

Original Paper

Research on the Training of Environmental Design Professionals under the Background of the Cultural Heritage Protection and Construction of the Yellow River

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Abstract

The Yellow River civilization has a long history in China. Along the Yellow River basin, rich urban settlements have developed, forming a distinctive architectural and cultural heritage. The traditional residential buildings in the Yellow River basin are not only tall in appearance, beautifully decorated and colorful in color, but also rich in cultural value and national characteristics. Based on the demand for the protection of the cultural heritage of the Yellow River Basin in the 14th Five-Year Plan of Henan Province, In combination with the training requirements of cultural and artistic talents in universities of "design to help cultural revitalization and participate in the protection of the Yellow River cultural heritage", The Department of Environmental Design at Zhengzhou University of Light Technology focuses on "Inheritance, protection and construction of the Yellow River Cultural Heritage", Taking the traditional residential buildings in the Yellow River basin in Henan Province as the research object of the characteristic architectural mapping course, From the aspects of architectural style, stone and wood materials, mortise and tenon structure, color technology, to guide students to appreciate the Yellow River culture, surveying and mapping local residential buildings, thinking about the protection and construction of the Yellow River cultural heritage, It is of great significance for students to understand the history and culture of local traditional buildings, establish the awareness of Yellow River culture protection, and cultivate related design talents.

Keywords

Protection of Yellow River cultural heritage, Environmental Design, Professional personnel training, Traditional Building mapping

1. Preface

The Yellow River basin is an important birthplace of Chinese culture, with a long history and splendid culture. Along the two sides of the Yellow River, it has formed a magnificent natural landscape and developed a prosperous urban settlement. In 2019, China put forward the strategy of cultural protection and construction of the Yellow River Basin, by deeply exploring the internal spiritual value of the Yellow River culture, continuing the historical context of the Yellow River basin, and promoting the Yellow River culture into a new era. Henan Province is one of the middle and lower reaches of the Yellow River basin, with rich natural, historical and cultural resources. Therefore, the Henan Provincial government put forward the construction goal of "Yellow River Cultural Belt" in the 14th Five-Year Plan. Through screening, protecting and building all kinds of cultural heritages in the Yellow River basin of Henan Province, a cultural complex integrating cultural protection, cultural appreciation and cultural development is formed. Henan traditional local-style dwelling houses building as the material witness of the ancient Yellow River civilization, has rich historical characteristics and cultural connotation, its unique architectural structure and environmental pattern reflects the different historical period of cultural activities and social ecology, for Chinese universities around the Yellow River basin culture research is of great significance.

2. Carry out University Education Focusing on Yellow River Culture

As an important area of the Yellow River ecological basin, in Henan Province, protecting the cultural heritage of the Yellow River, inheriting the cultural context and promoting the cultural spirit of the Yellow River are the important directions of university education in Henan Province in recent years. On this basis, The environmental design major of Zhengzhou University of Light Industry aims at "Design helps cultural revitalization, Talent revitalization and ecological revitalization", Continuous curriculum reform and teaching discussion, Pay close attention to the ecological environment protection and cultural construction in the Yellow River Basin, By analyzing the policy background, historical characteristics, environmental features and cultural elements of the cultural heritage of the Yellow River, By systematically integrating into the theoretical teaching and design practice, It helps students to understand the traditional living environment needs and architectural techniques of the Yellow River Basin in different historical periods, And carry out such as architectural design, landscape design, urban and rural planning and transformation, interior space design and other program creation, Transform the students' cultural interpretation of the Yellow River basin into creative projects, It is of great significance to deeply analyze the internal environmental landscape and cultural characteristics of the Yellow River basin.

Based on the rich natural and cultural resources in the Yellow River basin, the practical courses will help to cultivate students' awareness of the protection and design intention of the Yellow River cultural heritage. Therefore, as one of the practical courses of environmental design major of Zhengzhou University of Light Industry, architectural surveying and mapping course focuses on cultivating

students' insight and analysis ability of traditional architectural aesthetics and cultural value, and improving their own cultural accomplishment while appreciating the ancient architectural attainments. At present, many universities use such courses as elective courses or other courses to enrich students' knowledge of architectural culture; therefore, the courses select representative traditional buildings as teaching cases, and teachers lead students to observe and study. Residential buildings are the artistic crystallization of the development of traditional architecture in the Yellow River basin, most of which are concentrated near the ancient political center of Henan province (such as Kaifeng, Luoyang, Zhengzhou, etc.). From the perspective of appreciation, residential buildings have exquisite architectural technology, rich decorative colors and profound cultural connotation, which is suitable for junior professional students to carry out study and research. Therefore, this paper takes the course "Characteristic Architectural Surveying and Mapping" of environmental design major of Zhengzhou University of Light Technology as an example, and selects the traditional residential buildings in the Yellow River basin in Henan Province as a theoretical teaching case to analyze its internal craftsman skills and cultural value (Figure 1).

