

Redesign of the Pingshan Shu Kwong Yutan Community Activity Center (Anhui Province, China)

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Abstract

The Pingshan Shu Kwong Yutan redesign project aims to achieve a harmonious coexistence of sustainable design and green construction concepts. This concept not only reduces the building's dependence on and consumption of natural resources, but also provides a healthier, more comfortable, and more environmentally friendly space for community activities. The project included analyzing the historical and architectural features of the space, substantiating the redesign concept, creating drawings, zoning functionally, selecting materials, modeling the space, visualizing the rooms, and filming a dynamic fly-through video of the modeled space.

Keywords

Pingshan Shu Kwong Yutan, Ancestral Hall, Huizhou Architectural Style, Historical and Cultural Monuments, Redesign, Community Center, Green Construction, Resource-Saving Technologies

1. Relevance of the Study

With the acceleration of urbanization in China, the preservation and reuse of traditional architecture have become important issues in urban development. The preservation of Pingshan Shu Kwong Yutan, a building with deep historical heritage, is linked not only to the inheritance of cultural characteristics but also to the modern development of society.

Pingshan Shu Kwong Yutan is located in the historical and cultural city of Huangshan, Anhui Province, China. Built during the Ming and Qing Dynasties (14th century AD), it is a typical example of the Pingshan ancestral hall in Hui-

zhou, with a grand architectural scale and a relatively compact layout. However, over time, the original functions of Pingshan Shu Kwong Yutan have gradually weakened, and the building itself is in danger of collapse due to deterioration. Therefore, redesigning Pingshan Shu Kwong Yutan and giving it new functions is not only a way to preserve the historical building but also to revive the use of traditional culture (Wang Shiyuan et al., 2013; Zhao, 2023). The redesign of Pingshan Shu Kwong Yutan as a community center can promote development in several ways: the combination of traditional architecture and modern features not only preserves the historical and cultural heritage but also infuses it with new vitality. By redesigning the building as a community center, a win-win situation can be achieved for cultural heritage preservation and community development, serving as a benchmark for other similar projects.

The object of this study is the Pingshan Shu Kwong Yutan Community Center.

Subject of this study: the redesign concept of the Pingshan Shu Kwong Yutan building in Huangshan.

Purpose of the study. To establish a project to redesign the Pingshan Shu Kwong Yutan Ancestral Hall building as a community activity center in order to preserve the historical buildings for the continuation of cultural heritage and the sustainable development of the community.

Research objectives:

- Studying a conservation and redesign strategy for Pingshan Shu Kwong Yutan to revive its cultural heritage by giving it new functions while preserving its cultural value.
- Designing a community center that meets modern requirements, addresses the diverse needs of residents through spatial planning, and enhances the community's quality of life.

Theoretical significance. Using the redesign of Pingshan Shu Kwong Yutan as a community center as an example, this study offers a new theoretical perspective on the preservation and redesign of traditional buildings, exploring innovative ways to integrate cultural heritage revitalization and public functions. By synthesizing practical experiences, it provides a replicable theoretical basis for the renovation of other, similar historic buildings.

The redesign of Pingshan Shu Kwong Yutan as a community center will preserve the cultural value of the historic building while effectively meeting the functional needs of the modern community, thereby contributing to the preservation of cultural heritage and sustainable community development.

Research methodology. This paper focuses on methods of analysis and synthesis based on historical data and information obtained from relevant professional literature. The analysis and synthesis are based on a study of the use and cultural consumption of the design of the Pingshan Shu Kwong Yutan community center. Research methods include inductive-deductive, comparative, historical, logical, and systematic analyses. Sociological methods, such as questionnaires and interviews, were also used in the process of redesigning Pingshan Shu Kwong Yutan as a community center.

