

Retraction

Retracted: Exploring the New Mode of Teaching Computer-Aided Environmental Art Design Courses

Security and Communication Networks

Received 3 October 2023; Accepted 3 October 2023; Published 4 October 2023

Copyright © 2023 Security and Communication Networks. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their agreement or disagreement to this retraction. We have kept a record of any response received.

References

- [1] W. Zhen, "Exploring the New Mode of Teaching Computer-Aided Environmental Art Design Courses," *Security and Communication Networks*, vol. 2022, Article ID 3437810, 10 pages, 2022.

Research Article

Exploring the New Mode of Teaching Computer-Aided Environmental Art Design Courses

Weixiao Zhen 

School of Architecture and Art Design, Hebei Academy of Fine Arts, Shijiazhuang 050700, Hebei, China

Correspondence should be addressed to Weixiao Zhen; 1533210834@xzyz.edu.cn

Received 28 May 2022; Revised 30 June 2022; Accepted 20 July 2022; Published 10 August 2022

Academic Editor: Panagiotis D. Diamantoulakis

Copyright © 2022 Weixiao Zhen. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Environmental art design course is the main direction of practical teaching. Therefore, the teaching reform and practical research of environmental art design based on CAD have been carried out. Innovative environmental art design courses, taking into account the differences of student groups, formulate the teaching methods of introductory courses, formulate the comprehensive topics of curriculum design, expand the knowledge base, improve the professional curriculum system, and strengthen the horizontal connection between curriculum teaching and computer design to meet the diversified needs of different student groups. Environmental art design also requires that before formal construction, with the help of computer-aided function, establish architectural drawings and analyze the rationality of each construction process. In view of the current situation and further development prospect of computer-aided application design, designers should improve the application level of graphics software. This paper is mainly committed to optimizing environmental art design teaching through computer, making full use of artificial environment design, improving the efficiency of computer performance technology, avoiding too single final design effect, so as to enhance the appeal of ecological art and meet people's aesthetic needs.

1. Introduction

CAD, as a practical professional course, actually uses theoretical knowledge to solve practical problems so that only the practical skills of students are improved [1–3]. The environmental art design course has some connection with environmental design construction, environmental design drafting, and environmental design construction.

Although colleges and universities have implemented different degrees of reform for environmental art design courses, and the actual teaching finds that most students are still unable to design environmental design drawings independently after graduation or even a few years, according to the analysis of front-line professional teachers on the current situation of teaching professional courses, it is believed that the current teaching contents of colleges and universities have the problem of disconnection with social development, teaching resources, and the lack of timeliness of information obtained, although textbooks and teaching materials are constantly [4]. Although the textbooks are

constantly adapted and new technologies are constantly introduced, they are not yet popularized when teachers carry out teaching [5]. Teachers cannot use computer technology or a variety of drawing software to provide students with professional teaching, students still follow the traditional learning concept in learning, with low innovation and lack of targeted teaching methods and ideas, the arrangement of practical courses and theoretical courses is not reasonable, and the design of the teaching system of the course cannot be completed and most students have strong design theoretical ability, but are unable to connect with social demand positions [6].

In the process of carrying out computer-aided environmental art course teaching development, the understanding of the shortcomings and deficiencies of traditional teaching courses is important [7]. The traditional single teaching, mainly relying on the teacher's demonstration, through the item-by-item operation of each tool command in the design software, requires students to follow the teacher's demonstration order to operate again, and this

teaching mode is too mechanized [8]. Therefore, the course design should change the single teaching process, the teacher in the process of course explanation, not only focus on the operation of the software but also need to achieve good teaching effect through the adjustment of the operation process, and establish a close connection between technical design and other subjects to ensure the coherence of teaching links [9]. While improving students' professional and technical skills, focusing on the overall expression of artistic features, there is a problem of lack of relevance of teaching examples in teaching design and practice, innovate traditional teaching methods, and organize several teaching contents to guarantee students' enthusiasm and initiative [10].

Targeted analysis of various types adheres to the skills training as the basis, theoretical explanations as an aid, to optimize the traditional service concept through the command design, and smooth and natural mastery of basic technical operations [11]. Combined with the drawing instructions issued by the teacher to edit the software interface, computer-aided environmental art design course, to focus on the drawing software knowledge, in the diverse design principles into environmental psychology, engineering, lighting design and a variety of architectural principles, through the comprehensive display of effect drawings, to improve the artistry of the course design [12].

Teachers need to take the improvement of students' aesthetic concepts and professionalism as the basis, and through the effective application of computer drawing software, to ensure that designers can bring into play their creative and imaginative abilities to achieve more desirable design effects [13]. The establishment of the teaching structure can graduate who enter the workplace should be proficient in applying computer drawing software to ensure the design creativity of environmental art and improve the beauty of the overall environment [14]. In the process of performance drawing design, the design principle of combining technicality and artistry should be adhered to, and the concept of modern green design should be incorporated. CAD belongs to a technical means of environmental performance, and designers need to clarify the specific operation process of drawing software, master the rich content of art design principles and cultural knowledge, and improve their professional skills [15]. Build a standardized human living environment, combine the different characteristics of the environment has, convey the rich artistic information, improve the artistic infection, focus on the emotional reflection of the designers, in the process of environmental appreciation clear designers want to express the artistic emotions [16].

