

Analysis of Reform in Hybrid Teaching for University Landscape Engineering

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Abstract: Since the establishment of the landscape architecture program in the 1950s, landscape engineering has consistently been the core and distinctive course of the program. It is closely related to courses such as landscape planning and design, as well as landscape architecture design, collectively forming the core curriculum system of the landscape architecture program. Landscape engineering, typically serving as the foundation, becomes a required course for landscape architecture majors after incorporating content related to landscape design. It holds a crucial position in talent cultivation. Through the study of this course, students can gain a comprehensive understanding of the achievements in landscape engineering, become well-versed in contemporary theoretical knowledge in the field, and develop strong practical skills, thus evolving into high-quality talents that meet industry requirements.

Keywords: university; landscape engineering; hybrid teaching

Introduction: In today's era, China's approach to talent development is gradually becoming more personalized. The education sector shoulders the responsibility of nurturing talents for the country, so the educational models of universities need to keep pace with the times. Innovations in the existing teaching methods are required to meet China's demands for skilled professionals. Landscape engineering, as a crucial course in the field of landscape architecture, encompasses aspects of engineering, architecture, art, planning and design, as well as botany, effectively integrating landscape design and engineering technology. By teaching relevant content, a knowledge framework is established, enabling students to acquire practical skills while mastering foundational theories. This article explores the reform of hybrid teaching in landscape engineering at universities and proposes some measures for reference.

1. Reform Ideas for Blended Teaching in Higher Education Landscape Engineering

1.1 Integration of Online and Offline Learning

Micro-lessons can guide students to engage in self-directed learning, laying the foundation for formal classroom teaching. Offline classes, on the other hand, provide opportunities for students to have their doubts clarified and enhance their capabilities through group discussions and brainstorming sessions.^[1] After class, the use of online teaching platforms for course review deepens students' understanding of the material and encourages them to transition from passive to active learning, facilitating communication between teachers and students.^[2]

1.2 Integration of Theory and Practice

Enhancing students' comprehensive abilities in teaching practice usually includes assessing their participation in class, the effectiveness of self-study, the quality of discussion and homework completion, performance in practical activities, practical skills, and examinations of theoretical knowledge. This comprehensive evaluation assesses students' overall learning outcomes.

1.3 Coordination Before, During, and After Class

Implementing a "learn before teaching" flipped classroom model allows students to engage in self-directed learning using micro-videos and teaching platforms before formal classes. During formal teaching, teachers guide students to discuss and collaborate on pre-class questions, providing targeted guidance. After teaching, students independently consolidate their acquired knowledge, create reasonable learning plans, and autonomously study new material.^[3]

2. Approaches to Blended Teaching in Higher Education Landscape Engineering

2.1 Pre-Class Preparation

Pre-class preparation usually serves as a guide, with teachers providing students with self-learning materials to clarify the content and key points of study. Students use available resources to set learning objectives, independently build a knowledge network, and study the content and micro-lessons uploaded by teachers on online platforms. This approach saves valuable classroom time.^[4]

2.2 Flipped Classroom

Firstly, self-directed learning: Teachers use images and video cases to pose relevant questions, guiding students to think independently. Students learn how to engage in self-directed learning, define learning tasks, gather and share materials, and independently answer questions, thereby enhancing their inquiry skills.^[5] Secondly, cooperative inquiry: Students study and discuss the learning tasks assigned by the teacher, investigate relevant materials, and allocate responsibilities within the group, ensuring that all students participate in the learning and discussion process. Next, students present the results of their discussions, engage in discussions with other groups, and expand their perspectives and insights, truly benefiting from each other's strengths. Finally, personalized guidance: Teachers use knowledge integration and problem research to assess students' understanding of the material and identify issues encountered during learning, offering targeted guidance to help students overcome challenges. This approach enhances students' problem-solving skills and improves their ability to express themselves.^[6]

2.3 Online Interaction

Online teaching platforms provide the conditions for post-class communication between teachers and students, allowing knowledge to be revisited, which is highly beneficial for fostering students' divergent thinking. It enables students to achieve both subjective and objective results. Online clarification of doubts shifts the focus to the teacher, as students raise questions they do not understand, and teachers use images and case studies to help students comprehend and master the material.^[7]

