

Research on Job Requirements-Oriented Course Innovation of Architectural Drawing and AutoCAD

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Abstract: Architectural Drawing and AutoCAD are a professional basic course for the School of Construction and Engineering of Vocational College. This article propose the goal of training students' post skills, based on the current architectural drawing and diagrams, and the problems existing in the teaching process of AutoCAD courses. From the actual needs of the post, and conduct teaching reforms from the three aspects of the connection between the curriculum, the teaching mode, and the assessment and evaluation methods, explore a new model suitable for Architectural Drawing and AutoCAD course teaching of Vocational College.

Keywords: Post-Skill; Architectural Drawing and AutoCAD; Course Reform.

1. Introduction

Architectural Drawing and AutoCAD are professional basic professional basic course in the field of construction engineering. Based on the learning and drawing learning of construction engineering icon standards. It is the basis for students' future professional courses, and is also a basic post-skill for students to work in the field of construction engineering industry after graduation.

Through the study of this course, students are familiar with the national construction engineering icon standards. Can draw the construction map according to the specifications, including proficient drawing of plane, facade, section, and detailed nodes. Architectural Drawing and AutoCAD allows students to further understand the basic knowledge and design methods of construction engineering, and cultivate students to draw the practical ability and comprehensive professional literacy of students to draw construction drawings.

Architectural Drawing and AutoCAD aims to cultivate actual post skills, during the teaching process, through the real projects of the enterprise, the job tasks run through the classroom to improve the students' actual operation ability, cultivate students' ability to understand and draw, and enable students to seamlessly connect with professional positions after graduation, and cultivate high for society. Quality technical and skillful talents. Architectural Drawing and AutoCAD are a skill-type practical course, emphasizing students' own exercises. Therefore, how to deal with the relationship between the teacher's "teaching" and the students, mobilize the enthusiasm of students, allow students to better grasp the content of the curriculum, and cultivate the post skills of students.[1]

2. Reform Background and Main Problems

(1) Unfinished contact with other courses

Architectural Drawing and AutoCAD lacks horizontal connection with other professional courses. The curriculum arrangement was in the first semester of the freshman year. The basic knowledge and skills were mainly based on the course. There is still a distance from the needs of various

professional graphics. It is difficult to transform the students' abilities into the skills required for professional diagrams and drawing.[2] In addition, the architectural drawing and CAD are consolidated by the original architectural literacy and the content of the AutoCAD diagram, but the class is not integrated in form. Talk about the knowledge of the picture again.

(2) Single form of lectures

The form of Architectural Drawing and AutoCAD lectures are relatively single, and basically the teaching methods of "lecturer demonstration+student practice". As the protagonist of the classroom, students passively obtain knowledge and skills, and it is difficult to play the initiative of learning. Many textbook AutoCAD mainly focuses on the drawing and editing commands of professors, complicated operations, and disconnecting the needs of actual engineering drawings. As a result, students are very hard to learn. The teaching content is single, mainly software operations, insufficient depth of engineering drawings, gap with job skills demand, and difficult to meet the needs of business talents. The exercise time in the class is limited, and the after-school exercises are not targeted. Students do not have a solid grasp of basic knowledge and ability enough, which requires more time to review when the core curriculum study.

(3) The evaluation method is single and the orientation is poor

In Some Vocational Colleges, AUTOCAD drawing course evaluation methods are practical assessment. Students' usual scores accounted for 60%of the total scores, and 40%of the final scores. The assessment content is drawn through the prescribed interior construction drawings through the operation of the machine. It mainly examines the students' actual operation ability, the degree of mastery of the software, and the evaluation method is single. It is difficult to reflect the teaching concept of combining theory and practice. Learning effect and comprehensive occupational literacy.[3] The traditional curriculum assessment method can be roughly judged on the training of students' ability. It has a certain scientific and operable, but there is a problem of fuzzy evaluation indicators and poor matching of job ability requirements as a whole, resulting in low professional orientation.

3. Curriculum Reform

Based on job needs, mission disassembly, curriculum reform from the following aspects:

(1) Focus on the connection and integration with other courses

In the early stages of carrying out the architectural drawing and CAD courses, most of the students who read and draw the content of the three views have learned in the high school stage, so make a simple review with 4 classes. Focus on consolidating the reading problems that will be encountered in later professional courses, and consolidate through drawing methods. Teachers can allow students to use software to draw knowledge drawings to strengthen job ability training. In other professional courses, the reading and drawing of CAD drawings always run through it. This not only allows students to familiarize the software operation and improve the operation skills, but also allow students to understand the latest ability needs in time. In order to enter the job smoothly, it has lay a solid foundation for talents that enterprises really need.