The main reason for students' lack of creative thinking is the lack of confidence in the originality of environmental design and the lack of creative inspiration in completing the design tasks assigned by teachers, and the presentation of some valuable creative points is the basis for ensuring the quality of environmental design. Therefore, teachers need to guide students to think about environmental art from different perspectives, not to build spaces entirely according to their personal preferences, but to develop perfect design

solutions combined with the main needs of users, to guide students to be innovative and self-transcendent, and to lay a strong foundation for the effective application of creative design thinking, therefore, original thinking training needs to be integrated into traditional course design. Hand skills are the basic skills necessary for environmental art designers to master, therefore, teachers need to cultivate students' innovative thinking development ability, ensure the design quality of environmental art solutions, and help students develop their pioneering thinking.

2. Related Work

Environmental art design is a highly practical and complex comprehensive discipline, which involves many disciplines such as architecture, design, and art. Environmental art design is a human-centered design discipline and creates an ideal spatial environment to serve people's social and family life. However, as a new industry, environmental art design has not yet established a characteristic teaching system. It should be combined with practical, innovative thinking, from the teaching mode, curriculum system, teaching training objectives, teaching content, and other aspects of a comprehensive, systematic innovation, highlighting the comprehensive quality of training for students, strengthen the practical nature of professional teaching.

To comprehensively improve the effect, combine the current social development with the specific requirements of environmental art design, cultivate designers with high professional quality and strong artistic cultivation, and ensure the stable design. In the process of teaching and design to improve students' artistic aesthetic ability, master complex environmental art performance techniques, combined with the specific construction environment to develop a reasonable architectural rendering, to solve the current problems and deficiencies in computer-aided environmental art.

The following analysis of the common CAD in environmental art design: AutoCAD, 3D MAX, Photoshop.

2.1. AutCAD. The effective application of AutoCAD can ensure that the traditional two-dimensional drafting, based on the completion of the basic three-dimensional design tasks, is a more widely used CAD drafting software, and AutoCAD as the mainstream drafting technology has obvious design advantages in the effect of the drawing.

Designers for environmental art design drawing process, the accuracy of the data will affect the final artistic efficiency and overall design quality, if the drawing results are not accurate, it is likely to cause engineering rework, extend the design period and cause a waste of resources [17].

The outstanding advantage of AutoCAD application is the powerful drawing ability, and its application can ensure the quality of drawing and the accuracy of the final data, the application of Auto CAD software in environmental art design, covering a large number of projects, including interior design of AutoCAD [18].

The interior design is an important part of the interior environment, and the functional characteristics of the AutoCAD software and the requirements of the environmental atmosphere need to be analyzed before the design of drawings, and the planning tasks need to be completed in conjunction with the relevant design standards [19]. As an important element of the spatial environment, the interior environment design needs to analyze the existing performance characteristics of the spatial environment and clarify the special characteristics of AutoCAD software.

Environmental art design is considered from many aspects such as artistic value, functional value, and aesthetic value. It integrates spiritual factors in the process of interior environment design, adjusts the architectural structure to ensure the overall style of the interior environment, and creates a good environmental atmosphere [20].

2.2. 3D MAX. The effective application of 3D MAX software in environmental art design can create a good environmental animation display effect, and 3D MAX as animation software, with powerful design functions as a support, to complete structure settings, the basic configuration requirements are low, in the system to install the production plug [21].

The system structure is set up on the basis of the PC system, which requires low basic configuration, and the production plug-in is installed in the system to ensure the functionality of the software process, and the role animation production function of 3D MAX software is used to carry out the stacking of modeling steps to improve the flexibility of the production of design models and to complete the basic animation quality requirements [22].

3D MAX is also an important program in the production of games, films, and videos and has a high value in architectural design. 3D MAX aids work in environmental art design to show a more detailed interior environment and the outdoor effects of each element added to the production of environmental animation [23].

2.3. Photoshop. The application of Photoshop software can ensure the authenticity of scenery and creates a good environmental art atmosphere. After finishing the drawing of the design effect, the staff needs to post-process the various processes of the effect with the help of Photoshop software, which has powerful environmental image processing capabilities [24].

Many digital images in the rendering are composed of pixels, using Photoshop's processing technology to edit and modify the quality of the image, using more advanced drawing tools, and strive to improve the picture editing effect. 3D MAX rendering is only a rough data pattern, in the process of real scenery design, 3D MAX is difficult to get the desired technology Photoshop supports the production of real scenery to create a good environmental art atmosphere [25]. Among the elements in the interior space, such as plants and furniture, can be added to the effects in the form of real images with the help of Photoshop software.

3. Methods

The teaching system structure of environmental art design course at this stage is shown in Figure 1.

Compared with the same majors abroad, China's environmental art design majors started late, and most colleges and universities have only opened environmental art design majors in the past ten years. At present, the basic courses and professional courses of environmental art design majors in our universities are still relatively weak, and there is a serious disconnect phenomenon, and the research of environmental art "professional theory" is very lacking. At present, the teachers of environmental art majors in China's universities are not strong enough, and the teaching managers also lack attention to the professional theory, which leads to a serious lack of design guided by "professional theory".

