

# **Exploration of Integrating the Essence of Traditional Culture into Environmental Design Software Course Application: Taking Liang Sicheng's Ancient Architecture Manuscript as an Example**

**Yilan Shen**

*Zhejiang University of Finance and Economics Dongfang College, Zhejiang, China*

**Abstract:** “Let Chinese cultural heritage come alive and create a strong social atmosphere for inheriting Chinese civilization.” Actively implement the essence of traditional culture and effectively integrate it into environmental design software courses, combining traditional culture with modern design. The research focuses on the overview of the environmental design software course, analyzes the characteristics of the course and the current problems, and proposes a model of digitizing Liang Sicheng's ancient architectural manuscripts and using CAD, Photoshop, and Sketch Up design software for teaching practice. The aim is to cultivate students' cultural confidence and design ability, so that students can have a deeper understanding of traditional Chinese architectural culture while learning professional content, cultivate talents that are more in line with China's national conditions for the environmental design profession, and contribute to the inheritance of Chinese civilization.

**Keywords:** Chinese Traditional Culture; Environmental Design; Software Courses; Ancient Architectural Manuscript

## **1. Research Background and Significance**

### **1.1 Background**

The historical and cultural heritage contains the essence of traditional culture, which is the cultural wealth belonging to all generations of Chinese people. We must respect history, culture and ecology, and also comprehensively protect and develop China's historical and cultural heritage. Nowadays, the traditional ancient buildings preserved on the land of China are all important historical and cultural heritages<sup>[1]</sup>, containing rich historical

information and profound Chinese aesthetic values, carrying the national cultural genes, and possessing non renewability and irreplaceability, requiring protection, utilization and inheritance<sup>[2]</sup>.

Nowadays, urban spatial renewal planning has entered the era of quantification, and urban space needs to emphasize “remembering nostalgia”, protecting and promoting the excellent traditional Chinese culture in the region, continuing the historical context of the city, and preserving the genes of Chinese culture<sup>[3]</sup>. Environmental design is an art major that emerged due to urban development and has developed and grown with the acceleration of urbanization. The demand for environmental design professionals in society is gradually increasing, and professionals need to fully utilize their professional qualities to create urban spaces rich in Chinese civilization value for society. Therefore, it is necessary to integrate the essence of traditional culture into the education system of environmental design majors<sup>[4]</sup>.

### **1.2 Significance**

The software teaching of environmental design major, as a key part of undertaking professional foundation and core courses, requires students to first have a foundation in art painting and master geometric perspective drawing, possess basic thinking and aesthetic ability in environmental design, and then learn how to comprehensively use professional software to express design ideas and master the ability to draw environmental 2D drawings and 3D renderings. Through software learning, students can better utilize professional software and expand their design thinking when dealing with professional design projects<sup>[5]</sup>.

Integrating traditional culture into the teaching of environmental design software courses can

enhance the complementary effect of professional courses and patriotic spirit, guide students to establish correct values, and cultivate professional and craftsmanship spirit. Integrating the essence of traditional culture into design software courses can enhance students' learning enthusiasm and initiative, stimulate their learning enthusiasm, cultivate a sense of national mission, and nurture excellent traditional Chinese culture<sup>[6]</sup>. In the professional field, one can also make good use of traditional Chinese cultural elements, strengthen cultural confidence, achieve innovative integration and development of environmental design and Chinese culture, and strive to promote Chinese style design to the world.

## **2. Teaching Situation of Course**

### **2.1 Course Overview**

Environmental design software, as a software application that environmental design students must master, has strong professionalism and operability. The pace of the course is fast, and the knowledge points taught in each lesson are interrelated. Students need to understand the correlation between different knowledge points while practicing on the computer.

Comparing and analyzing the curriculum of environmental design courses in most domestic universities, environmental design software courses usually consist of two courses, one mainly teaches 2D drawing software: CAD and Photoshop; Another course teaches 3D spatial modeling software: Sketch Up, Enscape or d5 render. Each course can be set to 64 class hours, with one software taught every 32 class hours. The average theoretical and practical teaching hours for each software are 16 class hours. The target audience of the course is sophomore students who have completed the professional foundation introductory course, and software courses are offered in the first semester.

