Integrating Product Design with Website:
Digital Fusion of Chinese-style Picnic Experience

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Declaration

I hereby certify that this material, which I now submit for assessment as part of the Multimedia & Web Development programme, is *entirely* my own work and has not been taken from the work of others - save and to the extent that such work has been cited and acknowledged within the body of my work.

I hereby acknowledge and accept that this thesis may be distributed to future final year students, as an example of the standard expected of final year projects.

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Abstract

With the rapid development of digital media technology and the booming Chinese picnic market, this study combines traditional Chinese picnic culture with 3D product design and interactive website design. This study addresses the lack of cultural depth and interactive experience in current Chinese picnic activities. The approach of this paper includes double diamond model in service design and UI/UX principles in website design. In the product design process, the entire picnic preparation can be simplified through the development of refined and multifunctional product model. At the same time, creating an interactive platform for users through web design. The interactive website integrates traditional aesthetics with modern functions, with smooth operation and a simple interface, making it easier for users to access product information and enrich the user experience. Preliminary user engagement studies indicate that people actively accept products that combine cultural significance with modern convenience, as they believe it can deepen their appreciation and participation in Chinese cultural heritage. This project not only explores the huge market demand for Chinese picnic activities, but also combines cultural heritage with digital innovation in product design, which is expected to provide a new model for future leisure and cultural products.

Keywords: 3D modeling, Product design, Interaction website design

Contents

Chapter 1 Introduction

1.1 Motivation

With the continuous improvement of the quality of life and the enhancement of health awareness among the Chinese people, picnics have gradually become one of the most popular outdoor activities. At the same time, the picnic supplies market has also entered a period of rapid development, with some netizens even jokingly calling 2020 the "first year of picnics" in China. According to the data, the market size of camping sites in China increased from 7.71 billion yuan to 16.8 billion yuan from 2014 to 2020, with a compound growth rate of 13.9% (shown in Appendix I). In 2025, the core market size of China's camping economy will increase to 248.32 billion yuan, driving the market size to reach 144.028 billion yuan [1].

Exquisite picnics are currently a popular outdoor activity on various social media platforms. In April 2020, the number of notes related to exquisite picnics on the social media platform "Xiaohongshu" increased 13.6 times in just one month [2]. However, behind this trend, some problems and challenges have also been exposed. Firstly, many picnic activities blindly imitate Western style picnic culture, but lose their regional and cultural characteristics. Secondly, when preparing for picnics, people tend to choose fast food, which not only goes against the concept of a healthy lifestyle, but also reduces the quality of the picnic. In addition, the existing picnic facilities are not perfect and cannot meet the needs of users of different age groups, such as the lack of dedicated seats for young children. For the elderly, they may need to carry additional seats, which undoubtedly increases the complexity of preparation work. Finally, many picnic activities lack creativity and interactivity, making gatherings somewhat dull.

In fact, ancient China had a tradition of picnicking with flowing wine cups and winding water, which is a comprehensive cultural experience that integrates natural beauty, cultural art, and social interaction. From the middle ages of the Tang and Song dynasties, a gradual transition from a tradition that involved moderation in drinking and natural landscapes that copied Pungryu to those that were symbolic and paid more attention on games and amusement [3]. Nowadays, with the development of digital media and product design, if we can create picnic products with a unique Chinese style, combined with visual online digital display, will have huge market appeal and potential. It is predicted that by 2030, the proportion of online grocery shopping to total supermarket sales will increase from the current 2% to 25% [4]. Moreover, through visual online platforms, users can gain more product information and increase their perceived utility, resulting in a faster and more enjoyable experience.

1.2 Problem Statement

How to meet the modern picnic needs of Chinese people is a key issue. People not only seek a sense of closeness to nature and a fun experience in wild, but also attach great importance to comfort, convenience, and interactivity. Chinese users hope that the picnic process can be suitable for different age groups. As a result, the main technical issue lies in how to create innovative product design and how to optimize user experience (UX) design.