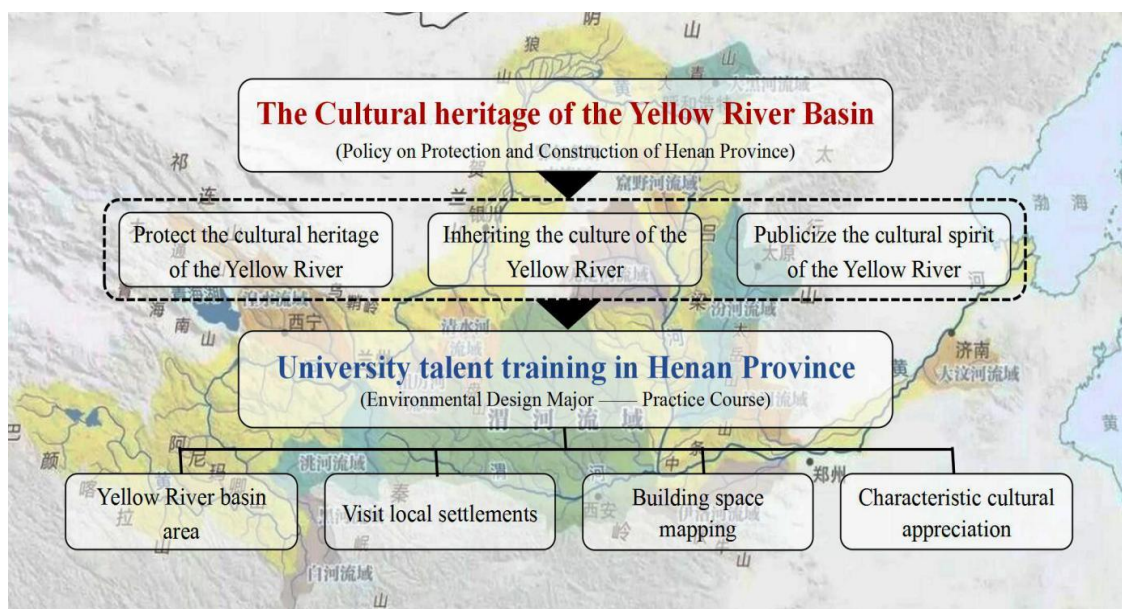


Figure 1. Cultural Protection and Talent Training in the Yellow River Basin

3. Visit and Study around the Yellow River Basin

In response to the national requirements to carry forward and protect the traditional architectural culture of the Yellow River Basin, develop the ecological landscape resources of the Yellow River Basin, and cultivate excellent design talents, the 2021 edition of the environmental Design major has added the teaching content for the protection, restoration and innovation of traditional buildings in Henan Province. Therefore, according to the school "freshman according to the discipline, sophomore professional" undergraduate training planning, the characteristic building surveying and mapping

course in sophomore last semester, the Yellow River culture and its living environment ecological composition is an important content of the early stage of the course learning, through two weeks of course teaching, for students on architectural case design style, structure characteristics, material technology, color decoration, etc., make the students in learning construction technology and cultural value at the same time, the preliminary master architectural characteristics and forms, for later outdoor sketch, surveying and mapping drawing to lay the theoretical foundation.

According to the requirements of the program, the course selects the traditional buildings in the Yellow River basin in Henan Province as the teaching cases, and arranges the subsequent mapping content. Therefore, course in GongYi Kangbaiwan manor buildings as an example, as the traditional Yellow River, north China, by the main house area, south courtyard, ancestral temple area, workshop area, garden, stack room, formed the large buildings, solemn and beautiful, imposing manner and reasonable layout, its embodies the traditional architectural characteristics of the Ming dynasty, qing dynasty, the republic of China, is the representative work of classical architecture in the Yellow River basin. This course mainly around kangbaiwan manor building style, material technology and decoration features, from the perspective of art, culture, social system, led by teachers students to kangbaiwan manor, through external viewing, internal visits, details, etc., the external site, architectural form, building materials, space layout, functional design, cultural characteristics, such as detailed view, records, to the Yellow River basin traditional living place environment characteristics, cultural characteristics, design requirements, etc. (Figure 2).