### **2.2 Problems in Teaching**

As a technical practical course, the design software course requires students to master multiple professional software drawing techniques in the prescribed courses, and be able to connect the linkage operations between multiple software and perform artistic design expressions. The traditional teaching mode of

design software courses usually adopts the approach of teacher operation and student follow-up, with a focus on individual hands-on teaching. The interactive experience content is limited and the form is single. Combined with the heavy workload of student course tasks mentioned earlier, it is easy for students to mechanically learn and have difficulty deeply understanding the connections between knowledge points. Ultimately, it leads to difficulties in meeting the needs of professional design software courses for guiding students' divergent thinking education. There is an urgent need to incorporate traditional cultural elements related to the profession, enhance students' learning enthusiasm and class learning atmosphere, and emphasize teaching objectives.

With the popularization of blended learning, environmental design software courses should adopt online and offline learning, offline guidance, and practical exercises. By requiring students to practice software in the classroom, they can review with teacher recommended and self-made online courses after class. Knowledge points can be consolidated and flexibly applied through classroom discussions, classroom exercises, experiments, and other methods. Based on feedback from two rounds of teaching practice, it is concluded that the operational problems commonly encountered by students in the classroom require targeted online video recording and explanation by teachers to avoid students repeatedly consulting with teachers but still easily forgetting the key points of operation; After class time, students watch teaching videos online less frequently and the feedback video content is boring. Therefore, it is necessary to add explanatory cases on the basis of the original teaching videos, such as adding demonstrations of traditional ancient architecture drawing and innovation points<sup>[7]</sup>.

## **3. Liang Sicheng Ancient Architecture Manuscript Implantation Design Software Course**

Traditional architectural culture has a long history, and its design principles and construction techniques have formed a unique style in historical development. Traditional architecture not only has practicality, but also incorporates long-standing traditional cultural connotations. As the founder of Chinese

ancient architecture research, Liang Sicheng's surveying and analysis of traditional architecture provided valuable references for modern architectural design. The ancient architectural manuscript jointly surveyed by him and Lin Huiyin not only records the design details of ancient buildings, but also reflects the core cultural values of traditional architecture<sup>[8]</sup>.

By passing on the stories of Liang Sicheng and Lin Huiyin, members of the Construction Society, overcoming numerous difficulties and traveling to hundreds of towns in China to survey and map traditional Chinese ancient buildings with significant historical value, students can feel the patriotic passion of their professional predecessors and be grateful for the excellent learning environment that our country has brought us today<sup>[9]</sup>. And applying ancient architectural manuscripts to software courses can achieve an organic combination of traditional culture and modern design technology, stimulating students' learning enthusiasm.

This course mainly involves Liang Sicheng's ancient architectural manuscripts, including the original images of the manuscripts and related film, television, and literature materials. The selected manuscripts mainly include temples and palaces, and the specific content implantation and application require students to conduct a detailed analysis of Liang Sicheng's ancient architectural manuscripts, understand their design principles and historical background. By combining the three main drawing software for environmental design (Enscape and d5 are plugins that mainly play an auxiliary role), ancient architectural manuscripts will gradually be produced and generated online, stimulating students' interest in learning and guiding them to use professional software to assist in the development of excellent traditional Chinese culture<sup>[10]</sup>.

## 4. Course Teaching Practice

### 4.1 Course Planning

Taking the environment design software course of teaching cad and Photoshop for a total of 64 class hours as an example, according to the teaching syllabus and teaching content, the teaching schedule (see Table 1) is arranged to meet the needs of both

teachers and students to clearly view the weekly teaching points, so as to facilitate the preparation and review before class.