Scientific novelty and theoretical significance of the study:

- Analysis of the historical, architectural, and social functions of the Pingshan Shu Kwong Yutan Ancestral Hall building;
- Identification of potential functional transformations in line with community needs to create a feasible design scheme;
- Development of a redesign of the Pingshan Shu Kwong Yutan building in Pinggan through design activities and interior design to preserve the building's original functions and integrate new functional requirements.

Practical significance. The possibility of implementing the redesign project of the Pingshan Shu Kwong Yutan Community Center can be realized for the implementation of other similar projects of redesigning historical buildings in design practice.

2. Historical Stages, Architectural Features

The Pingshan Shu Kwong Yutang Ancestral Hall is located in Pingshan Village, Yixian County, Huangshan City, Anhui Province, China. It is an ancient structure with a long history and rich cultural connotations. The geographical location is shown in **Figure 1**. Pingshan Village is located at the southern foot of Mount Huangshan, surrounded by mountains, beautiful scenery, and a pleasant climate. It is known as the “Peach Blossom Garden” (Wang Shiyuan et al., 2013; Zhao, 2023).

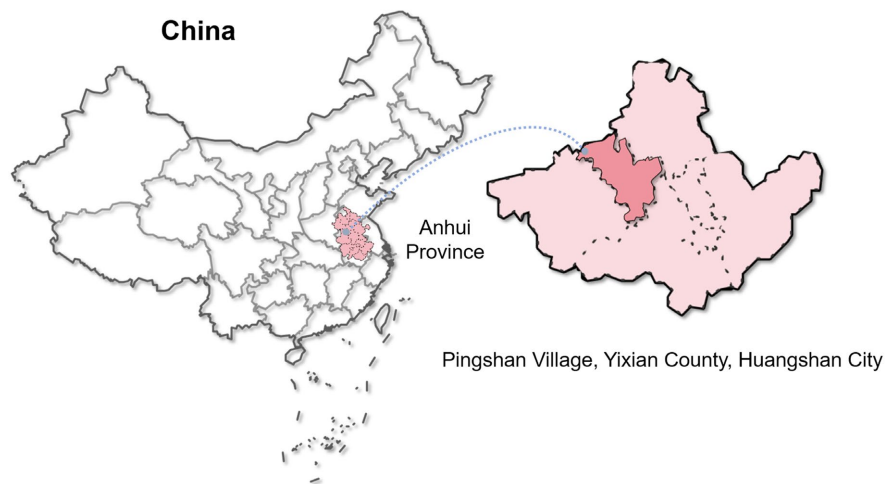


Figure 1. Geographical location of Anhui province.

The village has many ancient buildings, and the Pingshan Shu Kwong Yutan is one of the most impressive. Built during the Qing Dynasty, over three hundred years ago, the Pingshan Shu Kwong Yutan is the ancestral shrine of the Shu family in Pingshan Village. During the Qing Dynasties, the Shu family was full of talent, producing many scholars and officials. As an important site for family rituals and discussions, the Pingshan Shu Kwong Yutan bears witness to the Shu family's glorious history (**Figure 2**).



Figure 2. View of the main gate of Pingshan Shu Kwong Yutan, and carved details of the façade.

The Pingshan Shu Kwong Yutan architectural style embodies the essence of Huizhou architecture and the unique charm of ancient Chinese architecture. Huizhou architecture is renowned for its exquisite carvings, unique layout, and profound cultural heritage (Fang, 2010; Mitsova & Yang, 2024).

The building's overall layout is rigorous, its structure exquisite, and its decorations magnificent, fully demonstrating the high craftsmanship and artistic creativity of its ancient masters. The architectural layout of Pingshan Shu Kwong Yutan adheres to the principle of symmetry in traditional Chinese architecture, and the entire building is rectangular, facing south from the north, and occupies an area of approximately 480 square meters.