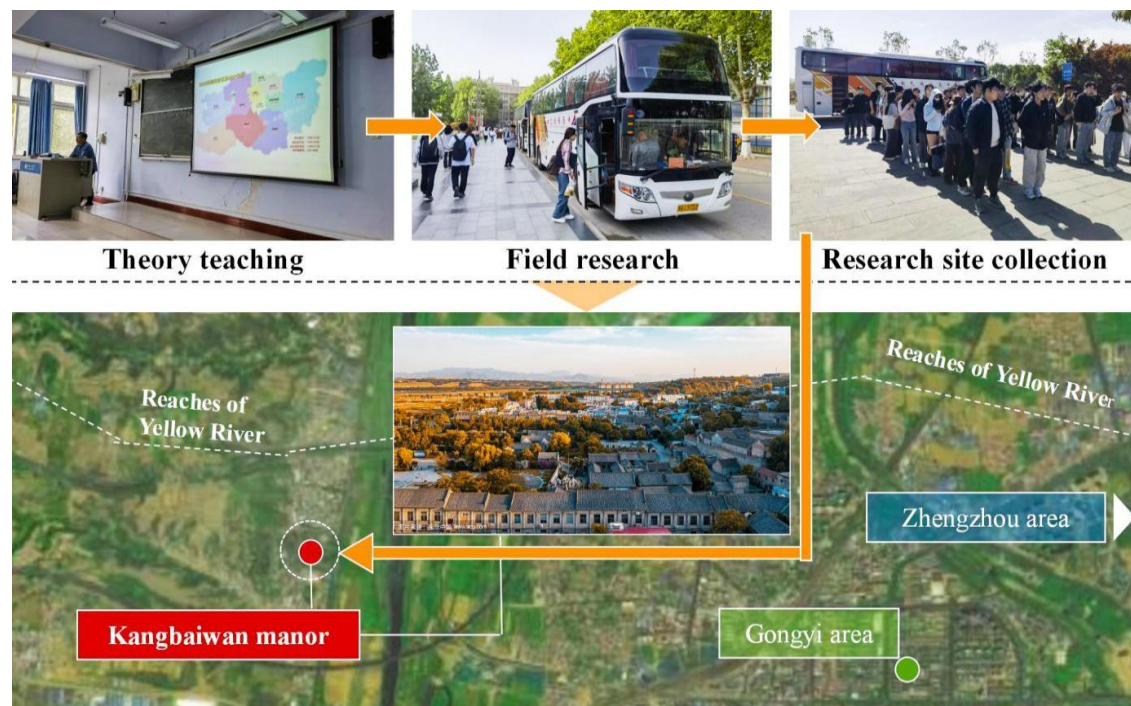


Figure 2. Research of Living Space in the Yellow River Basin

4. The Course Explains the Traditional Living Environment in the Yellow River Basin

In the field investigation, teachers lead students to the local area. Relying on the architecture of the Yellow River Basin as the environmental background, they can systematically explain the style characteristics, material technology, design structure and other contents of the case building for students, so that students can understand the design characteristics of traditional architecture one by one.

4.1 Traditional Architectural Style and Historical Evolution

Through field visits and view, on the one hand, for students to show kangbaiwan manor luxuriant exterior decoration and tall majestic architectural style, on the other hand for students to architectural culture: in the Yellow River basin culture as the background, kangbaiwan manor in the cultural level of clever segmentation and choice, highlight the core, to achieve the combination and cultural and architectural level. On this basis, the school explains the positive role of the manor in the local economic and cultural development. As an important part of the traditional architectural system in the Yellow River Basin, the regional, cultural and national values of the internal architectural connotation are also self-evident. After the summary, the teachers need to systematically comb the historical evolution and architectural styles of the main buildings of the manor for the students (Figure 3).



Figure 3. Observation of Traditional Buildings in the Yellow River Basin

4.1.1 Historical Features and Allusions of Traditional Buildings

Through this stage of study, students can understand the historical evolution of the Yellow River basin and celebrity allusions, understand the birth, historical evolution, architectural appearance and origin of the name of Kangwan Manor architecture, and guide students to trace the historical source of the objects of appreciation.

First of all, the birth of kangbaiwan Manor building: kangbaiwan Manor was built in the middle Ming Dynasty and began to take shape in the early Qing Dynasty. The manor site and buildings were repaired many times during the Qing Dynasty, becoming a large-scale residential buildings in Gongyi area at that time; Later, the basic style of kangbaiwan manor building: the architectural style of the manor is a combination of "column, room and layer", the main building top with a bright building, with glass,

stone carving, mahogany and other decoration, the whole with the central axis as the basis, extending to both sides, appear elegant and noble; Finally tells the origin of kangbaiwan manor name: "kangbaiwan" is since the Ming and qing dynasties, gong yi kang surname family in the local rich party, in manor grand scale, majestic, by the local people become "kangbaiwan", to 1900, the empress dowager and fled officials returned to Beijing, as the Henan famine, financial deficit, the local government is unable to receive the empress dowager cixi, then let kang home investment to drive. After the Empress Dowager Cixi and the Emperor Guangxu went to Gongyi, she not only lived in the "palace" built by the Kang family for one night, but also got 1 million taels of silver donated by the Kang family. The Empress Dowager Cixi marveled at "I do not know there are millionaires here", so that the name of kangbaiwan spread all over the world, kangbaiwan manor also got its name, became an important family in the Yellow River basin (Figure 4).