**Table 1. Teaching Schedule**

chapters and sections	content of courses	Teaching hours	The integration point of traditional culture
Lead before class	Liang Sicheng, Lin Huiyin ancient construction surveying and mapping drawings overview	8 (Extra-curricular)	Promote patriotism. Through the study at the front line, we can learn about the contributions of Liang Sicheng and Lin Huiyin in the protection and research of Chinese ancient architecture, encourage students to love the motherland, pay attention to and protect the cultural heritage of the motherland, and enhance their sense of national pride and mission.
the first week	AutoCAD Software foundation entry operation	16	Use the basic function keys to draw the traditional Chinese patterns.
the second week	AutoCAD Comprehensive operation of the software function keys	16	Liang Sicheng, Lin Conference ancient building surveying and mapping manuscript selection, on the machine copy painting.
the third week	Ps software basic entry operation	16	The traditional patterns and ancient patterns completed by CAD software were trained in color filling.
the fourth week	Comprehensive operation of the Ps software function keys	16	Can choose the traditional Chinese style for portfolio production.
Total		64	

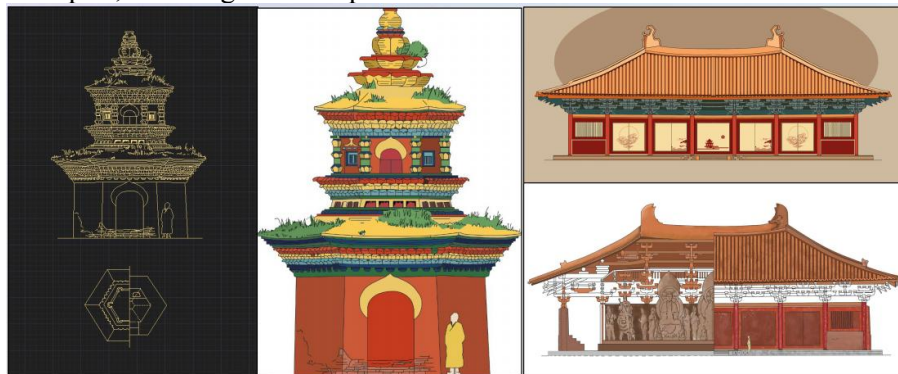
### 4.2 Teaching Content

Firstly, before the first week of classes, the life stories of Liang Sicheng and Lin Huiyin will be introduced, showcasing their fearless efforts in the early 20th century to conduct research and mapping of ancient architecture across the country. This not only provides students with a historical background of professional predecessors' efforts to serve the motherland, but also demonstrates the enormous contributions made by predecessors to the protection of Chinese cultural heritage. As professional descendants, students should strive to "sharpen their tools" and contribute to the motherland. By understanding and learning about the stories of ancient architecture through "Lianglin" surveying and mapping, we aim to inspire students' enthusiasm for professional learning and lay a solid emotional foundation for the upcoming formal course teaching.

Secondly, in the actual teaching from the first week to the fourth week, teachers combine the operation of design software to teach students

basic drawing skills, and encourage students to try using CAD and Photoshop software to copy the hand drawn drafts of Liang Sicheng and Lin Huiyin in advance. From the first week to the second week, after completing the first software drawing skill, students are required to formally copy and draw ancient architectural manuscripts in CAD, accurately reproducing the architectural details and structural features in the manuscript. Through this process, students can understand Liang Lin's rigor in surveying and mapping work, as well as the design essence of ancient architecture, and learn about the digital application of traditional surveying and mapping techniques, aiming to explore

interdisciplinary design research thinking. From the third week to the fourth week, it is necessary to perform post production coloring and effect processing on the manuscript in Photoshop. This assignment emphasizes the restoration and practicality of traditional ancient architectural colors, and through meticulous modification and color adjustment of ancient architectural images, it exercises students' sensitivity and processing ability to the traditional Chinese art style. And before the end of the course, use Photoshop software to layout and edit the patterns and drawings drawn in this lesson, and integrate them into a portfolio (see Figure 1).



**Figure 1. Student Works**

This course will also actively connect with the next software course, that is, in the 3D modeling software course, students can have a clearer understanding of the background and drawing difficulty of ancient buildings. And use Sketch Up to create a 3D model of the ancient building line draft completed by individuals. In Sketch Up operation learning, students need to combine their own drawn ancient building line draft with actual design principles to conduct detailed modeling and spatial layout. This process not only enhances students' modeling skills, but also helps them to have a more intuitive understanding of the appearance and structure of historical ancient architecture, and to experience the design essence and cultural connotation of ancient architecture in practice. This not only improves students' software operation skills, but also enables them to deeply understand the artistic value and historical significance of Chinese ancient architectural culture in practice.