(2) Change the previous teaching methods, adopt online and offline hybrid teaching mode

Properly promote vocational education, "To truly deepen the integration of production and education, school - enterprise cooperation"[4]. Based on years of teaching experience and students' employment, the author has found that some students often have difficulty integrating the knowledge skills they have learned in actual work. How to combine teaching with actual positions to enable students to have solid job skills after graduation is a problem that teachers need to solve in the teaching practice. This requires teachers to change the previous teaching model.

Architectural drawing and CAD are a very practical course. In teaching, teachers can introduce the true architectural design projects of the enterprise. Taking real projects as a carrier, creating a real working situation, and cultivating students' corresponding ability with real positions. Teachers can lead students to measure on -site, and use AutoCAD software to draw a complete set of construction drawings, including the four facade maps of the building, the building's facade, and the building section. In the process of teaching, teachers should explain in detail each diagram in the order of drawing, which must not only emphasize the standardization of the map, but also explain the design details, such as the material structure, color, size, etc. Teachers should integrate the content in other courses in the course, so that students can not only master the practical ability of the software, but also solve practical problems encountered in future work.

With the continuous development of Internet technology, the teaching concepts and teaching models of higher education have also changed, which has formed a hybrid teaching mode combining online and offline combination.[5] The original definition of hybrid teaching is: the combination of online teaching and facial teaching. But with the development of hybrid teaching, it is no longer a combination of face -to -face teaching and online teaching. The advantage of hybrid teaching is that it can play the leading role of teachers' guidance, inspiration, and supervision in the teaching process, but also give full play to the initiative, enthusiasm and creativity of students as the subject in learning. There are many teachings content and knowledge points for architectural drawing and CAD courses, but the total course of the course is often only 64 classes. Among

them, the practical courses can only account for two -thirds. Students can often only understand the basic operation knowledge of the software.

Through courses, job positions, skills certificates, and skills competitions, a practical teaching system is constructed according to the three levels of basic projects, small projects, and advanced projects. Among them, the basic projects mainly focus on mastering the basic principles, basic methods, and operating specifications of architectural drawing and CAD, and lay a solid foundation for students' skills and operations. Afterwards, entering simple projects and building construction drawing learning mainly uses practical training projects, skills verification, and innovative courses as the carrier to improve students' analytical skills. In-class and extra-curricular practice exercises focus on improving the application level of skills and lay the foundation for solving practical drawing problems, such as shown in Figure 1.[6]

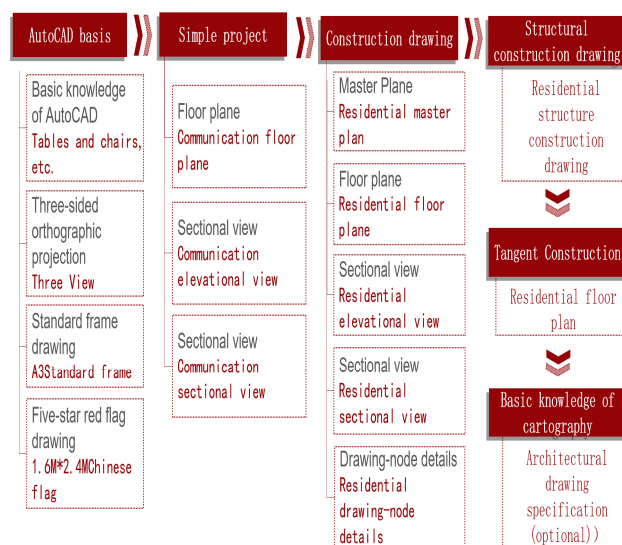


Figure 1. Curriculum system reconstruction

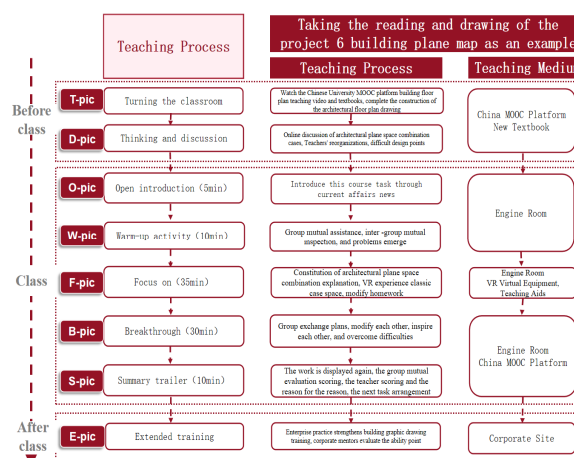


Figure 2. Teaching process

Teachers can refine the content of the curriculum and break down the knowledge points. Teaching content is divided into three major blocks before, in -class, and after class. Through the combined and offline mixed teaching, the teaching content that is difficult to complete in the class is rationally distributed in students' pre -class and post -class learning and review the knowledge points to achieve teaching goals. The number of online teachings every week is set at about twice. Students watch one or two videos each time, and the duration of each video is controlled within 15 minutes. In the process

of online teaching, students can freely regulate their learning time and learning progress, and teachers only play a role in supervising and guiding. Students can submit homework through online platforms. Teachers can understand the students' learning situation through the platform, correction and reviewing homework, and timely information feedback and online questions. The teaching process is shown in Figure 2.