Traditional art and design education is influenced by examination-based education, and although it has a strong systematic teaching mode, it is far from foreign countries in terms of creative cultivation. Other teaching links in the classroom lack new ideas and are too programmed, and the teaching content is too limited and single, and there are problems in the teaching process that emphasize skills but not thinking, performance but not creativity, and results but not process.

To improve the teaching situation, an environmental art design teaching unit based on CAD is proposed in Figure 2.

According to the actual needs of teaching, we design the training objectives of environmental design and design talents suitable for students' development, integrate the requirements of schools, professional courses, teachers, and society for students' learning, establish a teaching organization structure with deep interdisciplinary integration, provide a teaching support platform for professional courses, further enhance the communication between students and teachers, improve the framework of professional courses and teaching system, use CAD technology, propose targeted teaching for different student groups, improve students' practical application ability, improve students' entrepreneurship and education development capital chain, enhance the degree of adaptation between students and social demand positions, and transform the traditional closed indoctrination teaching without delay.

3.1. Innovative Teaching Thinking of Environmental Art Design Course. Through the analysis, mastering the necessary innovation ability and spatial appreciation ability is the main goal of the course teaching because the students at the beginning of the school year have less knowledge of environmental design, and students come from different regions, spread the social and cultural differences, and understand different levels of environmental design culture. To respond to the requirements of the information age, CAD technology is introduced, and students are instructed to use computers to analyze environmental design drawings in detail, and overview courses are arranged to unify students' cultural communication channels, such as "History of the origin of environmental design in China and abroad", "Introduction

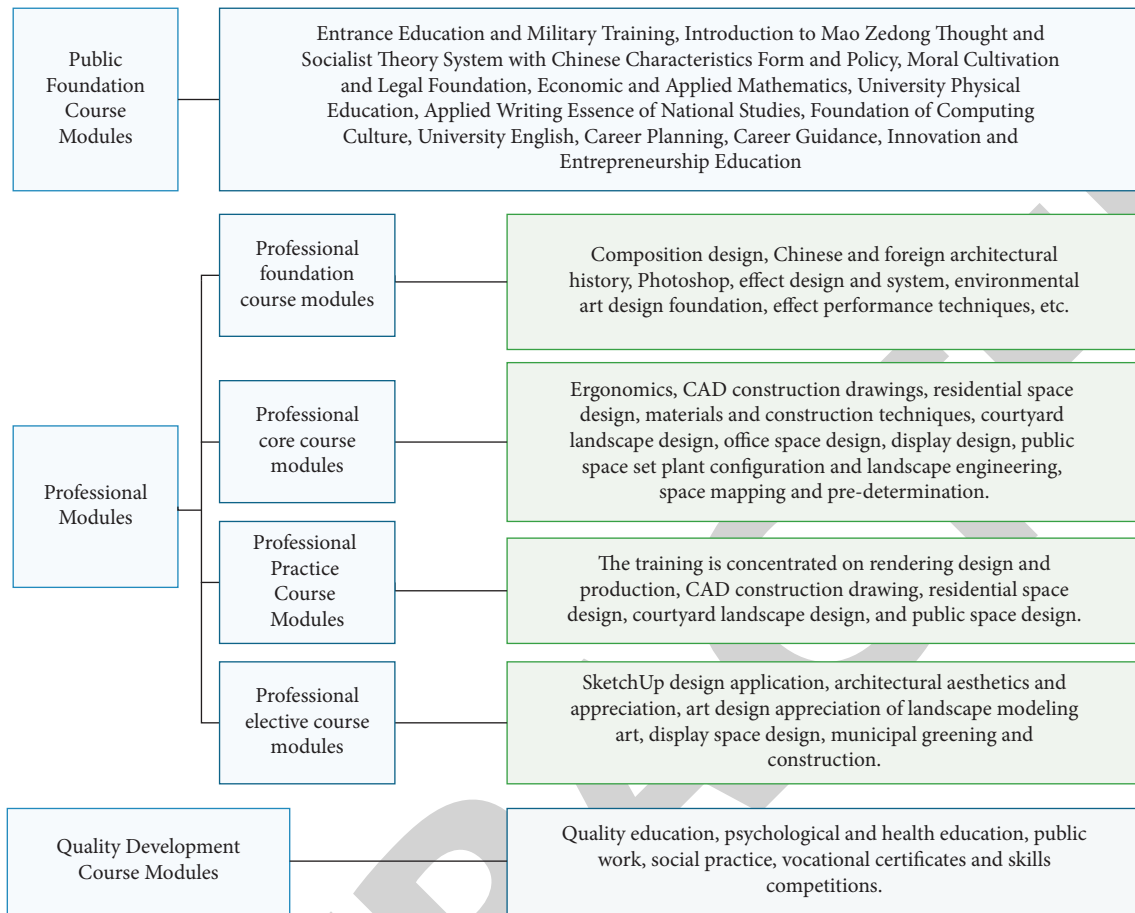


FIGURE 1: The framework of the modular curriculum teaching system of environmental art design majors.