The building materials of Pingshan Shu Kwong Yutan are primarily made of locally sourced, high-quality wood, stone, brick, and tiles. These not only possess excellent physical properties, ensuring the building's strength and durability, but also embody distinctive local characteristics. The wood, primarily cedar and pine, is characterized by its hardness and beautiful texture, suitable for carving and decoration, reflecting exquisite local craftsmanship. Bluestone and granite, durable and weather-resistant, were used for the building's foundation and walls. Local clay bricks and green tiles were used for the masonry, which have a fine texture and uniform color, not only visually enhancing the beauty of the building but also providing good thermal insulation.

Wood carving is an important part of the decorative art of Pingshan Shu Kwong Yutan, primarily found on beams, doors, windows, and balustrades (Fang, 2010; Mitsova & Yang, 2024). Most of the wooden elements on the beams and frames depict dragons, phoenixes, unicorns, and other mythical animals, symbolizing good fortune and family prosperity. Doors and windows are decorated with wood carvings, primarily birds, flowers, insects, and fish. The carvings are delicate and realistic, giving people a sense of beauty. The wood carvings on the railings are primarily geometric patterns, simple and generous, and rhythmic. This wood carving not only decorates the building but also plays a role in strengthening the structure, reflecting the skill of ancient artisans (Figure 3).



Figure 3. Reinforcing carved brackets and a detailed fragment of wood carving.

Carvings in traditional architecture, such as wood, stone, and brick carvings, demonstrate the level of craftsmanship and the deep cultural connotations of the time. These exquisite details are not only decorative but also contain cultural symbols such as good fortune, peace, and morality. For example, the dragon and phoenix symbolize strength, dignity, and the blessing of longevity and prosperity—family happiness.

Thus, not only can traditional culture be conveyed, but also a unique cultural atmosphere can be brought to modern public spaces, making architectural spaces more multilayered and culturally rich, helping residents better understand and experience traditional culture, and strengthening cultural identity and a sense of community.

3. Cultural Value

As a Qing Dynasty building, Pingshan Shu Kwong Yutan has a profound historical background and cultural heritage value, reflecting the social changes and development of crafts during that period. It is an important physical resource for studying Qing Dynasty architecture and society. As a family shrine, it preserves family memories and is a fundamental bearer of cultural identity (Liang, 2023; Jia & Hou, 2005).

From an educational perspective, the Ancestral Hall serves as a hands-on classroom for learning traditional architecture and culture, enhancing cultural literacy, cultural confidence, and a sense of historical responsibility through visits, lectures, and educational activities.

The Pingshan Shu Kwong Yutan building consists of three parts: the front hall, the middle hall, and the back hall, which are connected by a courtyard, forming a typical “front hall and back bedroom” layout. The front hall is a place for family rituals and celebrations, the middle hall is a place for discussing and resolving matters, and the back hall is a sacred space for storing ancestral tablets and performing sacrificial ceremonies.

The back room of Pingshan Shu Kwong Yutan is often called the “heng tang”—it is where the ancestral tablets are kept. Inside the hall is a shrine containing the tablets of ancestors of all generations, engraved with their names and dates of birth and death. On important holidays or anniversaries of ancestors’ deaths, clan

members gather in the “heng tang” and hold grand ceremonies.

Additionally, the Pingshan Shu Kwong Yutan has a special room for storing sacrificial vessels and ritual objects, such as incense burners, candlesticks, and wine vessels. These sacrificial vessels are usually carefully preserved by community elders and are only retrieved and used during sacrificial ceremonies. Through sacrificial offerings, community members not only express their respect for their ancestors but also strengthen a sense of unity and identity within the community.

The ancestral building features a courtyard, which serves not only as an important passageway for light and ventilation but also as a space for the family’s daily activities. A pond containing goldfish, symbolizing “year-round prosperity,” is typically located in the center. Thanks to this layout and design, the Pingshan Shu Kwong Yutan not only provides comfortable living conditions for family members but also embodies the artistic value and cultural undertones of Huizhou architecture (**Figure 4**).



Figure 4. Ancient ancestral hall and reading hall.

