

Research on Innovative Reform of Architectural Design Courses in the Context of Internet+

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Abstract: The architectural design course is a core component of the architecture major. In order to break through traditional teaching methods and enhance students' practical application abilities, it is necessary to conduct in-depth research on the "student-centered" approach in the context of Internet+ and utilize internet resources and platforms for innovation and reform in architectural design courses. This article explores the establishment of reform objectives, including knowledge objectives, skill objectives, and quality objectives, as well as innovative teaching methods, instructional design, practical teaching, process evaluation, high-quality courses, and extracurricular activities. Based on the optimization theory of architectural design courses and innovative reforms in practical teaching, the aim is to cultivate innovative and practical talents with strong application and design abilities.

1. Introduction

The architectural design course is an essential component of the architecture major, with a focus on cultivating the practical application of theory and nurturing students to become professionals in the field. This course helps students build a knowledge and theoretical framework centered around the "fundamental issues of the profession, such as space, construction, and site". It aims to establish a design concept rooted in the fundamental understanding of architecture and encourages students to apply this knowledge in various contexts. Traditionally, the teaching approach for architectural design courses relies heavily on project-based learning and places students at the forefront. However, there remains a concern within educational institutions that "theory is prioritized over practice", which fails to fully promote students' innovative and practical abilities.

With the advent of the "Internet+ Education" era, there have been significant changes in the channels through which students acquire professional knowledge. The new blended learning model, which combines the advantages of online and offline instruction, has emerged as a "product of the new era" in the field of education [1]. The concept of blended learning primarily involves reforming the existing instructional methods, encompassing not only online instruction but also offline instruction [2]. The innovative reform of university courses in the Internet era must closely integrate with modern online education resources and technologies. Utilizing high-quality internet teaching resources and actively reforming instructional methods suitable for architectural design courses are important guarantees for enhancing teaching effectiveness and quality. By leveraging the advantages of the "Internet+" concept, architectural design courses actively employ blended

learning models. This entails integrating online platforms for quality course resources, smart classrooms, and rain classrooms with offline project-based, case-based, and seminar-based teaching approaches. It also involves expanding practical teaching methods such as exhibitions, competitions, and workshops to enhance students' practical application abilities [3].

2. Reform Objectives

Based on the “Internet+” context, the reform of architectural design courses should be tailored to the talent cultivation goals of different institutions. Taking the example of reforming architectural design courses for applied talent cultivation objectives, the desired qualities, skills, knowledge, and abilities that students are expected to possess through the study of architectural design courses are as follows:

2.1. Knowledge Objectives

Assist students in establishing a modern architectural design perspective centered around “fundamental types of problems” that approaches the essence of design and enables them to draw analogies. Help students grasp and comprehend the latest trends in professional development, integrating cutting-edge knowledge with foundational teaching, and establish a knowledge and theoretical framework based on the “architectural ontology perspective”.

2.2. Ability Objectives

“Emphasize process control” in teaching, guiding students through rational and exploratory thinking and working methods centered around “problems” to stimulate their autonomy, cultivate innovative thinking, and foster personal development. Help students master a set of processes and methodologies for developing and refining designs through the means of “design concepts” to effectively enhance their design innovation abilities.

2.3. Quality Objectives

Significantly improve students' foundational design skills: Teach through “hands-on” approaches (modeling, physical construction, sketches, computer-aided design) to develop and refine the processes and methods of design. Cultivate students' habits and abilities in utilizing references. Strengthen oral, written, and visual expression and communication skills. Enhance team collaboration awareness and teach methods and skills for effective teamwork.

3. Reform Objectives

In the context of architectural design courses, addressing the issue of a traditional teaching approach that “emphasizes theory over practice” necessitates a comprehensive reform encompassing teaching methods, instructional design, practical education, and the development of exemplary courses. This reform aims to enhance students' practical application and innovation capabilities.

3.1. Innovative Teaching Methods

In the context of the Internet+ era, the architecture design courses can benefit greatly from the abundant online resources and platforms. Compared to traditional teaching models, adopting a blended learning approach, combining online and offline teaching, can inject more vitality into architecture design education. This approach facilitates better communication and interaction among teachers and students, resulting in a mutually beneficial teaching and learning environment

[4]. Blended learning primarily employs digital resources and platforms to expand students' learning space and broaden their knowledge base. It serves as a flexible and effective complement to traditional offline teaching methods. Using architecture design courses as an example, the curriculum can be divided into three parts: pre-class, in-class, and post-class. During the pre-class phase, online teaching resources can be utilized to provide students with preparatory materials. This helps students gain a general understanding of the course content, facilitating a smoother transition into formal teaching. In the in-class phase, case-based teaching, project-based learning, and interactive teaching methods can be employed, putting students at the center of learning. By breaking the boundaries of relying solely on textbooks as the main teaching tool, students' motivation and engagement can be stimulated, enabling them to fully comprehend and master the key concepts of architecture design. In the post-class phase, a combination of online and offline activities can be employed. Discussions, questions, and assignment feedback can be facilitated through online platforms, while deeper exploration and clarification can take place offline. This approach enhances students' grasp and understanding of architecture design knowledge.