In addition, in the classroom teaching process, it is necessary to set up multiple types of interactive teaching activities to improve

students' learning attention. Teachers can activate the classroom atmosphere and enhance classroom fun through functions such as "voting", "selecting", and "answering" in the "activity" area of the Chaoxing Learning Platform, allowing every student to participate and enabling teachers to timely understand students' mastery of knowledge points.

Also, in the class need to set up special theme discussions, such as "Elaborate on one's own Liang Sicheng ancient architecture copying works" and "Share software drawing skills". After learning two design software, students need to submit their personal copying and drawing assignments of traditional ancient architecture on the learning platform, and vividly describe the information of the ancient architecture they have drawn in class (see Figure 2). At the same time, students can collaborate in groups, broaden their thinking, and explore how to use the software they have learned to digitally reconstruct ancient buildings, and discuss how to use modern technology to protect and inherit Chinese ancient architectural culture.





**Figure 2. Classroom Discussion**

Finally, encourage students to regularly showcase their software learning achievements and provide feedback on any problems encountered during learning to their class and teachers. On the one hand, it is possible to gradually improve teaching methods and curriculum plans based on students' actual learning situations. On the other hand, students can share their learning achievements and experiences, further strengthening their patriotism and cultural confidence. Through this approach, the curriculum not only achieves the goal of imparting professional skills, but also achieves a subtle and seamless effect of ideological and political education.

#### **4.3 Assessment and Evaluation**

The assessment method for the course is assessment, which requires a comprehensive evaluation of students' performance in various aspects of the course, as well as the quantity and quality of their assignments. Based on the development of modern teaching technology, it is necessary to use student data from learning platforms for assessment, aiming to comprehensively evaluate students' knowledge mastery and practical abilities. The assessment is divided into two parts: online and offline:

Online, students are required to complete video learning, course assignments, and course quizzes through the Chaoxing Learning Platform. Online homework discussions and quizzes mainly test students' basic knowledge and theoretical understanding, while homework focuses on mastering software operation skills. Each video knowledge point on the Chaoxing platform is a part of student feedback that is difficult to understand and

easy to forget, meeting the needs of students to review during their later professional course learning process. Question bank ensures students' mastery of key knowledge points. Overall, it is convenient for teachers to pay attention to the learning dynamics and situation of each student, and then actively update the later course content and adjust the focus.

The offline part mainly involves classroom teaching, where students need to participate in practical software and group discussions. The project design requires students to use CAD and Photoshop for practical case operations, such as copying ancient architectural manuscripts, creating interior floor plans, etc. After the offline thematic teaching activities are completed or before the start of new lesson teaching, a course assignment review and evaluation based on the Learning Platform will be conducted. Teachers will comprehensively provide student grades based on the learning situation, discussion activity, assignment quality, and post class testing of the Chaoxing platform.

The course summary covers the corresponding classroom tests. Establish a supporting question bank for the course, covering basic knowledge, theories, and operational skills. At the end of the course and in the following semester, teachers will distribute proficiency test papers to assess students' mastery of knowledge, and regularly follow up with students on their actual application of the course to ensure their true mastery. The assessment results are comprehensively evaluated based on the online and offline learning situation (learning platform learning

situation, discussion activity, homework quality, and post class testing, etc.) It is reflecting the students' learning effectiveness and comprehensive application ability.

### 5. Conclusion

The integration of the essence of traditional culture into professional curriculum education can help better inherit Chinese traditional culture, stimulate students' innovative initiative, and contribute to the construction of a high-quality talent education framework in universities. Based on the content of this article, the reform of environmental design software courses needs to be combined with the training direction of the profession itself, and then explore traditional cultural elements in its own field, and find cultural implantation points in teaching modes and specific teaching methods. And it is necessary to dare to explore advanced teaching methods, optimize the overall course structure and content, timely evaluate the homework content feedback from students, dynamically adjust the teaching progress and pace, and better enhance students' comprehensive literacy and design ability.

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