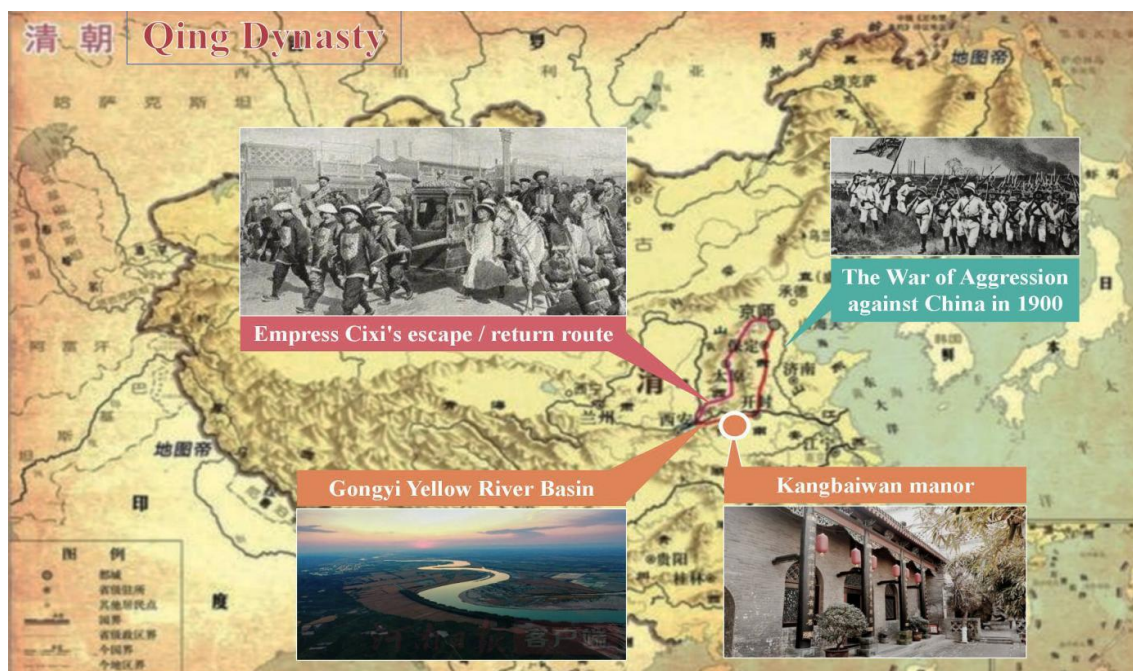


Figure 4. History of Kangbaiwan Manor

4.1.2 Cultural Protection and Utilization of Traditional Buildings

Through teaching and explanation, students can understand the contradictory relationship between the construction of Kangbaiwan Manor and the development of towns in the Yellow River basin and Heluo area, and the necessity of reconstruction as a cultural landmark. First, explain the reasons for the preservation of the manor buildings: after the founding of the Yellow River basin, the preservation and repair of the manor has the history and culture significance, repair the existing buildings according to the historical data, become the revival of the ancient culture, and make the students understand the significance of the preservation and repair to the cultural continuation of the Yellow River basin (Figure 5).



Figure 5. Protection and Utilization of Architectural Culture of Kangbaiwan Manor

4.2 Traditional Building Materials and Processing Technology

For the interpretation of building materials and technology is also for the characteristics of the Yellow River basin system deconstruction, can make the students a clear understanding of the types of dwellings and style, in the interpretation, can according to the different building materials and their use way, divided into the Yellow River region of wood residential buildings, stone residential buildings, glass dwellings, punters architecture, because of its status, function, symbolic object and performance meaning, and in the material selection, processing and use has a strict division standard and connotation significance. According to the field research of the construction of Kangbaiwan Manor, in order to conduct a further systematic understanding.

