

Exploration of Environmental Design Teaching Mode Based on Case Study



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Abstracts: With the continuous development and progress of society, environmental design plays an increasingly important role in shaping livable cities, improving people's quality of life, and protecting the natural environment. However, the traditional teaching mode of environmental design is often teacher-centered, often ignoring the students' subjectivity and practical ability cultivation, while the teaching mode based on case study brings new ideas and methods for environmental design education. In this paper, we will discuss the advantages of the environmental design teaching mode based on the case study, and conduct an in-depth study on the preparation of teaching resources, construction of cases, and teaching implementation, to provide useful reference and inspiration for advancing the innovation and development of environmental design education.

Keywords: case study; environmental design; teaching mode; teaching exploration

Introduction

The teaching mode based on the case study, as a teaching method targeting problem-solving and innovation ability cultivation, has demonstrated excellent educational effects in many subject areas. In environmental design education, the application of case studies in teaching can stimulate students' active learning interest, and students can deeply understand the design principles and methods, to cultivate a comprehensive ability to solve complex problems. However, the research on the teaching mode of environmental design based on case studies is still relatively limited, and a systematic theoretical framework and effective teaching practice have not yet been formed, so it is of great significance to conduct an in-depth study on this teaching mode.

1. Application of Case Study in Environmental Design Teaching

1.1 Comparison between case study and traditional teaching mode

Case study and traditional teaching modes are

two different teaching methods, which have significant differences in goals, learning styles, student roles, and other aspects. The traditional teaching mode emphasizes the teacher's lecture and knowledge transfer, the teacher plays a dominant role in the classroom, and the students mainly passively listen to the lecture and receive knowledge (Meng, 2020). Case study, on the other hand, puts students in the main position of learning, stimulates students' interest in learning through the introduction of real cases, and prompts them to actively participate in discussions and thinking. Secondly, the traditional teaching mode is usually a one-way transmission, the teacher has limited understanding of the student's learning progress and understanding, while in the case study, students need to actively participate in discussions and exchanges, and the teacher, as a guide and mentor, can better understand the student's learning situation and provide timely guidance and feedback. In addition, the traditional teaching mode is more fixed in the teaching content and method and lacks flexibility and personalization, a case study can be based on the interests and needs of different students, choosing the appropriate cases and teaching

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methods, to provide a more personalized learning experience (Nie , 2019).

1.2 Advantages of case study in environmental design teaching

Case study has many advantages in environmental design teaching. It can stimulate students' learning interest and enthusiasm, and through the introduction of real or virtual environmental design cases, students can explore and understand the design principles and methods in specific situations, thus deepening the interest and enthusiasm for environmental design, compared with the traditional abstract teaching methods, case study is more attractive, so that students participate in the learning process more actively (Ye , 2018). The case study is more attractive than the traditional abstract teaching method so that students are more actively involved in the learning process (Ye , 2018). Secondly, in the process of analyzing cases, students need to apply the theoretical knowledge learned in the classroom to the solution of practical problems, which helps to deepen students' understanding and memory of theoretical knowledge and cultivate their ability to transform knowledge into practical skills, case study enables students to continuously optimize and improve the design scheme in practice, and improves their practical operation ability. Moreover, each environmental design case involves multiple aspects of knowledge and skills, students need to solve problems from different perspectives by comprehensively applying knowledge, which helps to cultivate students' ability to solve complex problems and improve their comprehensive quality.

2. The construction of an environmental design teaching mode based on a case study

2.1 Criteria and methods of case selection

Case selection criteria and methods are important factors to ensure the teaching effect. A reasonable case selection can provide students with rich learning resources, stimulate students' interest in learning, and enable them to master and apply the knowledge and skills of environmental design in practice. First of all, the case selection should be

closely related to the teaching objectives. The teaching objectives clearly define the learning requirements that students should achieve, and the case selection should be consistent with the teaching objectives if the teaching objective is to cultivate students' creativity in public space design, then the case should cover the public space design cases with creativity. Case selection should also pay attention to the authenticity and representativeness of the case, real cases can let students better feel the actual application scene of environmental design, enhance the practicality and relevance of learning, representative cases cover different types of environmental design, can show the diversity and breadth of the field of environmental design (Tang , 2018). In addition, case selection should focus on the comprehensibility and operability of the cases, and students should be able to understand and analyze the cases more easily and obtain useful information from them. The cases should also provide enough details and data to enable students to perform practical operations and designs.

