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## Research on curriculum reform of "Aquatic Landscape Planning and Design" based on the concept of "Unity of knowledge and action"

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### Abstract

"Aquatic Landscape Planning and Design" is a course aimed at studying how to apply the principles of landscape planning and design to harmoniously and aesthetically integrate aquatic ornamental animals with their aquatic environments. To improve the traditional teaching model and expand students' thinking abilities, the course organizes hands-on student practice, applying the concept of "unity of knowledge and action" to establish a blended education model. This includes implementing "MOOCs + flipped classrooms," leveraging existing resources, hosting aquatic landscaping competitions, and conducting surveys to stimulate students' enthusiasm and initiative. The goal is to enhance students' aesthetic appreciation and landscaping skills, achieving a combination of theory and practice, and providing a reference for reform research in the "Aquatic Landscape Planning and Design" course.

**Keywords:** Aquatic landscape; Planning and design; Blended teaching model; Curriculum reform

### 1. Introduction

Aquatic landscaping not only integrates natural beauty, surpassing simple decoration to showcase the harmony between ecology and aesthetics, but also serves to beautify the environment, increase air humidity, and cultivate one's temperament. It also facilitates the observation of aquatic organisms and the acquisition of scientific knowledge. Aquatic landscaping combines aesthetics, ecology, education, and psychological therapy, allowing people to experience the beauty and richness of life while enjoying the scenery. In recent years, as people's quality of life has improved, aquatic landscapes have entered countless homes, becoming a beautiful feature in both residential and office environments. Aquatic landscaping falls under the category of visual arts and possesses the characteristics of three-dimensional physical space. Since its introduction to China, especially in recent years, the industry has seen significant development. The course "Aquatic Landscape Planning and Design" primarily explains the basic theories, methods, and techniques of aquatic landscaping. It aims to help students majoring in aquaculture develop innovation skills, hands-on abilities, and problem-solving capabilities during practical activities, while also reinforcing their foundational professional theoretical knowledge, deepening their understanding of aquatic landscape planning and design theories, and mastering the basic techniques of aquatic landscaping Error! Reference source not found.

### 2. Current status of aquarium landscape planning and design course

Aquatic landscape planning and design is a branch of the aquaculture major. To meet the market demand for talents in aquatic landscaping, many universities in China, such as Shanghai Ocean University, Huazhong Agricultural University, South China Agricultural University, and Yangtze University, offer courses related to aquatic landscape design Error! Reference source not found. Through studying this course, students are expected to reasonably and effectively plan and design various aquatic ornamental sites based on the fundamental principles and techniques of aquatic landscape design, combined with actual environmental conditions. However, due to the limited number of job positions and low demand, some students do not pay much attention to this course. As a result, most students' understanding of aquatic landscaping remains at the level of pictures and videos, with few practical activities. Course assignments are mostly imitative, lacking innovation and creativity, which fails to truly stimulate

students' innovative thinking. Since the course content is highly technical and practical, the lack of hands-on teaching limits students' ability to absorb and apply the knowledge Error! Reference source not found..

There are still some issues in the current teaching process. For example, students have insufficient understanding of the course, which leads to low learning initiative and seriously affects the quality of teaching. In the face of these challenges, how to stimulate students' interest in the aquarium landscaping course, improve teaching quality, and cultivate high-quality talents with innovative awareness for society has become an urgent problem that needs to be addressed in teaching.

### 3. Incorporating the concept of "unity of knowledge and action" into the curriculum

"Unity of knowledge and action" is an important concept in traditional Chinese philosophy, which has been widely valued and deeply studied from ancient times to the present. This idea emphasizes the close integration of knowledge and practice, advocating that knowledge is not only theoretical teachings found in books but also needs to be reflected and tested in real life Error! Reference source not found..

In traditional aquatic landscape courses, the focus is often solely on theoretical knowledge education, while neglecting the cultivation of students' practical abilities. By incorporating the concept of "unity of knowledge and action" into the curriculum, it not only helps guide students to apply theoretical knowledge in practice but also contributes to enhancing their innovative thinking and practical skills.

Given the urgent need in higher education to cultivate highly skilled application-oriented talents, practical teaching has become especially important. In response, we have conducted targeted training for the course "Aquatic Landscape Planning and Design," actively exploring new educational models that enhance students' hands-on practical abilities. We seamlessly integrate theoretical instruction with practical operations, enabling students to apply what they have learned immediately while mastering the theoretical knowledge, thereby promoting a deep integration of knowledge and practice.

## 4. Implementation of educational reform

### 4.1. Blended teaching

Blended teaching is an instructional approach that combines the advantages of traditional face-to-face teaching with online learning. By employing flexible teaching methods and techniques, it provides students with a richer, more diverse, and personalized learning experience. This model makes full use of the convenience of online resources and the immediacy of in-person interaction, aiming to enhance teaching effectiveness and learning efficiency <sup>[5]</sup>.

At the same time, integrating teachers' research work with students' professional skills not only facilitates teachers' involvement in relevant research projects but also allows them to carry out teaching tasks by organizing students to participate in manageable tasks and relatively simple experimental studies. This approach greatly benefits the improvement of students' professional interest, skill level, sense of responsibility, and entrepreneurial awareness. By strengthening practical teaching, students' hands-on skills and practical abilities have been significantly enhanced.