The Pingshan Shu Kwong Yutan is also a place for social interaction, serving as a hub for communication and exchange between the clan and the outside world. In ancient China, clans were not only bonds of blood but also an important platform for social interaction. Furthermore, the Pingshan Shu Kwong Yutan is also used for various celebrations and banquets. It features large round tables and banquet chairs, where clan members can hold weddings, birthdays, and celebratory banquets. Through such celebrations, clan members not only celebrate important life events but also strengthen cohesion and a sense of identity within the clan (**Figure 5**).

Over the course of time, the functions of Pingshan Shu Kwong Yutan have gradually changed. As a building with a long history and profound cultural heritage, it is not only limited to the function of holding family rituals, but has also become an important tourist attraction showcasing the architectural culture and local history of Huizhou. Its unique architectural style and historical background attract a large number of tourists, who not only appreciate the charm of Huizhou architecture but also gain a deep understanding of the traditional culture and local customs of the Anhui region. The tourist function of Pingshan Shu Kwong Yutan is reflected not only in the building itself, but also in the surrounding Huizhou

architecture, ancient streets, water system, and rural scenery, which also attract tourists. The tourist function of Pingshan Shu Kwong Yutan promotes the development of local cultural heritage and becomes an important force in promoting local economic development. The annual arrival of tourists brings significant tourism income to Pingshan Village and contributes to the development of local culture and the service industry (Lin & Wu, 2022; Shevchenko, 2024).



Figure 5. Ancient party scene.

4. Analysis of Population Composition

The primary purpose of community centers is to serve residents and provide them with a variety of activities. Therefore, when designing a community center, it is essential to first analyze its population in order to determine sound functional zoning.

Pingshan Shu Kwong Yutan is located in Yixian County, Huangshan City, Anhui Province. Based on Yixian County's population data, the transformation of Pingshan Shu Kwong Yutan into a community center requires considering the specific needs of various population groups. The total population of Yixian County is 15,527 (as of 2024), of whom 50.9% (approximately 7902) are men and 49.1% (approximately 7625) are women. Based on the age distribution, 11.7% (approximately 1815 people) are aged 0 - 14, 75.5% (approximately 11,728 people) are aged 15 - 64, and 12.8% (approximately 1984 people) are aged 65 and above. It can be concluded that the design of community activity centers requires consideration of the needs of different age and gender groups to ensure the satisfaction of all categories of residents and to promote community harmony and development (Yi County, Anhui, 2026).

The population analysis provided the functional zoning necessary for the redesign of Pingshan Shu Kwong Yutan as a community activity center.

5. Requirements for the Redesign of Pingshan Shu Kwong Yutan into a Community Center

During the redesign of Pingshan Shu Kwong Yutan, the preservation and restoration of wooden structures are paramount. To preserve the building's historical and cultural value, it is necessary to preserve the original wooden elements wherever possible, while strengthening and restoring them using modern technologies. This combination of traditional and modern restoration preserves cultural heritage while meeting modern safety and operational requirements (Shimko, 2005).

Traditional roof design plays a crucial role in the architecture, serving as both a central part of the building's exterior and a focal point of architectural culture and technology. The sloping, curved roof facilitates water drainage and is adapted to the southern Chinese climate, while the angular ridge symbolizes wealth and dignity, adding a sense of grandeur to the building (Carrizosa et al., 2020).

Entry to the building begins with the reception desk. As the entrance area of the activity center, the reception desk not only serves as a reception and information center but also as a guide. Its prominent location is designed to allow residents to easily navigate the event organization and related services.

Storage Space: Given that the activity center may host various sporting and cultural events, it is necessary to provide storage space for residents' clothing and personal belongings to avoid inconvenience during activities.

Restrooms: Restrooms are an integral part of every public facility. They must be strategically located to accommodate the flow of people, maintained in a clean and tidy condition, and provided with barrier-free access for the convenience and ease of use of groups with varying needs.