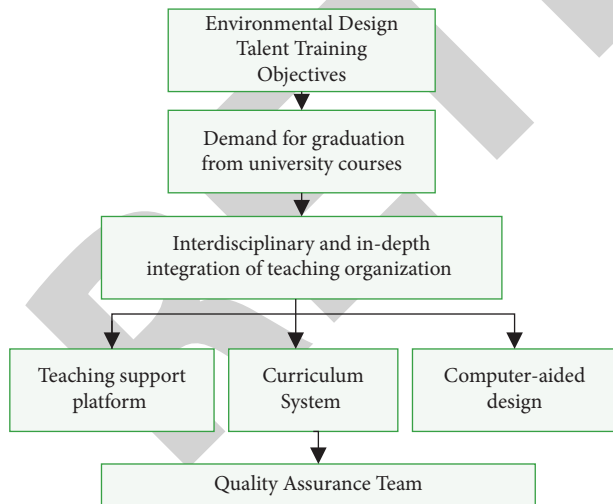


FIGURE 2: New teaching model of environmental art and design course.

to environmental design based on the cultural characteristics of local environmental design,” students are reshaped from the history of regional environmental design to the formation of the environmental design industry at many levels, establishing a correct cognition, guiding students to gradually form an independent environmental design thinking,

and improving their innovation ability and inspiring them to the course will help students to develop an independent environmental design thinking, improve their innovation ability, and inspire them to design spatial environments.

Switching the traditional teaching thinking and respecting the differences between student groups, in addition to arranging the necessary computer drafting courses, students should also strengthen their ability to express their environmental design on the computer. It is assumed that students only have the ability to think creatively about environmental design, but lack the ability to express their thinking, although they can complete the environmental design drawings as required, the content is lacking in vividness and flexibility. Therefore, we should adopt the open traditional classroom approach to cultivate students’ ability to use computer drawing and regularly carry out CAD drawing software learning for students to improve their ability to express their creative thinking, so that the environmental design course can be more vivid and enhance students’ interest in learning.

3.2. *Designing Guiding Course Teaching Ideas.* The degree of difficulty, novelty, and scope of environmental art design course teaching can directly affect the learning effect of students, so we should design guiding course teaching ideas and propose scientific and reasonable course teaching topics.

Next, establish cooperative relationship with several environmental design industries within the market, and students can refer to the recent design results of enterprises in the process of designing with computer-aided environmental design drawings, design guided course teaching ideas, and accumulate students' practical experience. The design of teaching ideas is shown in Figure 3.

As shown in Figure 3, teachers can introduce examples of enterprise design from environmental art design courses, guide students to analyze the design ideas of the results, combine students' learning perceptions, ask students targeted environmental design design-type questions, encourage students to use computers, give full play to their creative abilities, use a variety of computer drawing software, put forward their own design conjectures, guide students to complete environmental design solutions, provide students with market research resources, organize data about environmental design, verify the feasibility of the drawings or results of the design in the market distribution application, summarize the problems that arise in the design process, set up discussion groups so that students can communicate with each other, summarize the main points of the design class and the innovative points in the process of completing the design, by the teacher according to the focus of the class, and appropriate extension of knowledge points The teacher will deepen students' understanding of environmental design and expand students' design ideas.

3.3. Design Course System Based on CAD Technology. Based on CAD, improve the practical courses, transfer the traditional teaching classroom to the environmental design construction site, create a variety of learning conditions for students, integrate the teaching schedule of the course, lead students to visit the site to see the shape of a variety of parts or accessories in environmental design objects, improve students' sense of space, make the traditional classroom more abstract or difficult to understand the professional knowledge of popularization, and deepen students' design ability.

Since the practice courses are usually arranged outdoors, at the beginning of the design practice courses, the professional teachers guide the students to complete the self-study of the professional courses on the teaching platform and clarify the learning tasks that students need to complete in the practice courses through the communication and discussion among students. In the classroom, teachers provide students with environmental design drawings of the visited areas and carry out analysis of environmental design features to ensure that the teaching system is targeted in the implementation. In the course of implementation, students are guided to think more and observe more, to use computer ideas and environmental design construction principles to find their own potential problems in learning, to fully integrate theory and practice, to be summarized by the teacher's professional knowledge when necessary, to review the practical learning process with the help of multimedia teaching tools, and to supplement the learning content ignored by students. The teacher will review the practical learning process with the help of multimedia teaching tools and supplement the learning content that students have neglected.

3.4. Strengthen the Horizontal Connection between Course Teaching and CAD. Improve the extension of professional knowledge, strengthen the horizontal connection between multiple courses of environmental art design, integrate environmental design construction and CAD, reasonably arrange the class time of practical courses and theoretical courses, so that teachers can grasp the dynamic learning trends of students while completing the teaching tasks of the courses, and guide students to solve the practical problems in course learning. Building a student learning platform, teachers can upload market research data and survey reports to the platform in the form of compressed files and introduce a variety of computer drawing techniques to improve students' ability to use computers while deepening their spatial understanding of graphic images. The integrated teaching mode of design establishes a direct connection between different disciplines, enables students to get systematic training in learning, improves students' motivation to learn, builds a new mode of student learning interaction, enhances students' overall representation and cognitive ability of environmental design, cultivates students' innovative and creative ability, and cultivates applied talents for the development of the environmental design industry.

4. Case Analysis

Based on the university level, with the integration of new ideas of education reform, universities have raised the importance of teaching environmental art design courses, whether at the level of teacher team construction or the level of university orientation, there are different degrees of improvement, market service departments have been added to regularly carry out research activities of the industry in the market development trend, which can improve the connection between teaching resources and the market according to the real-time situation of industry development.