At present, although there are various types of picnic utensils on the market, most of them exhibit the characteristics of single style and lack of interactivity in form, which can no longer meet the diversified and personalized needs of modern consumers. With the acceleration of the pace of life and the development of technology, people's expectations for picnic experiences are no longer limited to traditional picnic equipment. They are seeking products that are more creative, convenient, and can provide interactive experiences [5]. These products need to meet their different leisure needs (shown in Figure 1-1).
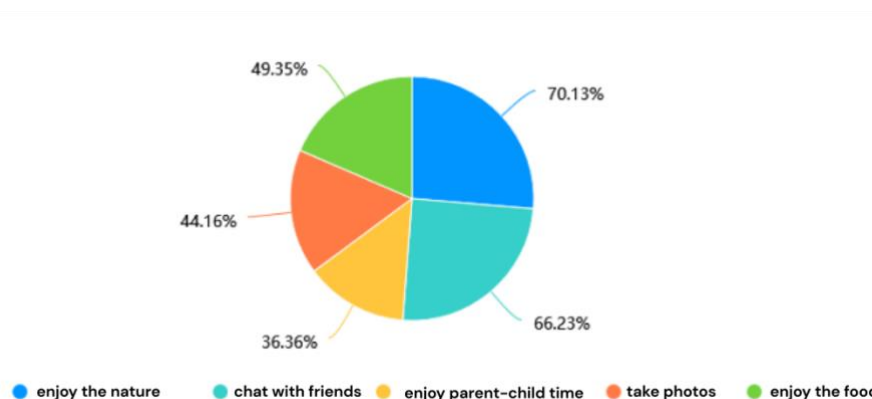

Figure1-1 Outdoor leisure activities

Meanwhile, the shortcomings of visual and interactive online websites further exacerbate these issues, limiting people's ability to understand these products, including their usage and advantages. At present, the promotion of outdoor activity products is relatively lacking. Although there have been many attempts at innovative products that incorporate elements of Chinese culture, such as the popular activity of brewing tea around a stove. However, the lack of innovative online website displays, and user-friendly visual presentations based on UX Design principles in the product makes it appear similar in the market, lacking uniqueness and interactive experience. As a result, it's important for web design to play a crucial role in the development of novel design concepts, not only to better understand the needs of contemporary users, but also to better understand the dynamics of innovation. [5, 6].

1.3 Approach

I will combine digital media and product design theories such as user experience design (UX Design), service systems design methodology [7], and visualization technology to solve the problems discovered in picnic product development. The entire design process is based on the double diamonds model of service design (shown in Figure 1-2) and is divided into four main stages: discovery, definition, development, and delivery [6].
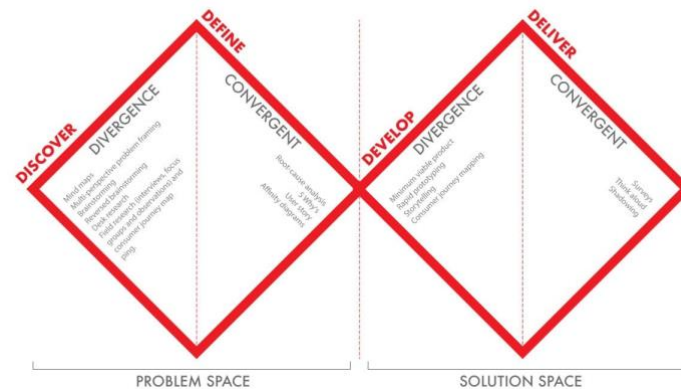

Figure 1-2 Double diamonds model

1.3.1 Discover Phase:

➢ User-Centric Research: Developed detailed **personals** and **user journey maps** to understand modern picnickers' preferences and how to enhance their experience [8].

1.3.2 Define Phase:

➢ Concept Development: Defined the core concepts for the product designs. This phase focused on conceptualizing products, combining the essence of traditional picnics with the functionality to attract users.

1.3.3 Development Phase:

➢ Product Design and Prototyping: Began with **sketching** initial product designs, followed by **interactive storyboarding** to visualize user interaction scenarios [9]. Employed **3D modeling** to enhance the realism of product designs, allowing for adjustments and refinement based on visual feedback.

1.3.4 Deliver Phase:

➢ Web Interaction and Service Blueprinting: Designed **interactive web** elements and developed a comprehensive **service blueprint** to ensure that the digital experience mirrors the physical product's utility [10].

➢ Evaluation and Feedback: Conducted **user testing** to collect feedback and performed a **SWOT analysis** to assess the project's strengths, weaknesses, opportunities, and threats [11]. This feedback loop was crucial for refining both the product and its market strategy.

