriculum groups and cultivate team cooperation ability; Improve the management system of students' extracurricular autonomous learning, and advocate mixed learning and inquiry learning based on evaluation in the classroom; Incorporate traditional culture and ideological and political education, establish cultural self-confidence, and pay attention to the cultivation of students' feelings of home and country, science and humanistic spirit.

1.3 Problems to Be Solved in Teaching Innovation

①Pay attention to the whole process management of teaching, carry out teaching in the form of teaching team, and combine online and offline;

②Introduce the practical topics of enterprises and participate in subject competitions, pay attention to cultivating students' practical design ability and innovative practice ability, master the whole process of product development, and cultivate students' comprehensive design ability to find problems, analyze problems and solve problems in the design process;

③Pay attention to traditional culture and ideological and political education in teaching, establish a correct design concept, and fully implement OBE teaching philosophy [4].

1.4 Course Content and Resource Application

①Preview and Consolidate Knowledge Before Class: students are required to self-study excellent resource courses on the website, and at the same time, design the course contents of each chapter and design the case library to upload the website for students to learn repeatedly;

②Interacting and Solving Problems in The Offline Course: paying attention to the interaction between teachers and students in the offline course, adopting the inquiry learning model and paying attention to the cultivation of students' creativity and independent thinking ability [5];

③After-school Online Promotion of School-enterprise Cooperation: Tencent meeting and technical personnel of enterprises are used to evaluate and upgrade the design scheme, and the school-enterprise cooperation mode is established.

This course teaching can grasp students' learning characteristics in the new era, and make full use of modern information technology to carry out teaching activities and learning evaluation.

2. Content of Courses

2.1 The Course Content has Depth and Breadth, Reflecting the Frontier of Discipline, Infiltrating Professional Ideas and Using High-quality Teaching Resources

The teaching content of this course mainly includes: the definition, basic principle, thinking method and design research elements of design research; Product planning, design investigation and analysis (culture and brand investigation); Design development (semantics, interface design, PI design); Design optimization; Design evaluation; Design output (product packaging, brand image, design marketing), etc. The course content has the characteristics of "golden course", which is high-level, innovative and challenging. The teaching content has depth and breadth, reflecting the frontier of disciplines and infiltrating professional ideas [6].

2.2 Integrate Ideological and Political Education with Professional Education

In the teaching process, this course integrates traditional culture and curriculum ideological and political education, builds up cultural self-confidence, pays attention to the cultivation of students' feelings of home and country, science and humanistic spirit, and integrates them into professional fields to improve comprehensive design practice ability.

2.3 Incorporate New Progress in Discipline Research, New Experience in Practice and Development, and New Changes in Social Needs into Teaching Content

This course further deepens the study of design theory and the training of design practice, and pays attention to design frontiers and hot spots, such as product interaction forms and user experience research and social innovation in the intelligent era; In-depth research combined with practical topics can further improve students' ability to think, analyze and solve problems on the basis of studying related courses of product design in the early stage [7].

3. Teaching Process and Method

3.1 Teaching Activities are Rich and Varied, Which can Reflect the Knowledge, Skills and Emotional Value Goals of All Levels

The teaching activities of this course are rich and colorful, focusing on integrating theory with practice, paying attention to the management of the whole teaching process, carrying out teaching in the form of teaching team, combining online and offline, focusing on cultivating students' practical design ability and innovative practice ability, mastering the whole process of product development, cultivating students' comprehensive design ability of discovering, analyzing and solving problems in the design process, integrating traditional culture and ideological and political education, establishing correct design concept and cultural self-confidence.[8]

3.2 According to the Characteristics of The Curriculum, Innovative Teaching Strategies, Methods and Techniques can be Used to Solve Various Problems and Difficulties in The Classroom.

The teaching team of this course produces learning resources such as teaching videos, courseware and design case libraries, and selects website platforms with high efficiency, smooth operation and comprehensive service, such as "Tencent Classroom", "massive open online course for College Students" and "Tencent Conference" for teaching activities. Pay attention to the whole teaching process management combining online and offline. Preview and consolidate knowledge before class, solve problems interactively after class, and improve school-enterprise cooperation online after class.

3.3 To Strengthen the Interaction between Teachers and Students, Teaching Activities Should is Gradual, and Teachers Should Provide Necessary Support and Guidance to Help Students Become Autonomous Learners.

This course adopts the teaching mode of combining online and offline, which requires students to teach themselves excellent resource courses on the website. At the same time, the course teaching team has designed the course content of each chapter and designed the case library to upload the website for students to learn repeatedly; Offline courses pay attention to the interaction between teachers and students, adopt inquiry learning mode, and pay attention to the cultivation of students' creativity and independent thinking ability; After class, through Tencent meeting, we can evaluate and upgrade the design scheme with enterprise technicians, establish a school-enterprise cooperation mode, and cultivate students' comprehensive design ability of finding, analyzing and solving problems in the design process, so as to help students become autonomous learners.[9]

4. Curriculum Evaluation and Feedback

4.1 Various Tests can Reasonably Evaluate Students' Mastery of Knowledge and Skills

In the teaching process of this course, we actively explore scientific and diversified academic evaluation methods, implement the whole process of academic evaluation, increase the process assessment, and expand the proportion of usual grades in the total scores of the course. Through the modes of defense, roadshow and exhibition, we conduct various evaluation methods, such as teacher evaluation, student mutual evaluation and enterprise tutor evaluation, so as to guide students to discover, analyze and solve problems and improve students' ability to apply and create knowledge.