Based on the student level, most of the students said in the survey that they have established the correct knowledge of the industry development and professional learning and can strictly follow the teaching arrangement of the teachers, follow the teaching steps of the professional teachers, and assist the teachers to complete the teaching objectives with high quality and high efficiency. In addition, based on the teaching needs of universities, some teachers choose to go to environmental design enterprises in the market for continuous training, in order to improve their academic professional ability and develop their own correct professional ethical quality as the standard, and participate in diversified environmental design market research activities, so as to provide students with more professional and perfect teaching resources.

Based on the demand of enterprises and deepening of teaching reform measures, enterprises can provide 50–70 students with jobs in colleges and universities every year according to the job demand, which effectively alleviates the current situation of employment difficulties of graduates. At the same time, the relevant enterprise managers have suggested in the survey that students who have studied through the teaching reform have a higher degree of adaptability to the

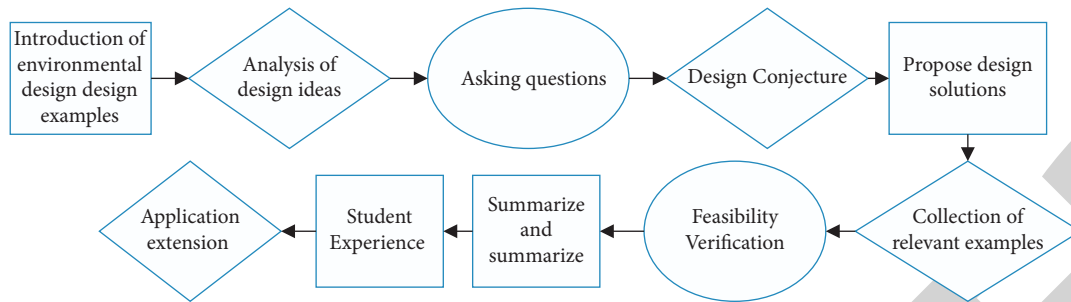


FIGURE 3: Guided course teaching ideas.

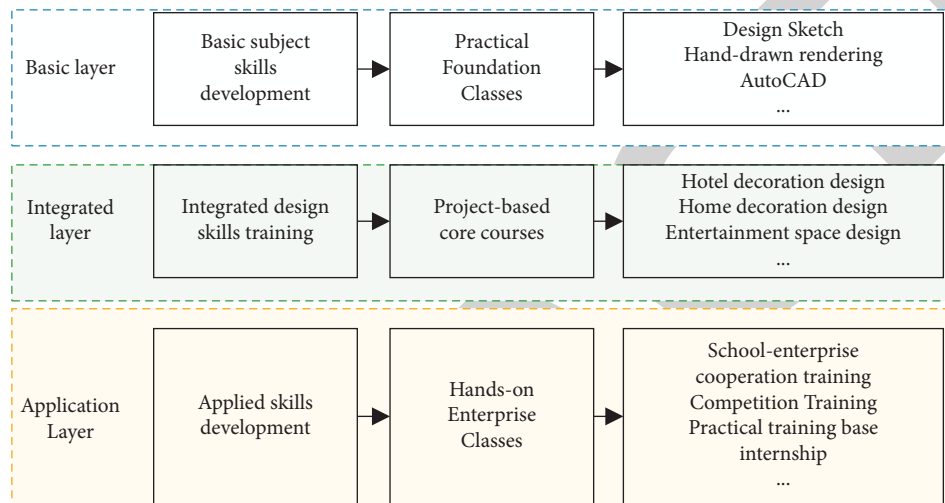


FIGURE 4: Job competence-based curriculum system.

internal positions of enterprises, and compared with the early employed students, this group of students can adapt to the working atmosphere of enterprises more quickly in their positions, and then integrate into the internal collective, which improves the practical application ability to use computers.

At present, environmental art and design education is 3 years, the training mode is generally two and a half years of school study plus half a year of enterprise internship, and the curriculum system is generally basic courses, professional foundation courses, and professional courses. In order to cultivate job-competent talents, the curriculum is key to align with the actual work project. According to the spirit and requirements of the current curriculum reform and the problems of curriculum design, this paper constructs a “three vertical and three horizontal” job-competent teaching curriculum system: the first stage is practical basic courses, the second stage is project-based core courses, and the third stage is practical enterprise courses, as shown in Figure 4.

4.1. Teaching Ideology. The main teaching idea of project-driven mode is “student-led and teacher-led”. Students should become the main body of learning, make students more willing to believe themselves as a designer, and enjoy the learning process more, so that their self-drive can be enhanced.

In addition, students are the main body to control and advance the teaching progress. During the teaching process, teachers should improve and revise the teaching plan

according to the students’ project progress and seize the teaching moment when the progress is stagnant and students are in a cognitive dilemma. This is because the efficiency of the teacher’s instruction is greatly enhanced when the students’ eagerness to get out of the status quo is at a high point.

4.2. Teaching Objectives. With innovative thinking and practical skills; at the level of process and method, require students to learn the learning method of inquiry learning, independent learning, and be able to actively obtain learning resources; at the level of emotional attitude and values, require students to have a strong interest in design and have a realistic level of emotional attitude and values, and students are required to have a strong interest in design and a realistic and innovative attitude.