2.4 Professional Experience

Firstly, professional competitions: Through extracurricular coaching, students are encouraged to actively participate in professional competitions related to the course. There are many types of competitions, which create conditions for innovations in teaching methods and significantly enhance students' practical abilities.^[8] Secondly, practical activities: Practice is the premise of understanding. Course teaching allows students to have a "seeing" process. Teachers can guide students to observe and analyze landscape engineering projects and complete corresponding practical assignments, thereby improving students' hands-on skills. Lastly, model making: Creating topographic models on an individual basis and organizing small-scale model exhibitions within the class not only enhances students' hands-on abilities but also promotes friendly communication among students.

3. Effective Measures for the Reform of Blended Teaching in Higher Education Landscape Engineering

The teaching method can significantly impact the final results. While relevant theories are essential for design thinking and practice, students today exhibit diverse thinking patterns, with some emphasizing tangible results. Therefore, traditional teaching methods may not yield optimal teaching outcomes.^[9] Landscape design, being a comprehensive subject encompassing various disciplines and evolving concepts and technologies, requires students to go beyond classroom learning to gain in-depth knowledge. It is imperative for teachers to nurture students' self-learning awareness and abilities, providing them with a strong foundation for their future careers.

Moreover, landscape design is inherently practical. Students should be capable of presenting their designs through hand drawings or computer-generated models. Thus, students need to establish comprehensive knowledge frameworks and possess strong expressive skills. Within the limited class time, students should apply knowledge from various subjects to conduct relevant designs. Using a single teaching method may not suffice. Consequently, research and reform on blended teaching methods in landscape engineering are urgently needed.

3.1 Project-Based Teaching

Project-based teaching divides course content into multiple real projects, combining them with practical implementation of enterprise-related projects to train students in project design processes. This approach allows students to acquire job-related skills by completing projects, genuinely integrating into society.^[10] It is a teaching method that aligns with course objectives, emphasizing problem-solving abilities, teamwork, self-directed learning, and a sense of responsibility. In traditional teaching, instructors typically focus on theoretical lectures and assess students through assignments, limiting students to passive learning. Project-based teaching, on the other hand, involves dividing the course content into different projects, such as urban squares, courtyards, and park design. These projects follow a structured process: "preliminary analysis, conceptual analysis, thematic conception, conceptual design, design confirmation, document production, project presentation, teacher-student reviews." This approach familiarizes students with the design process when solving problems. Through training in various projects, students' capabilities are enhanced, not only in terms of knowledge and skills transfer but also in divergent thinking, ultimately improving their professional abilities.

3.2 Task-Driven Teaching

Task-driven teaching places students at the center and tasks as the carriers, integrating course content into practical tasks. It aims to utilize tasks as a driving force for students to fully grasp the learning materials and enhance their analytical and problem-solving abilities. In traditional teaching, instructors typically deliver lectures first and then assign related homework, creating a classroom environment where students may not be very engaged. Task-driven teaching, however, begins with developing a project task list, setting clear tasks that students need to complete after the course, using previous student assignments or enterprise cases as examples. During instruction, instructors break down the tasks, gradually introducing them based on project requirements. This approach ensures that each class session guides and drives students toward achieving project goals, significantly boosting their motivation. Task-driven teaching can be combined with project-based teaching to maximize its effectiveness.

3.3 Learning Through Competitions

Participating in professional competitions is an extension of teaching that helps students learn and master professional knowledge. Especially for some private colleges with students of varying academic backgrounds, competitions can ignite students' passion for learning and promote real learning through competition. Competitions also provide students with a platform to showcase their abilities, which is beneficial for the cultural development of the institution. Successful competition outcomes can give students a competitive edge in the job market and enhance the institution's reputation. Reputation plays a significant role in attracting students and contributes to the institution's future development.