1.4 Metrics

To evaluate the effectiveness and impact of the picnic products and the online website, I will employ several key metrics centered around User Testing, Technical Performance Evaluation, and a SWOT analysis [11].

1.4.1 Usability Testing:

I will conduct comprehensive user testing, which will involve different groups of participants representing our target audience who will use the product in specific spaces. The key indicators to be measured include usability, user satisfaction, and the intuitiveness of the product interface.

1.4.2 Technical Performance Evaluation and SWOT Analysis:

Technical performance will be evaluated based on the reliability, efficiency, and responsiveness of the online website. Additionally, a SWOT analysis will be conducted to identify strengths, weaknesses, opportunities, and threats related to the project.

1.5 Project

In this project, several major achievements have been achieved, each of which contributes to the overall goal of enhancing the traditional picnic experience.

1.5.1 3D Innovation in Picnic Products:

Developing 3D models is to showcase innovative and user centered picnic product designs. 3D models make design more intuitive and vivid, allowing users to have a comprehensive understanding of the appearance and functionality of the product before actual purchase. This high level of visual expressiveness can help users better evaluate the practicality of the product and stimulate their interest in the product.

1.5.2 Interactive Digital Website:

In order to further enhance user engagement, an intuitive online platform has been created specifically for visualizing these 3D picnic products. This platform will allow users to explore various aspects of the product, such as design details, functional features, and usage methods, through virtual interaction. Through this interactive experience, users can feel the product from a first-person perspective, which could provide more specific and intuitive feedback.

1.5.3 Streamlined Service System:

In order to enhance the user experience, a comprehensive service framework will be established, covering the entire journey of users from the initial discovery of the product to the purchase. This framework aims to ensure that users can have a seamless and user-friendly experience at every service touchpoint. Ensure that every user can feel the unique value of the product.

Chapter 2 Technical Background

2.1 Topic Material

In the Chinese theoretical realm, liú shāng qū shuǐ, which translates as "floating cups along a winding stream", is a unique and culturally rich form of ancient Chinese social entertainment, often seen as a form of picnic. Participants would sit around a stream, engaging in poetry and painting, while cups of wine were placed upstream to float down. The person with the cup stopped in front of them was expected to drink from it.

This tradition was popular in ancient times, with notable instances like the residences of Wang and Xie in Nanjing and the Qing Autumn Pavilion in Beijing's Prince Gong Mansion [12] (shown in Figure 2-1). Modern design has seen innovation of this tradition, as evidenced by the contemporary Flowing Cups ceremony at Beijing's Fragrant Hills Hotel (shown in Figure 2-2) and the "liú shāng qū shuǐ" instant hot water tea set [13].

Figure 2-1 Qing Autumn Pavilion   *Figure 2-2 Beijing's Fragrant Hills Hotel*

This research direction focuses on innovative product design and enhancing user experience and interactivity through digital technology, like using virtual reality (VR) and augmented reality (AR) for immersive picnic experiences or simplifying the picnic process with 3D design and web-based applications. Moreover, online platforms can offer a dynamic and interactive marketing environment to attract a broader user base. In addition, digitalized dynamic website that combine images from computer graphic software with portable hardware such as a mobile phone open up the possibility of creating still and moving displays of graphic patterns that are more personalized and varied [14]. The Picnic app, pioneering in the Netherlands' advanced online grocery market, aims to increase retention for Picnic by creating a habit-forming store, which showed that perceived utility increases as the users gain more experience with the product, leading to a faster and more pleasant experience [15]. However, in this field, the enhancement of user interactivity and product innovation, as well as the adaptation to local culture, have not yet received sufficient attention.

2.2 Technical Material

2.2.1 Rhino Modeling Software

2.2.1.1 Introduction to Rhino

Rhino, short for Rhinoceros, is a powerful 3D modeling software known for its versatility and precision. It is especially popular in fields such as architecture, industrial design due to its ability to handle complex and intricate shapes with ease. Rhino offers an expansive range of modeling tools that enable users to accurately manipulate surfaces and solids. [16].

2.2.1.2 Feature Panel

Rhino's workspace, as displayed in Figure 2-1, is organized into several functional areas for efficient 3D modeling:

(1)   Command Line: This is where users could directly type in commands, facilitating a quick workflow. It's located at the top of the window, right beneath the main toolbar.