4.2 The Combination of Process Evaluation and Summative Evaluation Aims at Promoting Students' Progress, Designing Diversified Evaluation Methods and Giving Timely Feedback.

Pay attention to the whole process management of online and offline teaching, and combine the process evaluation with the final evaluation. Preview and consolidate knowledge before class, submit reading notes online, and discuss with posts in discussion area (30%); Interactively solve problems in class, find problems in time, and conduct classroom evaluation (40%); After class, the school-enterprise cooperation is promoted online, and the practical application value of students' design scheme is improved through the evaluation of enterprise professionals, so as to improve their professional quality and establish a sense of social responsibility and mission (30%).

4.3 Provide Clear and Reasonable Evaluation Rules and Standards, and Actively Create Opportunities for Students' Self-evaluation and Peer Evaluation.

Provide evaluation rules and standards for the whole process of teaching, preview and consolidate knowledge before class, submit reading notes online, discuss with posts in the discussion area, and track and evaluate by the teacher team and graduate counselors; Interact to solve problems in the middle of class, find problems in time and evaluate the classroom, which consists of two parts: teachers and students evaluate each other; After class, the school-enterprise cooperation is promoted online, and the practical application value of students' design scheme is enhanced by the evaluation of enterprise professionals. Actively create opportunities for students' self-evaluation and peer-to-peer evaluation. Students' feedback is good and their learning results are remarkable. The postgraduate entrance examination rate of this major in 2021 is over 10%, with high employment quality and social recognition [10].

5. Summary and Reflection

5.1 Course Features

① Teaching Methods: Reform the teaching mode of design research courses, conduct research in different directions and teams, establish course groups, and cultivate team cooperation ability; Improve the management system of students' extracurricular autonomous learning, and advocate mixed learning and inquiry learning based on evaluation in the classroom; Incorporate the actual project of the enterprise into the teaching content, complete the design task, and realize the school-enterprise cooperation.

② Teaching Content: It has the characteristics of "golden course" of high-order, innovation and challenge. The teaching content has depth and breadth, reflecting the frontier of disciplines and infiltrating professional ideas. Incorporate traditional culture and ideological and political education, establish cultural self-confidence, and pay attention to the cultivation of students' feelings of home and country, science and humanistic spirit.

③Teaching Evaluation: pay attention to the evaluation of the whole teaching process, increase the process assessment, strengthen the process management through online and offline mixed mode, and conduct various evaluation methods such as teacher evaluation, student mutual evaluation and enterprise tutor evaluation through defense, roadshow and exhibition, so as to guide students to discover, analyze and solve problems and improve students' ability to apply and create knowledge.

④Curriculum Resources: to build a team of teachers with information-based teaching ability and create an environment and atmosphere for innovative education; Through online and offline

teaching interaction, we can realize learning exchange and interactive teaching between teachers and students [11].

5.2 Innovation of Teaching Reform

①Pay attention to the whole process of teaching management, and carry out teaching in the form of teaching team, combining online and offline.

②Introduce practical enterprise topics and participate in subject competitions, pay attention to cultivating students' practical design ability and innovative practice ability, master the whole process of product development, and cultivate students' comprehensive design ability of finding problems, analyzing problems and solving problems in the design process.

③Pay attention to traditional culture and ideological and political education in teaching, establish a correct design concept, establish cultural self-confidence, pay attention to the cultivation of students' feelings of home and country, science and humanistic spirit, and fully implement OBE teaching philosophy.

5.3 Community-oriented Promotion and Continuous Service Plan

①To further expand the teaching demonstration role. Through the teaching innovation of this course, a strong teaching staff has been trained. In 2021, the product design major of our school was rated as a national first-class professional construction unit. Every year, teachers were promoted to a higher level of professional titles, and applied for a number of educational reform projects, college students' innovation and entrepreneurship projects, etc., guiding students to participate in discipline competitions won numerous awards, and the funds for completing enterprise design projects exceeded 100,000 yuan each year. In 2017, the teaching reform project "Reform of Practical Teaching System of Industrial Design Specialty Based on Service Design Concept" hosted and participated by the main team members won the second prize of provincial teaching achievement.

②Actively explore scientific and diversified academic evaluation methods, implement the whole process of academic evaluation, increase the process assessment, and expand the proportion of usual grades in the total scores of courses. Through defense, roadshows, exhibitions and other modes, teachers' evaluation, students' mutual evaluation, enterprise tutor evaluation and other evaluation methods are carried out to guide students to discover, analyze and solve problems and improve students' ability to use and create knowledge. The feedback from the students is good. The postgraduate entrance examination rate of this major in 2021 is over 10%, and the employment quality is high, which is recognized by the society [12].

③The teaching of this course is closely combined with the needs of enterprises and society, and a series of horizontal projects of enterprises have been completed, which have achieved good results and been recognized by enterprises. The teaching mode of "school"-"enterprise"-"society" has been established and coordinated with each other, which will be extended to the teaching of other majors or other courses increase the radiation of innovative achievements and continuously serve the society.

Acknowledgement

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