Library: As a community activity center with a strong cultural atmosphere, the library should provide residents with a variety of books for study and reading in their free time.

Craft Display Area: This area displays handicrafts made by neighborhood residents or craft enthusiasts, not only giving residents the opportunity to showcase their talents but also serving as a platform for cultural exchange.

Mini-Coffee Shop: This is part of the community activity center, providing residents with a place to socialize in a relaxed atmosphere, as well as refreshments and a place to relax.

Theater Zone: Used for traditional theater, dance performances, speeches, and other events. The theater design should be flexible, allowing the space to be adjusted to meet event needs and provide a good audiovisual experience.

Exhibition Zone: This zone is suitable for regular cultural exhibitions, art displays, and community outreach. The exhibition zone design should provide ample space with good lighting and display equipment to accommodate residents.

Viewing Zone: This zone provides space for viewing films and plays. The viewing zone should be equipped with comfortable seating, high-definition projection equipment, and sound systems to meet residents' entertainment needs.

Reading Zone: This is a static space where residents can read newspapers and

magazines or engage in casual social activities. When designing, particular attention should be given to the quiet and comfortable nature of this space, the amount of seating, and appropriate lighting.

Self-Study Zone: A quiet study space, this area is intended for studying and should therefore be designed as a soundproof space with tables, chairs, and appropriate electrical outlets so that residents can study individually or in small study groups.

Glass Garden: This is a unique outdoor retreat that allows residents to relax and enjoy the lush green atmosphere amid their busy daily activities.

The Chess Room is a daily social gathering place for many residents of the neighborhood. When designing, consider the spaciousness and comfort of the space, providing an adequate number of tables and chairs, as well as tabletop equipment suitable for playing cards and chess, to encourage interaction and entertainment among residents. The essence of the community activity center is to create flexible and multifunctional event spaces that meet a wide range of needs. Folding furniture and mobile devices, such as folding tables and chairs and adjustable display walls, not only save space but are also easily adjusted to suit the needs of the event.

6. Functional Zoning

During the redesign of Pingshan Shu Kwong Yutan into a hub for public activity, smart zoning was implemented, maintaining the original architectural features while integrating them with the needs of a modern public space. The design continues the traditional symmetry of the original building's central axis, reflecting its historical and cultural value, while introducing a freer, more dynamic line into the modern public space, enhancing the openness and interactivity of the space (Figure 6).