(2)   Tools: The left-hand toolbar, which is vertically aligned, contains an array of tools for creating and editing geometry.

(3)   Viewports: The large central area is divided into four viewports—Perspective, Top, Front, Right, allowing users to see and work on the model from different angles at the same time.

(4)   Osnaps: To the left below the tools, the Object Snap (Osnaps) options are provided to achieve accurate positioning by capturing the exact geometric position of the object.

(5)   Status Bar: At the top of the interface, the status bar provides quick toggles for features like grid snap, ortho, planar views, and others.

(6)   Command Line History& Coordinates: Directly below the command line, recent commands are displayed for quick repetition. On the left side, information about the CPlane and cursor coordinates in the active viewport is provided to the user.

2.2.1.3 Feature Panel

Rhino's workspace, as displayed in Figure 2-1, is organized into several functional areas for efficient 3D modeling:

(1)   Command Line: This is where users could directly type in commands, facilitating a quick

2.2.1.4 Software Benefits

Rhino is one of the most sophisticated 3D modeling software extensively used in the design field, thanks to its distinction in the precision of mathematics that drives and manipulates NURBS geometry. It excels in 3D modeling applications due to its ability to cater to various difficult modeling needs typical of architectural, engineer, and industrial design, among others. The software also ensures that the modeling process is not only straightforward but also intuitive by providing a design-focused blueprint that enables quick prototyping and iteration.

Rhino can also handle most file types, allowing integration with other design or engineering software, proving invaluable in all design workflows. In addition, Rhino offers a large ecosystem of third-party plugins that significantly beef up its capabilities into advanced areas such as parametric design through Grasshopper, rendering, and animation. Rhino, therefore, provides the ultimate tool that design professionals need since the broad scope and third-party module support offer more flexibility to explore various avenues in the 3D design models [17].

2.2.2 Visual Studio Code

2.2.2.1 Introduction to Visual Studio Code

Visual Studio Code – or VS Code in short – is a lightweight code editor that has played an important role in the web development domain, especially those of HTML, JavaScript, and CSS. It is characterized by its simple and minimalistic user interface, complete language support, and strong debugging capabilities. It also equips you with Git commands, intelligent code completion using IntelliSense, and a large extension library. Given its light, easy-to-use nature and the ability to tackle complex workflows, it is one of the best choices to create fancy, responsive sites in a short amount of time [18].

2.2.2.2 Feature Panel

In Visual Studio Code, as shown in Figure 2-2, the workspace is cleverly divided into four areas:

(1) Activity Bar: This vertical bar is the hub for quick navigation between different views and features in VS Code. It includes the Explorer for file management, Search for finding text, Source Control for Git operations, the Run view for debugging, and the Extensions view for managing VS Code extensions.

(2) Editor Tabs: The upper area contains editor tabs, which displays the currently open files. This area allows for easy navigation between multiple files and provides contextual information such as the file name and icons showing file types or unsaved changes.

(3) Code Editor: At the heart of the Visual Studio Code interface is the code editor, a powerful space where most of the development work takes place. The editor supports syntax

highlighting, intelligent code completion, and real-time error detection for a variety of programming languages. It's designed for clarity and focus, with options to split the view for side-by-side editing and customizable color themes to suit user preferences. This central area is where the magic happens, converting lines of code into functioning software.

(4) Status Bar: The status bar at the bottom provides context-sensitive information about the open project and file. It shows the programming language of the current file, any issues, and the cursor's position.

2.2.2.3 Feature Panel

Rhino's workspace, as displayed in Figure 2-1, is organized into several functional areas for efficient 3D modeling:

(1) Command Line: This is where users could directly type in commands, facilitating a quick

2.2.2.4 Software Benefits

Visual Studio Code is a powerful IDE, dedicated to building Web applications and cloud programs. The tool is a lightweight and resembles the functionality of Visual Studio, however it features comprehensive revision and compiling capabilities, packed in a modern looking interface [18]. Its main benefits include IntelliSense for intelligent code completion, debugging tools seamlessly integrated into the editor, and built-in Git commands for version control. The customizable interface with a large number of extensions allows developers to customize the environment to their specific needs, thereby increasing the productivity of web development tasks for HTML, CSS, and JavaScript [18].