In the theoretical teaching of Architectural Drawing and AutoCAD courses, teachers play a dominant role. Introduce the real projects of the enterprise into the classroom, analyze and explain the actual cases, allow students to find problems, analyze, solve problems in their studies, and continue to reflect and summarize their learning, thereby improving their ability to deal with various professional and technical problems. In teaching practice, students are the main body. By following the actual projects of the enterprise and completing various tasks, they can master software operation skills and improve their job skills. This combination of online and offline hybrid teaching models can cultivate students' independent learning ability and inquiry ability, improve teaching quality and learning efficiency, and improve students' professionalism.

(3) Innovation of assessment and evaluation methods

Architectural Drawing and AutoCAD are a very practical course. Through the study of this course, students must master the drawing ability of construction drawings and have comprehensive job skills. It is important to build a fair, objective and practical curriculum evaluation system. The assessment of this course focuses on the application of AutoCAD operating skills in actual enterprise projects. Teachers should focus on students' ability to analyze and understand the construction drawings, the ability to operate differently in different construction drawings, and comprehensive job skills.

According to the requirements of the drawing staff, the practical teaching of Architectural Drawing and AutoCAD course should be from easy to difficult. According to the requirements of ability, it is divided into three parts: familiar with the construction graphic standard of construction, the basic operation of the software, and the drawing drawings. Figure icing standards include familiarity with national architectural chart standards and accurate understanding of symbols, lines, planes, facades, section, and node details. Teachers should focus on evaluating students' construction map and reading ability and grasp of theoretical knowledge. Software basic operations include the degree of use and proficiency of basic drawing tools, editing tools, and teachers should focus on evaluating students' mastery of software operations. Construction drawing includes the drawing of the construction plan of the building, the drawing of the construction facade of the building, and the details of the node. Teachers should focus on evaluating the students' comprehensive use capabilities, solution design capabilities, and comprehensive job skills for students' comprehensive use capabilities, solution design capabilities, and comprehensive job skills.

At the same time, teachers should join the theoretical test part in the evaluation of practical operations. Especially in terms of diagram specifications, standards, etc., the importance of combining theory and practice should be highlighted. The evaluation method can be divided into three parts: student mutual evaluation, corporate review, and teacher evaluation. Display student homework through

multimedia platforms, discuss and evaluate each other between students, and finally evaluate by teachers. Students' mutual evaluation allows students to discover the gap between themselves and others, so as to make self-evaluation more clearly, so as to take advantage of long-term and short-term progress. Enterprise reviews are important links in the entire evaluation system. It can point out the gap between student abilities and actual post skills and indicate that students in the later period of improvement are important goals of the assessment. Teacher evaluation is a comprehensive evaluation of students' learning ability, curriculum knowledge, and job quality ability, and a comprehensive overview of students' mutual evaluation and corporate reviews.

4. Conclusion

Architectural Drawing and AutoCAD are a basic course in the field of construction engineering. Its application scope is getting wider and wider, and its application requirements are getting higher and higher. Through many years of curriculum teaching work, the author discovered the problems in the current teaching process, and proposed some reforms. First of all, teachers should strengthen the connection between the curriculum and other professional courses, penetrate the content of the course into other professional courses, emphasize the application of AutoCAD software, and allow students to master relevant skills and skilled operations in subsequent courses. Secondly, higher vocational colleges should introduce actual project cases, create a real working situation, and establish a hybrid teaching model that combines online and offline with teachers as the main body and the main body. Students' learning initiative, improve their learning enthusiasm and innovation ability. Finally, higher vocational colleges should improve the curriculum assessment and evaluation methods, and emphasize the evaluation method of combining theory and practice. Through the three methods of student mutual evaluation, corporate evaluation, and teacher evaluation, students' software operation ability, application ability and occupation are comprehensively evaluated. Literacy. Through the reform of Architectural Drawings and AutoCAD courses with training job skills as the teaching goal, training applied talents can lay a good foundation for students to enter professional positions.

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(2) Production and Education Integration Funding Project of the Wenzhou Polytechnic in 2020/2023 year --Exploration and practice of production and education collaborative education model based on Zhiyuan Architectural Design and Research Institute (No. WZYCJRH202005).

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