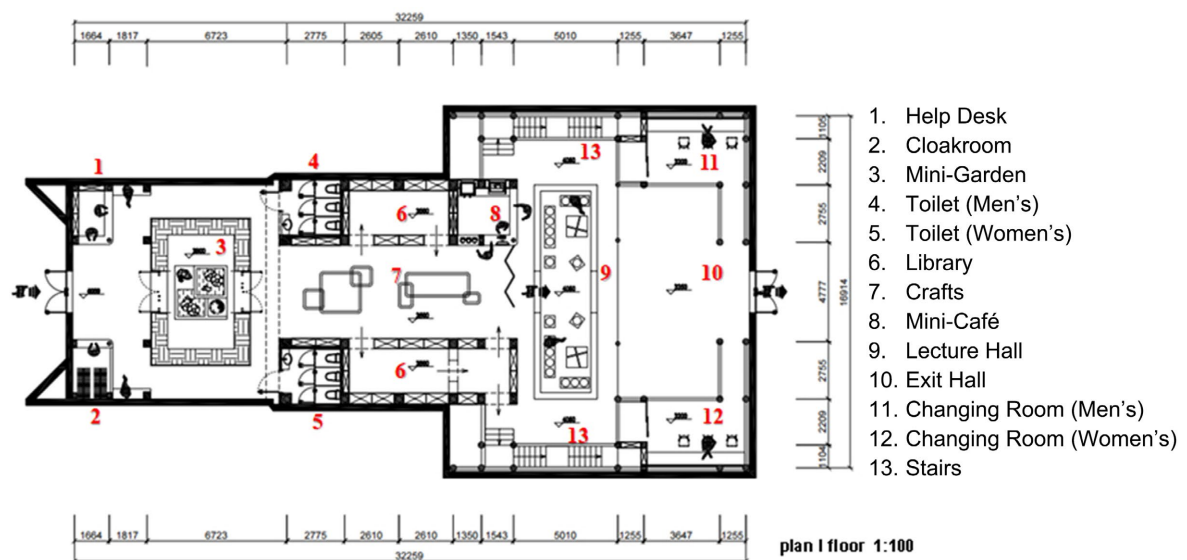


Figure 6. Functional layout of the ground floor premises.

The building itself is a two-story structure designed to provide a quiet relaxation area for activities such as self-study, chess, and cards. The second floor primarily contains a reading and relaxation area. The reading area is largely quiet and open, providing readers with a calm reading environment thanks to its appropriate scale and soft lighting (Figure 7).

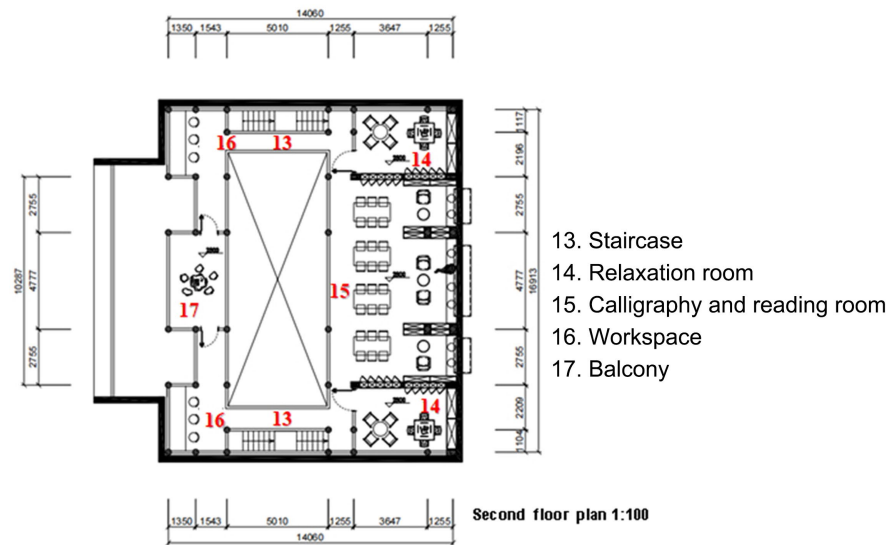


Figure 7. Functional layout of the second-floor space.

Thus, while maintaining the symmetrical layout of the original building, the circulation design provides a sense of space with “clear circulation lines, clear paths, and convenient interactions,” with accessible instructions that enhance the efficiency and comfort of the entire building as a center of social activity.

7. Architectural Style and Interior Design

The redesign of the Pingshan Shu Kwong Yutan Community Center adopted a design scheme that combines neo-Chinese and contemporary styles, aiming to preserve traditional character while incorporating modern functionality and aesthetics (Shimko, 2005). The entire project emphasizes a balance of form and material that respects history and culture while meeting the needs of contemporary use.

SketchUp, a 3D modeling program based on simple 2D elements (lines and planes) and 3D templates, will be used to model and visualize the interior of the community center. It allows for the design of buildings, interiors, and furniture, as well as high-quality visualization (Abbasov & Du, 2023).

The elements of the new Chinese style emphasize the expression of cultural heritage and regional characteristics through the use of traditional materials and decorative techniques. For example, walnut, a wood with a sense of history, was chosen as the primary wood, conveying a traditional atmosphere with its rich texture and warm color tones. In contrast, contemporary style emphasizes the modernity

and comfort of a space through the use of clean, subtle lines and functional space layout.