The editor accelerates the development cycle from concept to deployment, and its cross-platform compatibility ensures a consistent experience on Windows, macOS, or Linux. Developers can benefit from real-time collaboration from Live Share, which enables them to write and debug code together in real time. With its community-driven development, Visual Studio Code continues to evolve, introducing features and optimizations that respond to the latest trends and needs in the tech industry.

Chapter 3 The Problem

3.1 User Cases & User Journey Map

During the interviews, I engaged in conversations with diverse groups of picnickers and park staff to gain insights into their picnic experiences, collecting valuable feedback and understanding their needs. And organize them into User Cases and User Journey Maps (shown in Figure 3-1 and Appendix II), which is focused on learning about relevant user processes in order to identify areas with need for user research .

Figure 3-1 User cases

3.2 Analyzing the Problem

➢ For young influencers of Xiaohongshu, they seek a unique and attractive picnic experience. They often focuses on aesthetics, style, and the value of sharing, hoping to generate content worth sharing during picnics.

➢ Outdoor enthusiasts pay more attention to the functionality and durability of picnic products. They need picnic products that can adapt to various outdoor environments, are easy to carry, and do not lose comfort.

➢ The needs of park cleaning staff are more focused on the convenience of cleaning after picnics. They hope that picnic products are easy to clean and maintain, and will not bring additional cleaning burden to the park environment.

➢ Park managers are concerned about how to improve the service quality and user satisfaction of the park by providing a high-quality picnic experience, while ensuring the efficiency and order of park management.

Therefore, based on the specific needs of different groups, our picnic product design should combine aesthetics, practicality, and maintainability, while considering ease of management and compliance with the actual situation of park operation.

Chapter 4 The Solution

4.1 Concept Development

Concept development focuses on optimizing Chinese people's picnic experience, combining the development of digital media and interaction design concepts to create picnic products. In this process, we first clarified the following concepts:

➢ Chinese style: Integrating elements of Chinese culture, such as peonies and flowing water, reflecting the harmony between nature and culture.

➢ Environmental protection: Use biodegradable materials such as rice husks and loofah to reduce their impact on the environment.

➢ Getting close to nature: Product design emphasizes the connection with nature and provides mats and other products that are close to the natural environment.

➢ Comfort: Ensure comfort during picnics, considering physical needs and sitting habits.

➢ Portability: The design emphasizes the portability of the product, making it easy for users to move and use.

Figure 4-1 is an idea board I created to visually organize those ideas and concepts.
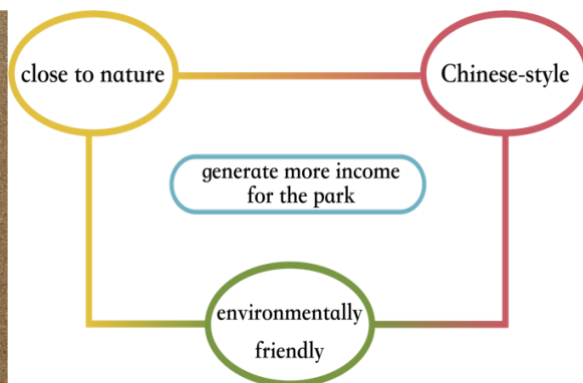

Figure 4-1 idea board   *Figure 4-2 concept development*

Based on these ideas, a concept development structure diagram (shown in Figure 4-2) was created to illustrate the integration of Chinese communication, environmental awareness, and user centered interaction functions in enhancing the picnic experience. On this basis, the next focus of work will be on how to refine the design of product elements and functions, refine details, and choose appropriate digital media tools to better showcase these design elements. Through this approach, not only can the product meet user expectations visually and functionally, but it also resonates with users emotionally, enhancing motivation, attention, understanding and recall [19].

4.2 Picnic Product Design

4.2.1 Product design ideas

4.2.1.1 Product form design

The product design process is deeply inspired by the traditional Chinese treasure flower pattern. Baoxiang flowers is a pattern with a long history and wide application, symbolizing good luck, harmony, and perfection (shown in Figure 4-3) [20, 21]. In the design of picnic products, I incorporate this symmetrical beauty into the design, making the products not only have a strong Chinese style, but also harmoniously coexist with the surrounding scenery like flowers blooming on the grass, adding elegance and fun to the picnic.