Specifically, taking “3ds Max Software Fundamentals and Applications” course as an example, for environmental art design students, its teaching objectives are to be able to proficiently use 3ds Max software operation skills to complete effect drawing, creatively express design concepts, and stimulate interest in design expression.

4.3. Teaching Procedures and Essentials. Teaching procedure refers to the specific operation steps, specific rules, and teaching schedule in the course of implementation. Take “3ds Max software foundation and application” as an example, set the project case as 120 m² space design (120 m²

three bedroom design/120 m² restaurant space design), and the teaching procedure and main points of the course are as follows (see Table 1).

In this course, Module 1 focuses on familiarizing students with project design cases, as they have not had a systematic study of design theory, so the instructor provides the basic planes on which the students can base their suggestions for optimization. This takes into account the objective learning base of the students and also gives them room to play with their designs.

At the end of Module 2, it is necessary to plan grouping design teaching tasks according to a process scoring and divide students into work groups and home groups according to their ability to accept new knowledge, so as to reasonably distinguish the difficulty of the tasks.

Module 3 still emphasizes the role of the students, who provide the furniture style and the overall layout of the project design case, and the teacher assists the students to complete the design expression by teaching them how to use the software and techniques.

Module 4 also requires the students to give their own design examples of the space and color palette, and the instructor will give suggestions on the style and color scheme, while the students will try to use their own solutions to give material mapping, feel the shortcomings of the solutions and make changes. Module 4 is a difficult part of the software technology, but not a difficult part of the design, so the focus is on helping students to complete the software skills, the teacher teaches lighting arrangement and debugging methods, allowing students to simulate the design expression under different light senses such as day, night, cool, and warm tones, in order to help them use lighting to set the mood.

An important guarantee for the model to work is that students must use their off-class time to complete the given tasks, and therefore it is emphasized in the rules. The off-class time is communicated through the cloud classroom online, which not only requires students to submit their proposals on time during the off-class time but also requires the teacher to complete the proposal instruction online at the agreed time so that the teaching time can be truly expanded and the given teaching task can be completed.

The in-class time is mainly used by the teacher to plan the teaching content rationally based on the materials submitted by the students, which requires the teacher to not only teach the textbook part but also help the students analyze most of the difficult problems they encounter in their self-inquiry, thus allowing the students' main role to be fully played. Students are also able to help each other solve noncommon problems after grouping, which helps to reduce individual students' blind spots in knowledge, which also enhances students' cooperative learning ability.

4.4. Support System. For practical professional software courses, the realization of project-driven teaching mode requires hardware and software support systems; otherwise, no system can be formed and no good teaching effect can be achieved.

- (1) Software learning resource library. Teachers need to collect software teaching videos, software demonstration videos, model libraries, material libraries, parameter reference data, reference libraries and a series of learning resources, the learning resources should have clear categorization, easy to use characteristics.
- (2) Multimedia platform in class. School multimedia classrooms need to have teacher-student interaction software, computer configuration to meet teaching needs, real-time updated software and Internet access conditions, project-driven teaching mode also requires full communication between students, so the seating arrangement should also be more flexible.
- (3) Effective off-class communication platform. Mobile Internet should be used for teaching, project-driven teaching mode needs to rely on time to complete tasks in class, and it is especially important to establish a perfect platform for teacher-student interaction in class, in which teaching software such as Blue Ink Cloud Class and Cloud Classroom should be widely popularized to ensure instant interaction and communication between students and teachers in class.

4.5. Evaluation of Teaching and Learning. Teaching evaluation is mainly for skill evaluation, "skill" is what the American educational psychologist Robert Mills Gagne (1916–2002) called operational skill, which is divided into three levels of learning: one is the level of imitation, including demonstration and specific guidance under the prototype. The first is the level of imitation, which consists of performing operations with prototypes and specific instructions, simulating and modifying the objects provided. The second is the independent level, which includes performing operations independently, making adjustments and improvements, and trying to make connections with existing skills. The third is the level of transfer, which includes applying existing skills in new situations and understanding the applicability of the same skill in different situations, etc.

According to the information processing theory of Gagne (Robert Mill s Gagne, 1916–2002), the project-driven CAD course teaching evaluation also starts from the above points and contains two parts: one is the degree of mastery of basic software skills, which is mainly reflected in the level of imitation, and basic knowledge mastery level. The first is the mastery of basic software skills, which is mainly reflected in the level of imitation, basic knowledge mastery level. The second is the completion of the project, which is mainly reflected in the level of creative expression, application level.

In this paper, we designed a table of teaching evaluation and its methods (see Table 2). The test questions are divided into subjective and objective questions, and the subjective questions are graded by both students and teachers.

The CAD course is different from the case teaching method in traditional teaching. Rather than simply inserting a case, it incorporates a real project throughout, which requires teachers to change their lesson planning and also

TABLE 1: “3ds Max software foundation and application” course teaching procedures and essentials.

