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Application Research and Teaching Implementation of Rubik's Cube Furniture in Home Design

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Abstract: A diversified teaching evaluation system has been established based on the characteristics of teaching content, with more diverse evaluation subjects including enterprises, teachers, and students. The evaluation content is more diverse, including daily performance evaluation, homework evaluation, project implementation evaluation, and project achievement evaluation; The evaluation methods are more diverse, including enterprise evaluation, teacher evaluation, teacher-student mutual evaluation, questionnaire voting, and other evaluation methods.

Keywords: Rubik's Cube Furniture; Home Design; Teaching Implementation; Evaluate.

1. Teaching Implementation

1.1. Teaching Implementation Ideas

The classroom teaching of this course relies on a blended online and offline teaching mode, while implementing teaching processes such as "pre class guidance - project introduction - teacher guidance - case demonstrations - task driven - project driven - student led - group discussions - group reports - teacher feedback - student peer evaluation - comparative summary - classroom evaluation - overall evaluation".

1.2. Basic Process of Teaching Implementation Design

Divide the course learning into stages and tasks, Task 1: Module of Rubik's Cube Home Design in Preparation Stage (Field Survey Method, 2 hours), Task 2: Planning of Rubik's Cube Home Design in Design Stage (Software Training Method, 2 hours), and Task 3: Implementation of Rubik's Cube Home Design in Deepening Stage (Task Driven Method, 2 hours).

1.3. Design of Teaching Implementation Plan

Task 1: Preparation Phase Module of Rubik's Cube Home Design (Field Survey Method, 2 class hours) Teaching Content Design: Firstly, Task 1 Module of Rubik's Cube Home Design. The teacher first displays Rubik's Cube furniture and three bedroom and one living room models, and explains the use of measurement tools and the method of model size conversion. Next, students will be grouped and measured, and the measurement results will be uploaded and submitted to the online course learning platform through their mobile phones [1]. Based on the measurement results, the teacher compares and analyzes the data of Rubik's cube furniture with the three bedroom and one living room model, guiding students to analyze and judge the relationship and rules between the scale data of furniture and Rubik's cube furniture, and explaining the origin of the modulus of Rubik's cube home design.

Task 2: Planning of Rubik's Cube Home Design in the Design Phase (Software Training Method, 2 lessons) Teaching Content Design: Next, the learning of Task 2. Firstly, the teacher explains the planning of Rubik's Cube Home Design through video animation. The teacher uses SketchUp professional software to explain and lead students to complete the 3D component design of Rubik's Cube furniture for three bedrooms and one living room. Then, the finished Rubik's Cube furniture components are placed in the virtual model space of three bedrooms and one living room, and the design results are uploaded and submitted to the online course learning platform. Teachers should provide timely feedback and guide students to analyze and judge the relationship between Rubik's Cube furniture and residential space scale data, and explain the spatial scale and planning of Rubik's Cube home design.

Task 3: Deepening the implementation of the Rubik's Cube home design (task-driven method, 2 hours) Teaching content design:

According to SketchUp software, students are divided into groups to create the 3D components of the Rubik's Cube furniture for three bedrooms and one living room [2]. The finished Rubik's Cube furniture components are placed in the physical model space of the three bedrooms and one living room, and photos of the physical production are uploaded and submitted to the online course learning platform. Teachers should provide timely feedback and explain the production and implementation of Rubik's Cube home design, including the cutting and connection methods of Rubik's Cube furniture.

1.4. Teaching Evaluation

A diversified teaching evaluation system has been established based on the characteristics of teaching content, with more diverse evaluation subjects including enterprises, teachers, and students. The evaluation content is more diverse, including daily performance evaluation, homework evaluation, project implementation evaluation, and project achievement evaluation; The evaluation methods are more diverse, including enterprise evaluation, teacher evaluation, teacher-student mutual evaluation, questionnaire voting, and other evaluation methods [3].

2. Classroom Teaching Implementation Results

Through the blended online and offline teaching mode, abstract and difficult to explain knowledge points are made clearer and more vivid through information technology,

achieving very positive results for both students and teachers.

2.1. Student Performance

By integrating course teaching resources through online teaching platforms, students can learn courses anytime and anywhere. Even during the epidemic, students can still achieve "suspension of classes without suspension" through these abundant teaching resources.