Figure 4-3 Baoxiang flowers pattern (source network)

4.2.1.2 Product function design

In the process of product function design, in order to pursue the changeable design concept, I drew inspiration from the traditional Chinese mortise and tenon joint (shown in Figure 4-4). Mortise and tenon joint is an ingenious connection technique used in ancient Chinese wooden structuresthat eachcomponent is generally connected by mortise-tenon joint without nails and irons[22, 23], allowingfor relative movement, such as rotation or sliding.

Figure 4-4 mortise and tenon joint(source network)

4.2.1.3 liú shāng qū shuǐ" (floating cups along a winding stream)

In fact, the ancient Chinese tradition of flowing wine cups and winding water was a highly distinctive picnic (shown in Figure 4-5). People sit around the flowing water, placing wine glasses on top of it and letting it flow downstream [3, 24]. Whoever stops in front of the cup will raise it and drink freely. In modern picnic product design, we can fully draw on this tradition and develop functions that can mimic flowing water interaction.

Figure 4-5 flowing wine cups and winding water (source network)

4.2.2 Product conceptual sketch

I propose an innovative picnic service design called "Peony Picnic Flex ", designed for 1 to 8 people (shown in Figure 4-6). The core of this picnic set lies in its deformability, which can be flexibly transformed into picnic chairs or tables according to different social occasions and user needs. For children, design includes safety seats; For adults, picnics can be combined into a table. Elderly users can enjoy more comfortable and supportive backchairs, reducing their physical burden. The design cleverly incorporates the cultural elements of the precious flower pattern and the curved water cup, not only presenting a Chinese style visually, but also adding interactive fun during use. By establishing small water channels, food can flow smoothly and add elegance, while also promoting interaction and communication between people.
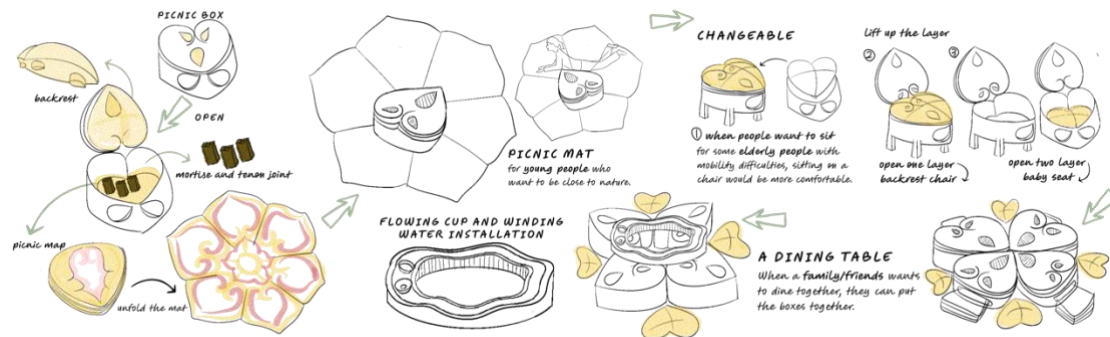

Figure 4-6 Product design sketch

4.2.3 Product model design

4.2.3.1 Product model with Rhino

When using Rhino for 3D modeling of products, the first step is to set up the workspace, which includes adjusting the units and grid (shown in Figure 4-7). This can ensure that the 3D modeling is consistent with the actual dimensions of the product. Next, use Rhino's powerful curve tools to outline the basic shape of the product from the previously imported concept sketch. Once the basic shape is determined, solid shapes can be generated by stretching these curves. Rhino's advanced surface tools can also be used to construct more complex geometric

shapes. On this basis, the shape can be further refined by adding details such as rounded corners and chamfers, which can ensure the creation of a more realistic and detailed product model. Finally, by applying Boolean operations, different shapes are combined or subtracted from each other to obtain the final product form.
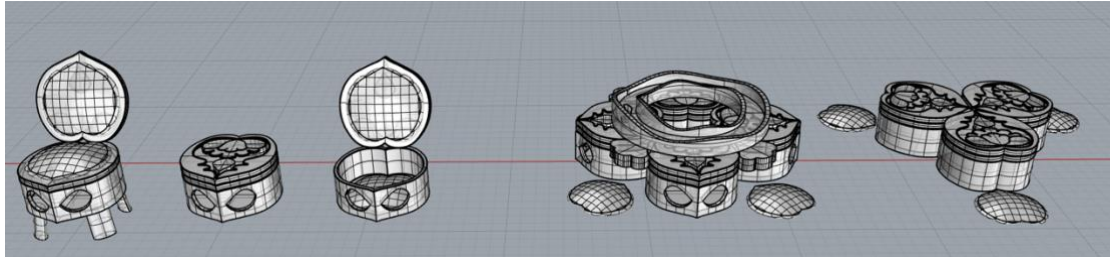