3.2. Expanding Teaching Design

“How can we do better?” is the core question to consider in teaching design. To break the traditional one-way teaching approach, architecture design courses can be viewed as a holistic entity, which is then divided into several teaching segments. These segments involve personalized teaching design based on a unified set of teaching objectives. Each teaching design can be structured within one class hour and include the following key elements: general course information (course title, course type, target audience, textbook analysis, teaching aids preparation, etc.), student analysis, teaching objective design, addressing teaching focus and difficulties, teaching methods and strategies, selection of teaching media and resources, innovative classroom teaching approaches, teaching process design, and courseware or blackboard design, among others. By employing teaching design in architecture design courses, implementation strategies for blended learning modes can be explored. This facilitates the creation of teaching models that are more suitable for students and the specific course type [5]. Through the integration of online teaching resources and platforms, personalized teaching can be enhanced, truly embodying the “student-centered” teaching philosophy in the classroom.

3.3. Strengthening Practical Teaching

The architectural design course itself is highly practical, but it is challenging to incorporate real-world engineering projects into traditional classroom teaching due to limited class hours. Therefore, reforms and breakthroughs are necessary in practical education to help students enhance their practical application abilities [6]. Firstly, in terms of course design, it is beneficial to interweave theoretical instruction with practical sessions, aligning with the concept of learning by doing. This approach allows for the immediate application of theoretical knowledge, enabling students to better grasp the concepts. Secondly, establishing teacher project studios can introduce real-world engineering projects into the classroom. If the projects are too extensive, an overview can be provided during class, followed by the dissecting of smaller project components to familiarize students with workflow processes. This early exposure enables students to adapt to future job responsibilities during their time at school [7]. Lastly, strengthening collaborations with industry partners and incorporating practical engineering projects that suit students' needs, while simulating real industry practices, fills the gaps in theoretical instruction and better prepares students for their future careers [8].

3.4. Emphasizing Process Evaluation

Architecture design courses typically do not include examinations and instead prioritize assessing students' learning progress through regular assignments. Thus, evaluations in teaching should focus on dynamic and continuous assessment to promote students' learning development [9]. Considering the practical nature of architecture design courses, the assessment of student outcomes should differ from the traditional teacher-centered approach to avoid one-sided evaluations. Process evaluation should be based on project practices and comprehensively assess students' authentic performances, with teachers and students as the evaluators. The primary focus should be on students' performance throughout practical courses, teamwork abilities, and comprehensive qualities. Providing feedback based on the evaluation results serves as an effective foundation for enhancing the practical application and innovative design capabilities of architectural engineering professionals [10].

3.5. Crafting Exquisite Courses

Leveraging the advantages of the internet, students can supplement their learning with numerous online resources that are helpful and enriching to their courses. The key is to prioritize quality in the development of these courses. Additionally, students often feel a sense of familiarity with familiar teachers and teaching environments. This encourages teachers, who have accumulated years of teaching experience, to integrate teaching resources and craft exquisite courses tailored to the characteristics of their students. In the construction of these exemplary courses, it is essential to comprehensively review and design the teaching content, taking into consideration the unique features of architectural design courses. This entails incorporating innovative methods and thinking into the curriculum, guiding students to engage in independent learning and innovative research, and strengthening their practical application abilities. By optimizing the relationship between theoretical and practical teaching, students' open-minded thinking and practical skills can be further developed through practical training, fostering their spirit of craftsmanship and innovation in the field of expertise.

3.6. Extending Extracurricular Activities

In the era of the Internet +, in addition to vertical reforms in classroom teaching, extending extracurricular activities such as exhibitions, competitions, and workshops horizontally is an important extension and expansion of practical teaching. These activities can better enhance students' practical application abilities. Whether it is exhibitions, competitions, or workshops, the second classroom requires students to personally conduct research, engage in discussions, organize, and solve various problems. This promotes students' ability to understand theoretical knowledge in a more intuitive manner and apply it effectively. It also strengthens their application of professional knowledge and continuously improves their innovative practical skills. For example, in architectural design courses, topic selection can be combined with design competitions, providing students with a broader platform for knowledge and skills practice. This also offers a favorable teaching method for relatively stable design courses, ultimately enhancing students' practical and innovative abilities. The second classroom is an important complement to innovative teaching reforms in architectural design courses, effectively addressing the issue of "excessive emphasis on theory and insufficient practical experience". By restructuring the practical teaching process, it not only optimizes the balance between theory and practice, but also expands students' design thinking and perspectives. Furthermore, it further enhances students' abilities in learning, analysis, synthesis, and innovation, ultimately improving their professional competencies as designers.

4. Conclusions

In the context of the Internet+ era, reforming architectural design courses and seizing the opportunity to innovate the development of blended learning models serve as catalysts for deepening the reform of classroom teaching in the architectural design curriculum. This reform aims to facilitate the transition from a “teacher-centered approach” to a “student-centered approach”, while advancing the reform of the “online-offline blended learning” method supported by Internet technologies. Such reforms are essential to adapt to the development of the times and meet the needs of society. Through continuous reform, it is possible to gradually enhance students’ practical application abilities, thereby cultivating them into applied talents with strong practical and innovative capabilities.

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