Module	Lesson time	In-class lecture	Inquiry in class	Specifications	
1	Project analysis/task breakdown	4	Project requirements, floor plan layout, 3D software basic interface layout	Floor plan optimization and expression (any form)	Each person participates in the project, and the real case is not restricted to the form and technique of expression
2	Project basic modeling	6	Project wall modeling skills and basic principles of space planning	Try other 2 or more space planning forms	The teacher provides a packet of materials, students submit their plans through the cloud classroom at the specified time, and the teacher makes timely suggestions online and plans the lesson according to the students' needs
	Project hard modeling	8	Modeling skills and style analysis of hard furnishings required for project planning	Determine 2 styles in groups, complete 2 styles of hard furnishings modeling tasks	
	Project soft modeling	8	Modeling skills of soft furnishings and furniture arrangement analysis required for project planning	Complete furniture modeling for 2 styles, find furniture style information, collect pictures	
3	Project model material mapping	10-12	Software mapping skills and different material parameters settings, color matching principles	Make material mapping of the completed hard and soft furnishings in different styles and modify and improve the plan	Students submit a schedule for completion, and the teacher makes corrections based on student completion and plans the lesson according to student needs
4	Project lighting parameter setting	10-12	Software lighting parameter settings and lighting arrangement methods required for different atmospheres	Set up lighting for 4 different atmospheres on the model, rendering local effects and overall large images	Students submit different styles of renderings, and the teacher provides guidance

TABLE 2: Teaching evaluation and its methods.

Type of test questions	Description	Example	Evaluation method
Objective questions	The format is computer-based, and the types of questions are fill-in-the-blank, multiple-choice, and judgment questions	3ds Max software in the move command shortcut key is ()	Paper test, the score is a percentage system
Subjective questions	Imitation level Simple imitation of the knowledge taught in class, project completion is less than 60%	The project only appears in the classroom demonstration content and cannot be reasonably used	1. Score percent evaluation; 2. Project evaluation includes overall completion, model, material, lighting, creative effect of the five aspects; 3. The student's name will be hidden
	Application level Use the teacher's packet appropriately, learn the knowledge required for the project and apply it independently, and complete the project at a level of 60% to 80%	The project has the same model or material, lighting and other elements not taught in the class and the use of reasonable	
	Innovation level The project design is creative, the project expression is unique, and the project completion level is 80%~100%	The project has all the elements of reasonable use and unique creativity, with a sense of design	

requires students to have a basic sense of design. In today's teaching process, all these conditions are available.

- (1) Teacher level. The concept of “student-led and teacher-led” has been popularized, and teachers are very receptive to this concept and have had similar experiences. The difficulty of the teaching model lies in the introduction of specific cases and the embedding of knowledge points, which are similar to the case-based teaching and are not new to teachers.
- (2) Student level. Students often have a basic understanding of their major and are no longer unfamiliar

with the term design when they are exposed to the course. Although their design skills are not strong, it does not affect their absorption and digestion of the knowledge points of the software course. At the same time, students already have strong learning and self-inquiry ability, as long as they are driven by interest, they are able to complete the absorption and transformation of knowledge. In addition, the small class size of about 30 students in the university also facilitates the model and helps to decompose the project tasks.

- (3) Technical level. The teaching mode requires the joint participation of teachers and students both online

and offline. With the existing cloud classroom, blue ink cloud class, social platform, and sufficient online course resources, teachers and students are fully able to achieve instant interactive communication during nonclassroom time.

Therefore, the teaching model is a new attempt derived from the mature teaching concept applied to specific courses, which has both subjective and objective bases and is highly feasible.

5. Conclusion

Based on CAD, this paper studies the reform and practice of environmental art and design teaching and improves professional curriculum system and ensure the smooth development of diversified teaching activities. Through the analysis of this paper, insisting on student-oriented and innovative design is the basic purpose of the curriculum teaching reform, and only by improving students' practical application ability and cultivating their innovative and entrepreneurial consciousness can we ensure the effectiveness of talent cultivation. Although the teaching reform strategy proposed in this paper has achieved partial success in actual teaching, it is still necessary to follow the development needs of the times in the later development, establish a multi-course cross-teaching system, guarantee the high enthusiasm of students in the learning process, and then provide excellent talent support for the development of the market environment design industry.

Data Availability

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Conflicts of Interest

The author states that this article has no conflicts of interest.