Figure 4-7 model in Rhino

4.2.3.2 Product dimension

➢ When used as a storage box, its dimensions are 46 centimeters wide, 42 centimeters deep, and 26 centimeters high. Its top design features a precious flower pattern.

➢ When transformed into a picnic chair, the dimensions are 46 centimeters wide, 42 centimeters deep, and 80 centimeters high. The backrest of the chair can be opened for easy placement or removal of items.

➢ When unfolded as a picnic table, the overall dimensions are 138 centimeters wide, 138 centimeters deep, and 40 centimeters high, providing a dining surface, with a flowing cup and winding water device in the middle.
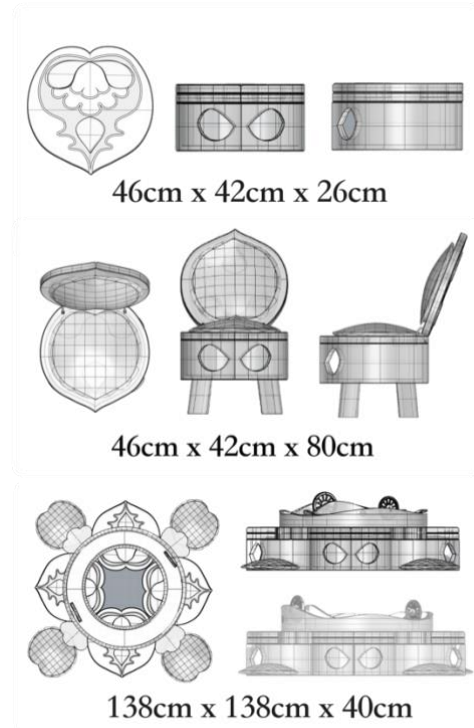
Through Rhino's product model, product design can be quickly modified and optimized by adjusting parameters and constraints. Not only that, Rhino also supports seamless integration with other software and formats, such as CAD, CAM, and Keyshot rendering.

4.2.3.3 Apply materials and textures in Keyshot

After completing the 3D modeling in Rhino, apply materials and textures to the model in Keyshot [25] to give the product a more realistic appearance (shown in Figure 4-8). In this step, by carefully adjusting the geometry nodes in multi-layer material map in Keyshot, the picnic box selected a material that simulates hard pressed rice husks, and the seat cushion applied a material that simulates the texture of a loofah.
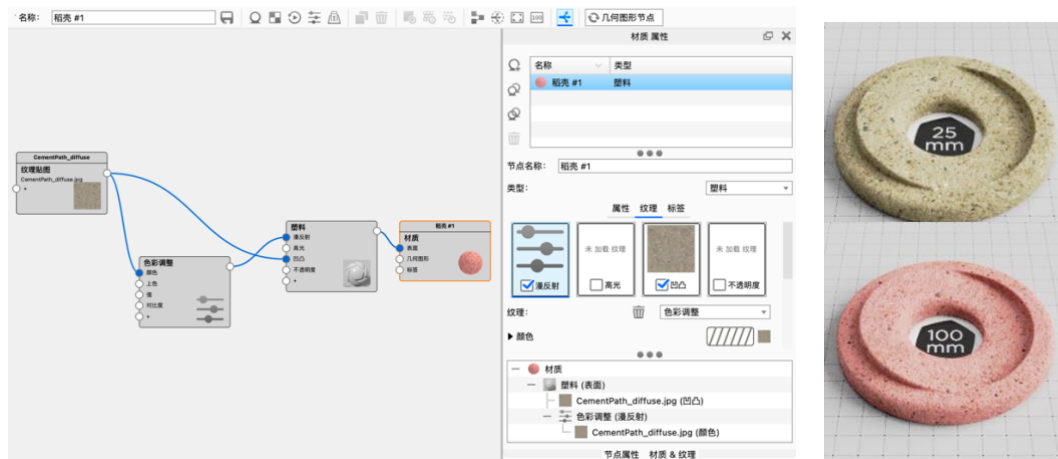
Figure 4-8 apply materials in Keyshot