4.2.1 Selection of Building Materials

Considering that the Yellow River basin is rich in natural resources, the selection of building materials is the basis of building shaping. In teaching, students should be guided to shift from paying attention to the "shape" of the building to the "material" of the building, so that students can think about the appropriate building materials while considering the appearance of the building, so as to match the shape and rational design. In the field investigation, the building materials and decoration components of Kangbaiwan Manor building are mainly stone and wood. The grinding of these two materials is more soft and delicate than the metal materials, especially the dougong with national color, wood is the best material; at the same time, the wood materials also facilitate the maintenance and repair after completion, and are lighter and more plastic than other materials; In addition, the building of Kangbaiwan Manor is different from the royal garden residential architecture, which reflects a folk, life and family style, so its material selection is more close to the folk skills and crafts of the Yellow River

basin, and in line with the traditional folk culture and commercial color of the Yellow River Basin. Through learning, students can understand the importance of wood in shaping the structure of residential buildings, and understand that the choice and use of building materials should conform to the natural and social environment of the Yellow River basin (Figure 6).



Figure 6. Building Materials of Residential Houses in the Yellow River Basin

4.2.2 Processing Technology of Building Materials

After learning material part, need for students to explain the ecological landscape of the Yellow River basin and its influence on local building materials, and then explain millions of manor building materials processing technology, the students' focus from "material" back to "form", as the breakthrough point, make students understand the Yellow River basin ecological landscape at the same time, understand the material process for the importance of building structure, space shaping, and analyze the associated environmental factors. For example, the traditional residential buildings in the Yellow River basin, as the local characteristic buildings, are placed in the changeable external environment all the year round. Therefore, the processing technology and production mode of their materials are strictly standardized, which need to be made according to the hierarchical system, and there are very high requirements for the craftsmanship of local craftsmen. In terms of internal functionality, it should meet the requirements of physics and mechanics. Different texture materials and combinations should be used in the important key points and connections. At the same time, it should be skillfully connected with the decorative components to make it a part of the decoration of local residential buildings. From the perspective of environment, we can explain the scientificity and relevance of materials and technology in building construction and decoration, so that students can grasp the knowledge points more comprehensively (Figure 7).

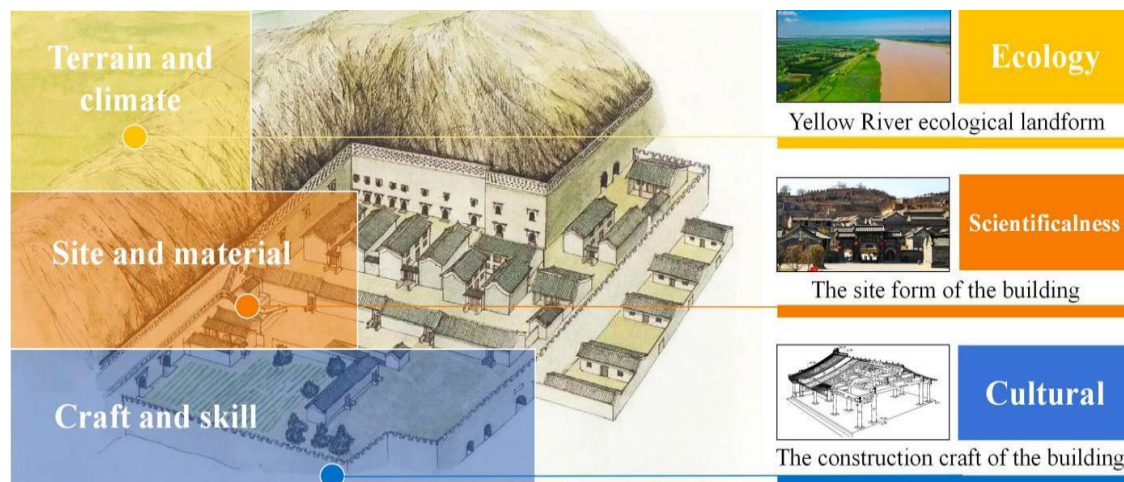


Figure 7. Processing Process of Building Materials

4.3 Residential Building Structure and Cultural Characteristics

Architectural structure and cultural characteristics are important factors to identify the external style of buildings, which is also the reference element for students majoring in environmental design. Through the deconstruction of residential building structure, for the students need to understand the residential building structure has the following several: roof, brackets, fang, plaques, and panels, iron hook, columns, and stone, etc., because of the different functional requirements and collocation also changed in appearance, decoration, and symbolic significance and builder identity also gives its unique cultural characteristics, make students in the students in the face of all kinds of residential buildings, feel different cultural charm and ideological connotation.