When designing teaching tasks, instructors should select appropriate competition projects that align with course objectives and schedules and use competition requirements as task instructions. This approach aligns teaching with current industry trends, ensuring that teaching content remains up-to-date. Additionally, competition-based and task-driven teaching methods can be combined for better results.

3.4 Flipped Classroom Teaching

The flipped classroom approach transforms the transmission and internalization of knowledge. In the transmission phase, teachers guide students in self-learning through various resources such as videos, PowerPoint presentations, and online MOOC materials before formal classes. During class time, instructors and students engage in interactive discussions and showcase their progress, facilitating knowledge internalization. Given the vast amount of information covered in landscape design, traditional lecture-based teaching may not be effective. In the digital age with abundant online resources, learning is no longer limited to face-to-face classes. Students can access course materials from prestigious institutions online. The flipped classroom approach aims to foster independent thinking, effective information acquisition, and processing skills, nurturing versatile and lifelong learners.

To enhance teaching outcomes, the flipped classroom should be based on project-based, task-driven, and competition-based methods. Currently, Chinese universities have a wide range of student abilities,

with some lacking self-study skills. Insufficient support for projects and tasks often results in passive student participation in class and minimal post-class study. Therefore, educators should prepare before class, setting teaching objectives and creating task lists. Instructors can use competitions or projects as examples and develop clear goals and requirements for students. The teaching resources should be sufficiently available to ensure students have access to necessary materials for self-learning. Students can work in groups of four and engage in self-study after receiving the task list, optimizing the task content. During self-study, students can communicate with instructors using tools such as QQ and WeChat. Class time should focus on interaction and problem-solving. When students present their projects, they should use PowerPoint presentations to report on the progress of their projects and raise any issues they encountered. Instructors should answer questions and guide students in exploring and solving problems together, facilitating true knowledge internalization. After class, summarization and improvement should be emphasized. Students can follow project templates provided by design firms and offer feedback to other students, simulating the client's role. This process can be divided into stages such as "project presentation, sharing of group members' experiences, client inquiries or evaluations, instructor reviews." This approach enhances students' expressive and coordination skills, increases communication between students and teachers, and allows students to influence each other, ultimately achieving collective improvement.

4. Achievements of Blended Teaching Reform in Higher Education Landscape Engineering

4.1 Facilitating Divergent Thinking and Enhancing Self-Learning Abilities

The use of micro-lessons has, to some extent, enabled students to construct their own knowledge networks. Before attending classes, students must allocate their learning time and space according to their individual circumstances, transforming them into controllers of their learning progress. Knowledge transmission has shifted from unidirectional to bidirectional, supplementing the process of knowledge transfer. After completing self-study, students can convey their doubts to teachers, which places new demands on students for self-discipline and autonomous learning. In the classroom, student engagement has increased, focusing the classroom on student-centered learning, exploring and expanding upon more in-depth knowledge. This approach has significantly improved students' self-learning abilities, thereby achieving personalized learning and development.

4.2 Clarifying Teacher Role and Building Positive Teacher-Student Relationships

In the blended teaching mode, teachers serve as guides to knowledge, fully understanding each student's strengths and potential while recognizing variations in students' learning progress and comprehension. Utilizing an "theory + practice" teaching approach within the limited time and space of the classroom, teachers answer students' questions, changing the traditional teaching model and promoting a more comprehensive development of students. It sparks students' enthusiasm for learning, enabling them to gradually develop their abilities in communication and exploration while enhancing existing subject competencies. In landscape engineering education, there has been a shift from a teacher-centered approach to a student-centered one. Teachers should adjust their roles, acting as guides before class, facilitators during class, and mentors after class.

5. Conclusion

In summary, the choice of teaching methods is closely related to the teaching outcomes. The selection of teaching methods should consider the goals of talent cultivation and align with the requirements of the job market. Therefore, teachers should reform existing teaching methods based on the specific situation of their institution and market demands, using market needs as guidance. By gaining a deep understanding of the skills and job requirements for landscape professionals, teachers can adapt their teaching to better prepare students for recognition by employers. Furthermore, as China's technology and online capabilities continue to advance, teaching methods and approaches must also evolve.

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