



Research and Practice on the Construction of Curriculum Resource Repository for Architectural Design under the Background of "Internet +" Era

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Abstract. With the development of modern information technology and the advancement of educational and teaching reform, using information technology to promote educational reform and innovation has become an important aspect of the development of higher education. This research constructs the curriculum resource repository for architectural design in accordance with the concept of "fragmented resources, structured courses, and systematic design", aiming to make the resource repository truly serve education and teaching, meet the personalized needs of teaching resource applications, and enhance the effective use of information technology. It is expected to provide some reference for the construction of resource repositories in similar institutions and educational reform, and form a demonstration for promotion.

Keywords: Architectural Design; Curriculum Resource Repository; Teaching Reform.

1 Introduction

In recent years, the development of technologies such as big data, artificial intelligence, and the Internet of Things has drastically changed the architectural market, raising the demands on architects by enterprises and institutions. The traditional teaching model of architecture majors struggles to meet the market's demand for professionally applied talents, necessitating reform. With the introduction of the new engineering talent training model by the Ministry of Education, the goal of educating students has shifted from a focus on theory and professional techniques to nurturing engineering talents with innovative spirit and practical skills[1]. Using information technology to promote educational reform and innovation has become an important aspect of the development of higher education. In the field of architectural design, the development of architectural design software and the Internet has also promoted the continuous progress of the informatization of architectural education. With the advancement of information technology, the traditional way of exploring architectural issues through hand-drawn drawings

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ings or handmade models has been changed. The emergence of new architectural software such as BIM, SketchUp, and Lumion enables designers to intuitively infer the building form, volume, and spatial relationships through computer simulation during the conceptual design stage, which is of great benefit to the process and results of architectural design. The informatization of the construction industry is advancing rapidly, and the informatization of architectural education is also booming accordingly[2].

At present, our architecture major has a wide variety of resources, but they have not been integrated, and the utilization rate and systematicity are not strong. Students who are still in the early stage of professional learning find it difficult to use these resources in a targeted and efficient manner. Therefore, there is an urgent need to build a professional information resource library for architecture related courses.

2 Construction Ideas of the "Resource Repository"

2.1 Aligning with Curriculum Requirements

The curriculum group of the architecture major mainly includes three types of teaching modules - architectural design, architectural technology, and architectural theory, with architectural design courses being the core. The cultivation of architecture talents aims to cultivate the innovative and practical ability of architectural design, examining students' actual design ability. Students master relevant theoretical knowledge and professional skills through the study of architectural theory and architectural technology, and obtain design practice training in a series of architectural design courses, thus mastering design ability. Design results can also flow bidirectionally among various courses, be effectively used in different courses, and be further deepened and improved in different courses, improving learning efficiency. However, in current curriculum teaching, the three major teaching modules are in a relatively independent serial state. Although there are many curriculum resources, they are complex and disorderly, and cannot be used for learning and knowledge parallelism efficiently. Therefore, the construction of the architecture teaching resource repository advocates mining, refining, and integrating according to the "1 core, 2 levels, and 9 modules". Taking the courseware resource repository, book resource repository, network resource repository (websites, official accounts, videos), text resource repository, quick - design resource repository, work resource repository, modeling resource repository, drawing resource repository, and post - production resource repository as the main digital resource carriers, a smart architecture professional resource repository is sorted out with architectural design as the core, architectural technology and architectural theory as the two - level supplement, and eight resource repository modules as the auxiliary to optimize the efficiency of talent cultivation. As an instant messaging software in the Internet era, QQ has the characteristics of instant use, wide - spread popularity, simplicity, strong sharing, and the ability to upload large files. Therefore, it is used as the platform for the construction of the resource repository in this research to give full play to the advantages of information technology in teaching.

2.2 Research Expectations

The construction of the curriculum resource repository can strengthen the cross - integration among the knowledge systems of various architecture courses, providing a complementary teaching sharing resource platform for design - related courses. The goal is to share teaching resources, establish the scientificity and systematicness of teaching resources, and improve teaching efficiency. It enriches the types of learning resources for students, clarifies learning goals, and makes the categories clear, realizing the efficiency of learning. Through the joint construction of the curriculum resource repository by teachers and students, students', these strategies include involving students in collaborative projects, providing training in collaboration skills, striking a balance between online and in-person activities, and developing supportive policies and skills. Implementing these strategies can help design programmes that prepare students for professional success and future careers[3], and also builds an effective sharing and communication platform between universities and counterpart enterprises.

3 Construction Practice of the "Resource Repository"

Contemporary architects must realize that it is very important to develop a new teaching method, which provides students with theoretical and practical ideas. It can be achieved by combining the most common skills with innovative means, first of all generating artificial intelligence, which is the largest technological revolution since the emergence of the Internet[4].

The curriculum resource repository for architectural design is constructed in accordance with the concept of "fragmented resources, structured courses, and systematic design". The existing complex, disorderly, and scattered fragmented resources of teachers and students are sorted and classified using the QQ platform. According to the curriculum structure with architectural design courses as the core and architectural theory and architectural technology courses as the auxiliary, nine resource repositories are systematically designed and planned to provide data support for curriculum requirements, focusing on solving the key and difficult problems of architectural design - related courses. Using QQ groups as the interactive platform, QQ groups are established according to the corresponding resource types, and teachers and students classify and use resources according to the QQ group types and the folder categories within the groups. As the main users, students only need to join a few QQ groups to conveniently use and participate in the construction of the resource repository, providing a personalized training path for students. With teachers as the leading force in the construction of the resource repository, following the principle of "joint construction and sharing, construction while using, and optimization while using", the follow - up construction, improvement, and optimization of the curriculum resource repository are well - done to ensure the sustainability of the construction and application of the curriculum resource repository.