2.2 Preparation and support of teaching resources

In the construction of an environmental design teaching model based on the case study, teaching resources include case materials, teaching facilities, faculty teams learning platforms, and other support, which together constitute a good learning environment to promote the overall development of students. The preparation of teaching resources should focus on the diversity and practicability of case materials, and teachers can collect environmental design cases from different sources and types, including successful and failed cases, to enrich students' learning content and vision, and the case materials should also be practical, which can help students solve actual environmental design problems and cultivate their practical ability (Liang , 2018). The support of teaching resources requires the provision of advanced teaching facilities and technical support, in environmental design teaching, students usually need to use a variety of design software and tools for practical operation, so the school should be equipped with advanced computer

labs and design studios to provide the technical support needed by students. At the same time, the preparation and support of teaching resources require the construction of an excellent faculty team, teachers are important supporters of the teaching process, they need to have rich teaching experience and professional knowledge, and be able to guide the students in case study and practical operation, the school should recruit environmental design teachers with a high level, and provide teachers with continuous teaching training and support (Ding & Wang , 2018). The preparation of teaching resources also needs to provide a good learning platform and learning support, the school can build an online learning platform to provide students with convenient learning resources and communication platforms and also set up a learning tutoring center to provide students with learning guidance and questions and answers.

2.3 Steps and skills of case construction

Before building the case, the construction of the case requires sufficient case material support, teachers can collect relevant environmental design cases through libraries, networks, industry publications, and other channels, the case material should be closely related to the teaching objectives, reflecting the diversity of the discipline and practice. After collecting the case materials that need to be screened, the screening criteria can include the authenticity, representativeness, comprehensibility, and operability of the case and only cases that meet the criteria can enter the subsequent construction stage. Based on the selected cases, teachers need to construct a complete case story, including the background, problems, challenges, and solutions of the case, etc. The case story should be able to arouse students' interest and thinking and stimulate their desire to learn (He, 2016). While constructing the case story, teachers need to provide relevant case materials, such as pictures, charts, data, etc., which can help students better understand the case and get useful information from it. During the teaching process, students need to be guided to analyze and discuss the case, and the case guide should include

questions to guide, thinking prompts discussion points, etc., to help students think deeply and communicate.

3. Case study-based environmental design teaching implementation

3.1 Teaching design and course arrangement

Teaching design and curriculum arrangements need to clarify the objectives of teaching and determine the learning outcomes to be achieved, through the in-depth analysis and discussion of specific cases, so that students can systematically understand and master the basic knowledge and methods of environmental design, and then carry out design activities on this basis. Specific teaching design can adopt a "three-step" strategy, the first step provides cases so that students have a preliminary understanding of the specific examples of environmental design; the second step organizes in-depth discussion and reflection, to discover and understand the design principles and methods behind the case; the third step allows students to apply the knowledge and skills gained from case study to practical design, to test and The third step allows students to apply the knowledge and skills gained in the case study to practice design as a way to test and consolidate their learning outcomes (Luo & Wu, 2018). In terms of course organization, the learning objectives and topics of each lesson can be set, and then the cases related to them can be selected. For example, if the theme of a course is "Sustainability in Environmental Design", the teacher can choose a specific environmental design project, such as "New York's High Line Park" as a teaching case to show students how to apply sustainability principles to the actual design. Introduce the background and goals of the design of the High Line Park and how it transformed an abandoned railroad line into an urban park. Through group discussion and class sharing, guide students to explore the design principles, techniques, and methods of the case in depth, and discuss how they contribute to environmental sustainability. Finally, students are engaged in a simulated design project that requires them to

consider sustainability principles in their design as a way of consolidating and practicing the knowledge and skills they have gained from the case study.