When choosing materials, walnut and gold-tone matte stainless steel are the two primary materials, complementing each other with both a traditional sense of warmth and a modern, stylish texture. The delicate texture of gold-tone matte stainless steel and the deep tone of walnut wood reflect each other, creating an elegant, modern, yet warm spatial atmosphere. Furthermore, the design of the spaces utilizes a wealth of contemporary materials, such as marble, stainless steel, glass, and cotton fabric, enhancing the sense of fluidity and hierarchy within the space through their varied textures and translucencies. Marble is primarily used in the reception area and public spaces, not only enhancing the quality of the space but also ensuring durability with frequent use. Glass is cleverly used to create a bright and transparent space, such as the glass garden and partitions of each functional area, allowing natural light to fully penetrate, enhancing the sense of openness. The functional zoning of the spaces fully takes into account the original building's structural features and spatial functions, and efforts are made to optimize the efficiency and comfort of using the interior space without disrupting the original structure. The use of the building's columns in the space planning makes the new functional layout both organically integrated and able to highlight the historical architectural features (Abbasov & Du, 2025).

The specific functional distribution is as follows: the front area, including the reception desk at the entrance, the clothes storage room, and the glass garden, is the initial space for receiving guests and transition after entering the building (Figure 8) (Huang, 2024; 2025).



Figure 8. View from the lobby to the entrance of the mini-garden.

Central Area (Quiet Area): This area is for reading books and also contains a coffee shop to provide community residents with a quiet place to study and socialize (Figure 9).



Figure 9. Lobby of Pingshan Shu Kwong Yutang.

Back Zone: This is the main activity area and includes a multi-functional lobby, stage, and auditorium. Behind the stage, there is a dressing room for men and women, meeting the real needs for performances (**Figure 10**).



Figure 10. First floor of Pingshan Shu Kwong Yutang.

In addition, the space under the original staircase is used to create a historical display case to present the history and cultural subtext, thereby strengthening the memory of this place and its cultural and educational function (**Figure 11**).



Figure 11. Staircase space.

Through this functional zoning and layout, while respecting the original architectural design, the project introduces a spatial logic that adapts to the needs of modern communities and enhances its diverse service functions as a hub for public activity.

In the redesign of the Pingshan Shu Kwong Yutan Community Activity Center, the circulation design is a key link connecting the space's functions and enhancing the user experience. The overall dynamic line follows the principle of "central axis and interconnected rings" and, while maintaining the sense of order of the original building's central axis, introduces the mobility and openness needed for a modern community.

The second floor is primarily an entertainment space, but it also addresses the need for recreational and social functions and is designed as a private space capable of accommodating a small group without losing its intimacy and entertainment value.

The library provides visitors with access to a wide range of books for reading and studying during their leisure time, thereby creating a place for a peaceful stay (Figure 12).



Figure 12. Library space on the second floor.

By carefully considering the architectural style and interior space of Pingshan Shu Kwong Yutan, the project strives to find a balance between tradition and modernity. The fusion of neo-Chinese and contemporary design styles allows the space not only to convey history and culture but also to effectively meet the dual needs of modern residents for functionality and aesthetics. A thoughtful combination of materials, colors, and layout creates a visually and functionally harmonious common space, providing the community with a hub of activity that is simultaneously culturally rich and contemporary.

8. Sustainable Design and Green Building Concepts

In today's society, with growing awareness of environmental protection and envi-

ronmental degradation, the concept of “green” building is gradually becoming an important trend in architectural design. The redesign of Pingshan Shu Kwong Yutan placed sustainable design and “green” resource-saving construction at the center of public activity. The concepts aim to make the project sustainable in terms of energy use, resource conservation, environmental protection, and the health of the interior spaces through rational planning and design.