4.3.1 Building Structure Style

Structural style is the external expression of cultural elements in architecture. Teachers should focus on explaining the basic design rules of architectural style, so that students can form a correct design thinking. In the case, the architectural structure takes five rooms, six columns and five floors as the basic shape, so the residential architectural style needs to have more decorative and visual impact, such as the dignified and gorgeous second building, the exquisite marble, and the magnificent plaque of the main building. Therefore, teachers should guide students to think about the environmental factors in the residential architectural design from the perspective of this major, so as to demonstrate the environmental rationality of their design style. Through historical data query, kangbaiwan manor located in the west of gongyi town, shops, people to car, residential buildings as a landmark should be integrated with the surrounding environment, and through the gorgeous, exquisite structure style reflects the location of the city properties, make the students understand local-style dwelling houses landmarks and the design of the environment, from the urban planning level appreciate the ancients in the architectural design (Figure 8).



Figure 8. Architectural Structure and Style of the Yellow River Basin

4.3.2 Characteristics of Architectural Culture

Cultural elements are an important reference for environmental designers to carry out scheme conception, and also an important medium for environmental students majoring in environmental design to carry out scheme design. It connects the environment with the site through cultural design. Such as kangbaiwan manor building as a landmark of the Yellow River basin culture, its gorgeous, exquisite exterior is Henan folk unique "family culture", show a from folk cultural atmosphere, namely peaceful, peaceful, meaning the auspicious wealth and thriving, this is in the history of the Yellow River basin a unique cultural characteristics and performance, contains the "family culture" in the Yellow River culture color and rich folk mark. In this way, the students can establish the consciousness of cultural design, and consciously explore the unique natural, social and cultural elements of the Yellow River basin (Figure 9).



Figure 9. Architectural and Cultural Characteristics of the Yellow River Basin

4.4 The Yellow River Cultural Color Decoration and Humanistic Connotation

Decoration color is an important way for designers to give the architectural impression. Students should seriously think about the collocation form of architectural color in the Yellow River basin, and explore the cultural significance of the connotation of architectural decoration. In the teaching case, the decoration color of residential buildings in the Yellow River basin not only has rigorous production norms and requirements, but also contains rich allegories of the Yellow River culture and traditional humanistic thoughts, which are used for the world to read carefully in the way of architectural

language.

4.4.1 Color Decoration of the Yellow River Culture

Color is an important object for the analysis and creation of students majoring in environmental design, and the use of color is also the expression of ideas. The color decoration of traditional buildings in the Yellow River basin contains profound social thoughts and cultural implication. Such as kangbaiwan manor residential buildings contains red wall column, yellow brick, turquoise beam fang and royal blue water grain outline, through the color and pattern to achieve the best effect of visual stitching, and with the traditional ethical thoughts and cultural idea clever overlap, reflect "for harmony", "coexistence and co-prosperity" thought connotation. At the same time, the students also want to think about color use and the Yellow River correlation of the natural environment, climate, such as kangbaiwan manor residential buildings as a fortress building, perennial sun building walls easy to fade, damage, and residential buildings beautiful colorful decoration around the top floor, building corridor, to avoid long exposure, the maximum maintenance of its color bright and complete, also reduces the cost of residential buildings maintenance and difficulty. The above explanation can make students understand the cultural, scientific and rigor of the color matching of traditional buildings in the Yellow River basin (Figure 10).