3.2 Case introduction and discussion

The introduction and discussion of cases are a key part of teaching. Effective cases should be closely related to the course objectives, thought-provoking, and challenging so that students can deepen their understanding of environmental design principles in the process of problem-solving. Teachers should choose appropriate cases, for example, if teachers are teaching the design of urban public space, then Barcelona's "Public Market Renovation Project" is a good case, this project involves many important design principles, such as humane design, sustainable design, spatial reuse, etc., which enables students to understand the environmental design from multiple perspectives. Design. In the introduction stage of the case, teachers can first provide some basic information, such as the design objectives, the design program, and the implementation results, and help students establish a preliminary understanding. Teachers can then use multimedia resources such as videos, pictures, and design drawings to present this design case from more perspectives so that students can have a more comprehensive understanding of the background, design process, and results of the project. In the case discussion stage, teachers should guide students to explore various issues in the case in depth. For example, in the case of "Public Market Renovation Project", teachers can ask questions such as: "How does this design consider humanization?", "How does it achieve sustainability?" "How does it achieve sustainability?" "What are the strategies for reusing the space?" etc. Through group discussion and whole class sharing, students can not only analyze the case in depth from various perspectives but also learn how to use design principles and methods to solve practical problems.

3.3 Student Participation and Teamwork

In the teaching process, students can learn the importance of collaboration and communication, improve problem-solving skills, and develop

leadership and team spirit through teamwork. Take the design of Chongqing Forest Park as an example, this design task includes multiple considerations, such as topography, climate, ecology, community needs, etc. It is a typical complex environmental design task, and the teacher can allow students to practice designing based on this team. The teacher divides the students into teams, and the number of students in each team can be adjusted according to the actual situation, usually four to six students are the most appropriate, Each team should study the design case of Chongqing Forest Park, including the background, design process and results, and extract useful design elements and principles from it. Then, based on what they have learned and the results of their research, the student teams will begin to design their environmental design solutions. In this process, students need to subdivide the design tasks according to their specialties and interests, such as Some students are mainly responsible for the analysis of topography and ecology, while others are responsible for the design and drawing of the plan, etc. Teachers play a guiding and supervisory role in this process to ensure that the design process is carried out in an orderly manner. Then, each team needs to prepare and present the design program. During the presentation, students from other teams can ask questions and provide feedback, to promote communication and interaction between teams. The teacher evaluates the students' expressions, answers, and design solutions in this session and provides professional feedback.

3.4 Teacher's Role and Guidance Strategies

The role of the teacher is to be a guide and coordinator, and the teacher's task is to provide students with high-quality teaching cases, stimulate students' interest in learning, guide students to carry out in-depth discussions and provide effective guidance and feedback on their learning process. Take "Bicycle Path Design in Copenhagen" as an example, the teacher can introduce the basic information of the case at the beginning of the course, then stimulate the student's interest in the case, and put forward some thought-provoking questions, such

as: "How did Copenhagen become the 'City of Bicycles'?" "How does this design take into account the interaction between bike lanes and driveways and sidewalks?" And so on. Teachers' guiding strategies should focus on stimulating students' active learning. During the case discussion stage, teachers can use questions, guidance, and demonstration to help students understand and analyze the case, to promote their understanding and mastery of environmental design principles, and to cultivate students' critical thinking and innovative thinking. At the same time, teachers need to provide continuous feedback and assessment of students' learning to facilitate their learning progress. After team discussions and report presentations, teachers should summarize and evaluate students' performance, praise their strengths, point out their weaknesses, and give constructive suggestions.

Summarize

In summary, this paper has deeply explored the advantages of case study in environmental design teaching, the preparation and support of teaching resources, the steps and skills of case construction, and the methods of teaching implementation, these studies, not only deeply recognize the value of the teaching mode based on the case study, but also recognize that it has a positive role in promoting the cultivation of students' comprehensive quality. Teachers should continue to expand and improve this teaching mode and strengthen the accumulation of case resources and the innovation of teaching practice in environmental design education, to cultivate more excellent environmental design talents with practical ability, creativity, and social responsibility.

Conflict of Interest

The authors declare that they have no conflicts of interest to this work.

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