Through teaching methods such as task driven, project driven, and school enterprise cooperation, the job workflow has been moved to the classroom. Students can better participate in the project implementation process, and their learning ability has been greatly improved. In 2018, they won the second prize in the Provincial Purple Gold Competition [4].

2.2. Teacher Effectiveness

The teaching philosophy of this course extends the teacher's teaching environment beyond the classroom teaching stage, but to the entire teaching process before, during, and after class. Rich teaching methods also require teachers to constantly innovate in the teaching process, significantly improve their classroom teaching level, and foster closer collaboration among teaching teams.

3. Teaching Reflection and Rectification

3.1. Teaching Reflection

1. Extension of teaching classroom: With the support of online teaching platforms, course teaching is no longer limited to learning in limited time and space, but learning anytime and anywhere, providing students with more learning channels;

2. Task driven, project driven, and school enterprise linkage: The interior designer position is a highly practical position, and through practical case exercises, it can improve students' professional abilities and promote the improvement of teaching quality.

3. New teaching methods: combining the Internet, PC terminal, mobile phone terminal, etc., improves the teaching interest and sense of experience, and students' learning interest is improved;

4. Rich teaching resources: micro videos, screen recording resources, various online teaching platforms and other teaching resources have enriched the learning content;

5. New requirements for teacher abilities: Teachers not only need rich teaching abilities, but also need to enhance their practical abilities in enterprises, as well as their learning abilities in new things, new processes, new technologies, and new methods;

6. Requirements for teaching facilities, venues, and equipment: Higher challenges have been posed for teaching venues and teaching software and hardware levels;

7. Higher requirements are put forward for students' learning ability: the emergence of various new things requires students to have stronger acceptance ability, and higher requirements are put forward for their learning consciousness, self-learning and review before and after class. Due to the emergence of team task division, higher requirements are placed on students' teamwork ability.

3.2. Teaching Rectification

In order to better enable students to experience the actual project implementation process, methods such as micro videos and project-based teaching were used in the teaching process to create scenarios for students. However, there is still a certain gap with actual projects. In the future, more companies can be introduced to set up workstations in schools, allowing students to participate in actual projects without leaving the school gate. This will be of great help to students in their future internships and employment [5].

4. Teaching Characteristics and Innovation

4.1. Teaching Characteristics

1. Integration of industry and education, school enterprise co education: Enterprise participation in the teaching process, including project task formulation, explanation of ideas, project content, evaluation, and other processes, is conducive to promoting the development and progress of teaching. At the same time, integrate course teaching into the production process of enterprises, and promote the integration of knowledge and action through the alternation of engineering and learning;

2. Project integration, driven by both theory and practice: The integration of real projects is beneficial for improving student motivation and project participation, and is of great help in enhancing professional abilities. Through the combination of theory and practice, effectively solving the relationship between teaching and learning, stimulating students' interest in learning, and greatly improving their subjective initiative and practical project hands-on ability in learning;

3. Blended teaching and resource sharing: By fully utilizing modern information technology and digital resources, as well as sharing resources on school enterprise cooperation platforms, we strive to build a project-based blended teaching model, which has brought about significant changes in the educational and learning methods of teachers and students. This is of great help in improving teaching quality and the teaching environment.

4.2. Teaching Innovation

1. Diversified ideological and political education: During the epidemic, fully utilize online and offline resources, explore ideological and political education from multiple perspectives and at a deeper level, and introduce the achievements of epidemic prevention and control construction into curriculum teaching. Integrating engineering ideological and political cases into various teaching units and links of the course in various forms, taking into account industry characteristics and course characteristics, fully reflecting ideological and political elements such as socialist core values and craftsmanship spirit;

2.Diversified presentation methods: Teaching resources include not only traditional drawings, but also electronic CAD drawings, as well as SKB 3D models, sandbox models, etc. The diverse presentation methods make the tedious drawing recognition and calculation work more interactive and experiential, enhancing students' learning interest;

3.Multidimensional teaching evaluation: Based on the characteristics of teaching content, a multidimensional teaching evaluation system has been established, including online and offline learning evaluation, pre class, in class, and post class evaluation, enterprise evaluation, teacher feedback, student self-evaluation, teacher-student mutual evaluation,

questionnaire voting, and other evaluation methods to provide feedback on learning outcomes.

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