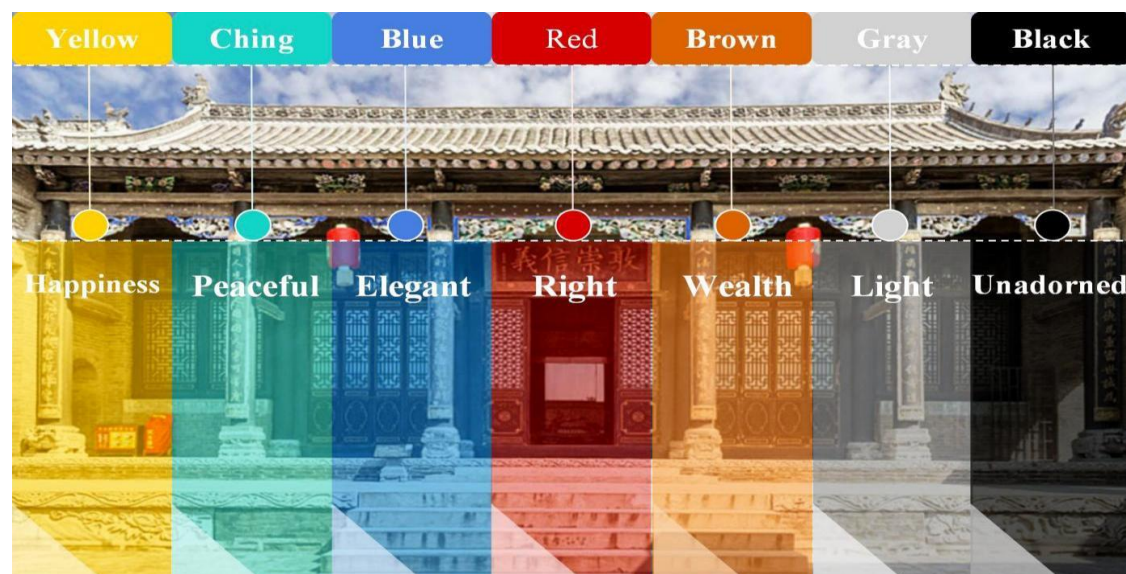


Figure 10. Architectural Color Decoration of the Yellow River Basin

4.4.2 Humanistic Connotation of Architectural Decoration in the Yellow River Basin

Jewelry is the materialized embodiment of design ideas, and the traditional architectural ornaments in the Yellow River basin directly reflect the local humanistic thoughts. When teachers lead students in field research, they focus on explaining the moral meaning of the Yellow River culture related to jewelry, so that students can understand its cultural value. For example, the residential buildings of Kangbaiwan Manor show the cultural connotation of the traditional architectural decoration in the

Yellow River Basin everywhere, from the high jade to the clip stone on the bottom. Jade reflects the confrontation and disgust with the peaceful and peaceful thoughts of the world and the stone column, implying auspicious and peace; the double stone lions on the stone reflect the pursuit and yearning for peace and peace; the decoration and decoration of residential buildings in the Yellow River basin, and reflect the harmonious meaning of "the world together, inside and outside symbiosis" (Figure 11).

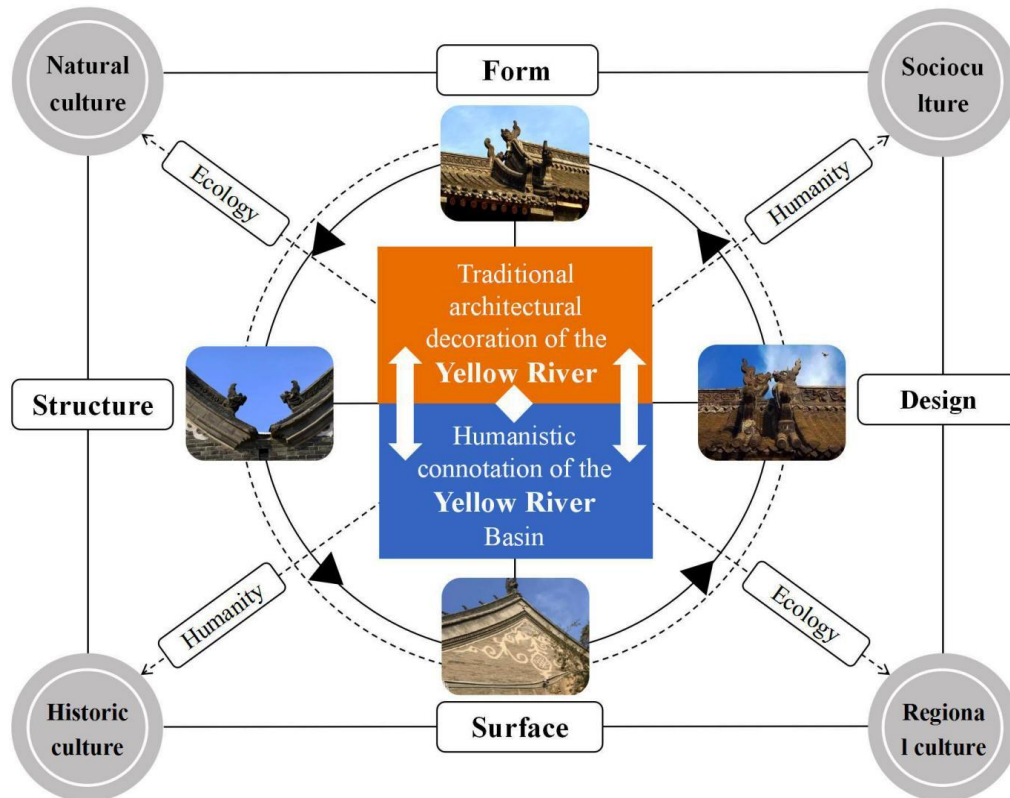


Figure 11. Architectural Cultural Connotation of the Yellow River Basin

To sum up, the Yellow River basin residential buildings mainly use auspicious color jewelry decoration, reflects since ancient times the locals in the residential building decoration design of "peace" culture and pursuit, due to the Yellow River basin in the qing dynasty war, social unrest, residential architecture design of peaceful, peaceful meaning is more obvious. Through rich traditional culture allusions on the culture of culture, not only expand the cultural depth of the course and teaching content of interest, also promoted the communication between teachers and students active, make students more clear understanding of the Yellow River residential building culture behind complex time factors, for the concept of the Yellow River cultural heritage has a deeper understanding.