With the advancement of educational informatization in China, blended teaching has become one of the directions for teaching reform. Extensive and in-depth research has been conducted on its connotation, functions, theoretical foundations, intelligent teaching tools, models, quality evaluation systems, and the quality of the teaching workforce. However, there are still some urgent issues that need to be addressed. In the future, it is essential to seize the gaps in blended teaching research, solidify theoretical studies on blended teaching, and promote applied research on its practical implementation. This will help achieve better outcomes for blended teaching and further advance education and teaching in higher education institutions.

### 4.2. MOOCs + Flipped Classroom

MOOCs, or Massive Open Online Courses, effectively integrate high-quality educational resources from world-class universities with the latest technological advancements, maximizing the advantages of existing online education and promoting high-quality development in higher education Error! Reference source not found..

Through internet platforms, students can freely choose courses based on their interests and preferences. The flexibility and openness of MOOCs allow students to explore the vast ocean of knowledge "anytime, anywhere, and at their own pace." The "flipped classroom" is a new educational model and an effective approach to blended teaching. It actively engages students, encouraging them to take initiative by searching for relevant materials and learning independently, shifting from traditional "passive learning" to "active learning." This approach not only enhances students' presentation skills but also broadens their horizons due to the diversity of topics chosen by each student. It enriches the teaching content and fosters the development of students' independent working abilities and overall qualities.

The teaching concept of "MOOCs + Flipped Classroom" is an innovative approach in modern education that combines MOOCs and flipped classrooms, aiming to enhance teaching effectiveness and student engagement Error! Reference source not found..

By introducing the online course "Aquarium Landscape Planning and Design" from China University MOOC, students can access cutting-edge theories and knowledge about aquarium landscapes beyond traditional classroom instruction. In the traditional single-teacher lecture model and MOOCs alone, learning often remains superficial and fails to fully integrate the knowledge. Therefore, to deepen students' understanding and broaden their perspectives on this course, a flipped classroom model is adopted. Students independently choose their preferred aquarium landscaping styles, gather relevant information, images, and videos online, and create PowerPoint presentations. They then take turns presenting their chosen styles to classmates, sharing what they like and have learned. Additionally, students showcase their self-made aquarium landscapes in class. Finally, the class votes to select the "Most Popular Landscaping Style," and the teacher provides a comprehensive evaluation based on the overall aesthetics of the students' planted aquariums and their presentation skills. This evaluation serves as an important basis for the course assessment.

### 4.3. Aquarium Market Research

Organize students to visit aquarium markets in the city where

the school is located or nearby cities to investigate the local trade of ornamental fish and aquarium products. Students will tour aquarium stores to observe fish tank landscaping and learn about and discuss different landscaping styles. This allows students to deeply experience the thriving aquarium trade market, gain early insight into the development prospects of the aquarium landscaping industry, and boost their confidence in future employment. At the same time, it helps reinforce the relevant knowledge learned in class, enhances students' understanding of the course, and increases their interest in the major.

#### 4. Aquarium Landscaping Competition

By organizing an aquarium landscaping competition, students' interest in learning and their hands-on abilities can be further stimulated. The competition not only provides a platform for students to showcase their design and landscaping skills but also allows them to gain a deeper understanding of the complexity and balance of aquatic ecosystems through practical experience. During the preparation process, students need to thoroughly study the living habits of various aquatic plants and fish, as well as their environmental requirements, enabling them to make more scientific and reasonable arrangements when designing aquarium landscapes. The aquarium landscaping competition also encourages students to unleash their creativity and aesthetic sense, designing aquatic environments that are both beautiful and close to nature. Additionally, consideration must be given to how to create a harmonious and natural visual effect through clever layout and combination, while ensuring the health and vitality of the aquatic organisms. Throughout this process, students not only learn about aquatic ecology but also develop their aesthetic abilities and spatial imagination.

The combination of aquarium landscape design competitions and the educational philosophy of "unity of knowledge and action" not only cultivates more students with innovative spirit and practical abilities but also helps more people recognize the important role of aquarium landscapes in beautifying the environment and enhancing quality of life. Through aquarium design competitions, there is a significant impact on improving teaching efficiency.

#### 4.5. Assessment Model

The final course grade will be based on students' hands-on skills demonstrated during regular classes and the landscaping competition, as well as their understanding and application of professional knowledge. The score of the participating team will serve as the individual base grade for each student on the team. This bundled assessment approach sets expectations for every student on the team, fostering a positive learning environment of mutual support and collaboration. It not only helps improve the competition level but also cultivates students' spirit of teamwork. For students who study diligently, actively participate in the competition, and make significant contributions, their efforts should be reflected in their regular coursework grades.

#### 5. Conclusion

Aquatic landscape planning and design is a highly specialized course. To integrate theory with practice, the concept of "unity of knowledge and action" was introduced, utilizing a blended teaching model that combines MOOCs and flipped classrooms, along with innovative methods such as market

research. This approach not only helps stimulate students' interest in learning but also enhances their hands-on skills and creativity, broadens their understanding of the industry, and boosts their confidence in employment. By organizing landscape design competitions, students are more effectively guided to independently acquire professional knowledge of aquatic landscapes and master design skills through practical experience, while also fostering teamwork abilities. Conducting surveys allows for timely feedback on students' learning experiences and progress, enabling optimization of teaching methods. Strengthening the faculty team, keeping pace with the times, continuously expanding teachers' perspectives, and improving the teaching system are also emphasized. These explorations and attempts provide new ideas for the teaching reform of the aquatic landscape planning and design course and lay a foundation for cultivating high-quality talents with innovative spirit and practical abilities in the aquatic landscape industry.

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