References

- [1] H. Jin and J. Yang, "Using computer-aided design software in teaching environmental art design," *Computer-Aided Design and Applications*, vol. 19, no. S1, pp. 173–183, 2021.
- [2] R. Chen and A. Sharma, "Construction of complex environmental art design system based on 3D virtual simulation technology," *International Journal of System Assurance Engineering and Management*, pp. 1–8, 2021.
- [3] F. Niu, "Communicative image expression in teaching of CAD for environmental art major," *CAD and Applications*, vol. 18, no. 2, pp. 25–35, 2021.
- [4] T. Zhang, "Influence and impact of CAD on environmental art design Paradigm under digital background," *International Technology Management*, vol. 45, no. 6, pp. 69–71, 2017.
- [5] Y. Yang and D. Zhu, "Environmental design vs. Environmental art design: a Chinese perspective," *Journal of History Culture and Art Research*, vol. 9, no. 4, pp. 122–133, 2020.
- [6] Y. Lou, "The idea of environmental design revisited," *Design Issues*, vol. 35, no. 1, pp. 23–35, 2019.
- [7] E. T. Eren and S. Yilmaz, "The student attitudes towards digital and conventional drawing methods in environmental design studios and the impact of these techniques on academic achievement in the course," *International Journal of Technology and Design Education*, vol. 32, pp. 617–644, 2020.
- [8] L. Qiao, Y. Shi, Z. Guo, Y. Mao, and X. Deng, "Research on environmental design teaching model based on the concept of ecological Sustainable development," *Advances in Vocational and Technical Education*, vol. 3, no. 1, pp. 81–84, 2021.
- [9] C. Xue, "Research on the expression of environmental art design based on virtual technology," *Revista de la Facultad de Ingenieria*, vol. 32, no. 9, pp. 560–565, 2017.
- [10] Y. Xu and Y. Li, "Research on computer aided environmental art design based on 3D studio max," *Revista de la Facultad de Ingenieria*, vol. 32, no. 3, pp. 149–155, 2017.
- [11] E. T. Eren, T. Düzenli, and D. Akyol, "Attitudes of landscape architecture students towards biomorphic and parametric design approaches in environmental design," *Sanat ve Tasarım Dergisi*, vol. 8, no. 1, pp. 126–143, 2018.
- [12] K. C. Dannemiller, "Engineering design for environmental health: a new course preparing students to address interdisciplinary challenges," *Environmental Engineering Science*, vol. 36, no. 2, pp. 257–261, 2019.
- [13] Di Wu, Y. Lei, M. He, C. Zhang, and Li Ji, "Deep Reinforcement learning-based path control and optimization for Unmanned Ships," *Wireless Communications and Mobile Computing*, vol. 2022, Article ID 7135043, 8 pages, 2022.
- [14] G. Cai, Y. Fang, J. Wen, S. Mumtaz, Y. Song, and V. Frascolla, "Multi-carrier M-ary DCSK system with Code Index Modulation: an efficient solution for Chaotic communications," *IEEE Journal of Selected Topics in Signal Processing*, vol. 13, no. 6, pp. 1375–1386, Oct. 2019.
- [15] K. Chandra, A. S. Marcano, S. Mumtaz, R. V. Prasad, and H. L. Christiansen, "Unveiling capacity gains in ultradense networks: using mm-Wave NOMA," *IEEE Vehicular Technology Magazine*, vol. 13, no. 2, pp. 75–83, 2018.
- [16] F. B. Saghezchi, A. Radwan, J. Rodriguez, and T. Dagiuklas, "Coalition formation game toward green mobile terminals in heterogeneous wireless networks," *IEEE Wireless Communications*, vol. 20, no. 5, pp. 85–91, 2013.
- [17] S. Palanisamy, B. Thangaraju, O. I. Khalaf, Y. Alotaibi, S. Alghamdi, and F. Alassery, "A Novel approach of design and analysis of a Hexagonal Fractal Antenna Array (HFAA) for Next-Generation wireless communication," *Energies*, vol. 14, no. 19, p. 6204, 2021.
- [18] S. Nagi Alsubari, S. N. Deshmukh, A. Abdullah Alqarni et al., "Data Analytics for the Identification of Fake reviews using Supervised learning," *Computers, Materials & Continua*, vol. 70, no. 2, pp. 3189–3204, 2022.
- [19] Q. Liu, C. Liu, and Y. Wang, "Integrating external dictionary knowledge in conference scenarios the field of personalized machine translation method," *Journal of Chinese Informatics*, vol. 33, no. 10, pp. 31–37, 2019.
- [20] S. A. Bansode, V. R. More, S. P. Zambare, and M. Fahd, "Effect of constant temperature (20 0C, 25 0C, 30 0C, 35 0C, 40 0C) on the development of the Calliphorid fly of forensic importance, *Chrysomya megacephala* (Fabricus, 1794)," *Journal of Entomology and Zoology Studies*, vol. 4, no. 3, pp. 193–197, 2016.
- [21] F. A. Al-Mekhlafi, R. A. Alajmi, Z. Almusawi et al., "A study of insect succession of forensic importance: Dipteran flies (diptera) in two different habitats of small rodents in Riyadh City, Saudi Arabia," *Journal of King Saud University Science*, vol. 32, no. 7, pp. 3111–3118, 2020.
- [22] A. Abd, A. Fahd Mohammed, and S. P. Zambare, "New species of flesh fly (Diptera: Sarcophagidae) Sarcophaga

- (Liosarcophaga) geetai in India,” *J Entomol Zool Stud*, vol. 4, no. 3, pp. 314–318, 2016.
- [23] A. M. Al-Azab, A. A. Zaituon, K. M. Al-Ghamdi, and F. M. A. Al-Galil, “Surveillance of dengue fever vector *Aedes aegypti* in different areas in Jeddah city Saudi Arabia,” *Advances in Animal and Veterinary Sciences*, vol. 10, no. 2, pp. 348–353, 2022.
- [24] A. R. Alqahtani, A. Badry, S. A. Amer, F. M. A. Al Galil, M. A. Ahmed, and Z. S. Amr, “Intraspecific molecular variation among *Androctonus crassicauda* (Olivier, 1807) populations collected from different regions in Saudi Arabia,” *Journal of King Saud University Science*, vol. 34, no. 4, Article ID 101998, 2022.
- [25] R. Ali, M. H. Siddiqi, and S. Lee, “Rough set-based approaches for discretization: a compact review,” *Artificial Intelligence Review*, vol. 44, no. 2, pp. 235–263, 2015.

RETRACTED