4.5 Site Relationship Based on the Ecological Environment of the Yellow River Basin

Architectural design and construction application need to form a benign interactive relationship with the surrounding environment, so that the planning, completion and use of the building. In the course, teachers can interpret the coordination relationship of local traditional buildings to the site for students

from the macro perspective of the Yellow River basin. From the perspective of site relationship, Kangbaiwan Manor, as a landmark building of the Yellow River Basin in Henan Province, guides the evolution and composition of surrounding alleys, streets and urban areas as a stronghold, and becomes the positioning sign of passing pedestrians and horses, so that it can confirm their location and adjacent areas, and provide convenience for merchants and hawkers' activities; At the same time, due to the Yellow River basin residential buildings, because of its design style, building scale, color decoration, plaque inscriptions are different, virtually make kangbaiwan estate became the local title, in improving regional visibility at the same time also convenient for people and the Yellow River town construction, defines the identity of the surrounding residents and communication way. Through from the perspective of the Yellow River landscape, urban traffic, historical and cultural analysis kangbaiwan of manor building site, can enhance the characteristics of surveying and mapping and environmental design, make the students understand the Yellow River basin residential building site relationship, deep understanding from what professional perspective to carry out the late sketch, surveying and mapping, mapping work (Figure 12).



Figure 12. Ecological Environment and Site Relationship in the Yellow River Basin

5. Take the Long-term Development of the Yellow River Culture as the Goal

The rich cultural history and natural features of the Yellow River basin give birth to the distinctive way of living, and also produce the traditional residential buildings with the cultural characteristics of the Yellow River basin, which has good learning and research value for students majoring in art design in universities. In environmental design professional teaching, through the theory, field visits can for students on the interpretation of the Yellow River basin traditional architecture design style,

construction form, decoration technology and related to the Yellow River culture construction development, etc., and resolve the Yellow River basin natural, social and cultural elements, in order to improve the richness of teaching content and interest, improve students for the Yellow River cultural heritage protection and construction; At the same time, as a guiding theory teaching, the characteristics of the Yellow River building surveying and mapping to the Yellow River culture introduction, traditional architectural sketch, surveying and mapping drawing of complete teaching system, through the appreciation teaching system of the structure characteristics of the Yellow River traditional architecture, construction way and decoration technology, make the students form a preliminary building concept, to guide the late practical work, for example, kangbaiwan manor building as a teaching case, students will study its design style, construction technology, decorative culture, but also find similar goals in the later mapping, and do a good job of goal formulation, data collection and other work arrangements; In addition, teachers need to be based on this professional teaching, from architecture, urban planning, arts and crafts, humanities history discipline perspective on the Yellow River traditional architectural design development and the relationship between the Yellow River ecological site, make the students realize the importance of this course for professional learning, avoid teaching, boring and students' interest in learning, with the integration of "art, engineering, literature, science and" course teaching, it helps universities to innovate and cultivate talents, and establishes the concept of protecting the ecological civilization of the Yellow River, developing and utilizing the cultural heritage of the Yellow River, and promoting the long-term development of the Yellow River culture.

6. Conclusion

The protection, inheritance and promotion of the Yellow River culture is an important part of the implementation of the national strategy for the protection and high-quality development of the Yellow River basin. The protection and construction of the Yellow River cultural heritage requires the joint participation of all kinds of cultural and artistic talents, in which the training and construction of cultural and artistic talents in universities are essential. Characteristic of building surveying and mapping as Zhengzhou university of light industry of environmental design of the external practice course, popularize the traditional culture, expand the design thought, improve the practice ability, the Yellow River cultural heritage protection, construction, to the Yellow River basin residential buildings as a teaching case, make the students in the Yellow River basin traditional architecture style, materials, modeling, decoration, technology and other characteristics at the same time, also understand the connotation of the construction of the Yellow River culture value and the Yellow River basin ecological landscape, and from a professional perspective of the Yellow River basin local-style dwelling houses in the local culture and historical role. While enriching the course content and integrating the discipline construction, it also puts forward more innovative teaching requirements for teachers, promotes the optimization and construction of the environmental design professional talent training system, and

cultivates more professional design talents for the protection and construction of the Yellow River cultural heritage in the future.

Figure source: Figure 1/2/3/4/5/6/7/8/9/10/11/12 shooting, finishing and drawing for the author

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[3] Henan Province philosophy and social science planning project (Grant No: 2022CYS059)

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