Combined with the actual teaching situation, the resource repository integrates the curriculum system and high - quality industry resources with the framework of "1 core, 2 levels, and 9 modules", using QQ groups as the interactive platform. The "two levels"

refer to the auxiliary of the architectural knowledge level and the architectural skill level. The "nine modules" refer to the main resource support required for building the "one core". Architectural design - related courses are generally divided into three major structural sections: "pre - architectural design, mid - architectural design, and post - architectural design". The research designs the construction of the "nine - module" resource repository system to be distributed in the three main stage structural sections, which not only conforms to the curriculum characteristics but also optimizes the curriculum setting, strengthens the connection between courses, and makes the teaching resources of the entire major shareable and integrated.

4 Conclusion

4.1 Evaluation

Yunnan belongs to the border areas of ethnic minorities, where learning resources are relatively scarce. The resource library provides a unique and diverse platform for integrating in class and out of class teaching activities, as well as for students to focus on both learning and research. It provides students with an efficient platform for acquiring knowledge and the ability to participate in collaborative research and development. A total of 9 resource libraries were constructed for research. In the early stage of architectural design, theoretical resources were systematized by establishing three major resource libraries: courseware, books, and the internet. Students were able to find resources, find good resources, and efficiently acquire resources; In the mid-term of architectural design, by establishing three major resource libraries of text, quick questions, and works, the resources of scheme design are systematized. Students can correctly and quickly obtain systematic resources with correct direction and strong professionalism; In the later stage of architectural design, establish three major resource libraries: modeling, drafting, and post design. Students can obtain software video tutorials, modeling materials, drawing examples, layout materials, and other related resources from the software resource library according to their learning stage needs, and complete the combination of theoretical knowledge and skill operations to ensure the excellence of architectural design results. At present, according to statistics, at least 200 teachers and students have benefited from the reform research, and 4 sessions of promotion have been held for teachers and students on campus. The curriculum resource library has a certain influence within the school, and the brand effect has initially formed. The construction ideas and educational practice methods of the curriculum resource library have certain promotional value. Research can provide reference for the education construction of similar courses, and also provide demonstration and reference for the construction of curriculum resource libraries in Yunnan region.

Constructing a curriculum resource repository for architectural design under the background of the "Internet +" era, combining "information technology + curriculum construction + resource optimization" as a new idea for teaching reform. The research on the construction of the curriculum resource repository for architectural design courses in the architecture major makes up for the research deficiencies in this field, provides a theoretical paradigm and innovative ideas for other researchers, and solves

the problems of backward concepts and low teaching efficiency of architecture professional teachers in the construction of curriculum resource repositories.

4.2 Effectiveness

4.2.1 Resource Integration, Joint Construction and Sharing

By establishing a curriculum resource repository for the architecture major, teachers and students jointly participate in the construction, integrate relevant curriculum resources, and classify scattered professional materials, forming a systematic, complete, and multi - disciplinary integrated resource repository. This resource repository can not only provide teachers with rich - content, diverse - form, and highly professional teaching resources for teaching but also provide students with a systematic learning and expansion platform, which can improve the internalization of knowledge, enhance the spirit of innovation and practical ability, and drive the rapid development of the discipline.

4.2.2 Solidify the Foundation , Improve the Literacy

Using the curriculum resource repository platform, students can repeatedly learn, think about, and internalize the theoretical knowledge of the courses, copy and draw engineering examples, and practice quick - design examples to further improve their comprehensive literacy, making up for the content that cannot be fully covered within the limited class time. The resource repository is shared through the network, expanding students' knowledge, increasing their professional skills, responding to the requirements of the school for cultivating applied talents, and improving the quality of talent cultivation.

4.2.3 Platform Construction, Skill Optimization

Most of the team teachers have work experience in architectural design institutes. The construction of the resource repository can integrate their industry resources. Excellent engineering examples, various professional software tutorials, industry specifications, etc. are sorted into a repository to build a learning platform. Teachers can learn from the excellent engineering examples of other teachers or industry experts through the professional resource repository platform, access first - line industry information and the latest technologies, and increase their practical experience, thus improving their professional skills.

4.2.4 School - Enterprise Integration, Specialized Talent Cultivation

Under the talent cultivation mode of industry - education integration in universities, the establishment of a professional resource repository can build an effective sharing and communication platform between universities and counterpart enterprises[5]. Enterprises share the information and resources of the production front - line to the platform. Students can contact relevant enterprises for internships and training through the

platform. Universities can transmit their high - quality educational resources to the enterprise classrooms through the platform, achieving complementary advantages and win - win cooperation among the three parties.

4.2.5 Teaching Reform Practice, Promotion and Demonstration

Under the background of the "Internet +" era, through information technology means, curriculum resources are reasonably integrated, and various resources are fully utilized to achieve the optimization of teaching, effectively meeting the teaching requirements for cultivating applied talents. The resource repository truly serves education and teaching, meets the personalized needs of teaching resource applications, enhances the effective use of information technology, provides some reference for the construction of resource repositories in similar institutions and educational reform, and forms a demonstration for promotion.

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