Pingshan Shu Kwong Yutan was originally a traditional building with a long history, and the environment in which it is located has unique cultural roots and ecological characteristics. Therefore, the redesign process prioritized the building’s integration with the surrounding environment, following the principle of “adapting to local conditions and respecting nature.” Through environmental research and analysis, the site’s original environmental benefits are maximally preserved, such as the utilization of existing land and water resources, ensuring the building blends seamlessly with the natural environment while minimizing damage to it.

Additionally, taking into account the region’s climatic conditions, the project utilizes appropriate natural ventilation and lighting solutions to minimize the use of artificial lighting and air conditioning. This not only helps to save energy and reduce emissions but also creates a more comfortable and healthy spatial environment for building users.

When designing the walls, windows, and building facades, factors such as sunlight and wind direction are intelligently considered to ensure the full utilization of natural light and ventilation across seasons and climates, while also reducing reliance on artificial lighting and air conditioning systems.

When selecting materials, special attention is paid to the use of environmentally friendly and renewable materials to maximize resource efficiency. For example, marble tiles are used for floors and walls, which not only ensure indoor air quality but also reduce the negative impact of building materials on the environment. At the same time, durable materials are used for interior finishes, extending the lifespan of the building, reducing the need for frequent replacement, and minimizing resource waste. Water is a key environmental factor, especially in today’s rapidly urbanizing world, where water shortages are becoming an increasingly serious issue. The building’s water supply system was also optimized. To reduce water loss, low-flow plumbing fixtures and water-saving devices, such as water-saving toilets and faucets, were selected.

The quality of the indoor environment is crucial for occupant health, so the design focuses on improving indoor air quality and comfort. First, the ventilation design utilizes a combination of natural and mechanical ventilation to ensure indoor air circulation, while automatic temperature and humidity control are provided by an intelligent control system to maintain a comfortable indoor environment. Open windows and highly efficient air exchange systems ensure the timely removal of airborne pollutants, improving indoor air quality (Huang, 2024).

Furthermore, special attention is paid to the continuation and protection of the community’s history and culture during design. Preserving and reusing the orig-

inal architectural style not only protects the historical heritage, but also creates good interaction and integration between the new building and the surrounding environment, and strengthens the community's sense of cultural identity (Huang, 2025).

9. Conclusion

The redesign of the Pingshan Shu Kwong Yutan ancestral building as a community center is based on the concept of "inheritance and innovation." It transforms Pingshan Shu Kwong Yutan into a community center that integrates traditional culture with modern needs. A community center redesign project was proposed, the space was planned, the spatial functions were separated, and a 3D model and visual renderings of the project were created. The project also fully implements the concept of a "green" building, ensuring the unity of functionality and ecology through natural lighting and ventilation, energy-saving materials, rational use of water, and cultural continuity.

This paper examines the historical and cultural background and functional limitations of the Pingshan Shu Kwong Yutan ancestral building and proposes an innovative solution for redesigning it into a community center. By analyzing community needs, spatial planning, and design principles, this paper explores ways to meet modern functional needs while preserving historical architectural features and implementing sustainable development and green building concepts.

In summary, the paper's objectives included analyzing the historical background and current situation of Pingshan Shu Kwong Yutan, the functional needs of a community center, and the spatial planning, architectural style, and principles for redesigning the Pingshan Shu Kwong Yutan building into a community center, taking into account sustainable development and green building concepts. During the project concept development process, drawings were created, functional zoning was conducted, materials were selected, the space was modeled, the center's premises were visualized, and a dynamic fly-through video of the modeled space was produced.

Author Contribution

Conceptualization, A.I., H.X.; Methodology, A.I.; Software, H.X.; Validation, A.I.; Formal Analysis, A.I.; Investigation, A.I., H.X.; Resources, H.X.; Data Curation, H.X.; Writing—Initial Draft, H.X.; Writing—Review and Editing, A.I.; Visualization, H.X.; Scientific Supervision, A.I.; Project Administration, A.I. All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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