4.2.3.3 Rendering in Keyshot

Use Keyshot's rendering function to fine tune materials and textures, adjust appropriate lighting, create scenes to ensure the visual appeal of the product, and accurately convey the design scheme and functionality (shown in Figure 4-9 and Appendix III). The picture shows how the picnic box can be cleverly transformed into a comfortable chair with a backrest by lifting the lid and adding chair legs, or by combining multiple picnic boxes together to create a functional picnic table, allowing potential users to understand the product's versatility.

Figure 4-9 3D model

4.3 Interactive website design

4.3.1 Purpose of website

With the continuous progress of digital media and product design, the purpose of designing product interaction websites is to provide a visual online platform, allowing users to deeply understand the design concept and process of products, and enjoy a rich online interactive experience. Through the website, users can quickly grasp the usage methods of the product [6].

4.3.2 Homepage

4.3.2.1 UI & UX design

The main page of the website is centered on "Peony Picnic Flex", which presents the brand name and provides a brief introduction below. The interface retains the classical style and adopts the elegant color scheme to give people a gentle and quiet visual enjoyment.
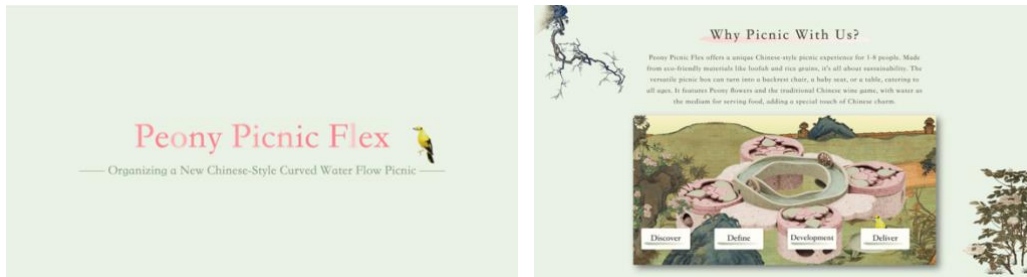

Figure 4-10 Homepage UI design

The **navigation menu** contains five sections, "**Discover**", "**Define**", "**Development**", "**Deliver**" and **music button**, so that users can jump to the corresponding page and turn on or off music.

Figure 4-11 Navigation menu

4.3.2.2 Front-End Development

In the front-end development of the homepage, I designed a series of details using HTML, CSS and JavaScript codes to enhance the user's visual and interactive experience.

■   Blur animation:

Create a blur effect for each character in the text using JavaScript code [26], so that they are displayed one by one. Each character is wrapped in a <span> tag, and a random animation delay is added to each <span>, so that the characters start animation at different times, creating a blurry effect. All <span> add a blur class at the same time after 1 second to start the animation, creating a progressive text blur effect.
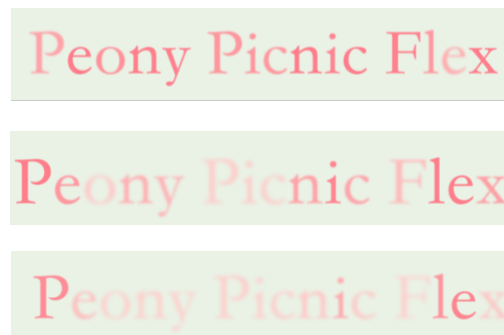

Figure 4-12 Blur animation

- Scroll events:

  - $window.addEventListener('scroll', function(){}$

When the page scrolls to the top of the second page, the image of the bird will switch to a flying image, and the animation effect of flying will be added and moved to the bottom right corner of the page. After the flight animation ends, the bird will gradually disappear and trigger the gradual display effect of the second page image. If the page scrolls back to the position above the second page, the image and animation of the bird will be restored to its original state.

Figure 4-13 Scroll events

4.3.3 Discover page

4.3.3.1 UI & UX design

The Discover page is decorated with an elegant background and Chinese landscape painting, with warm tones and natural elements as the theme, presenting a clear and concise layout. Users only need to slide and click on the flashing button to experience a smooth interactive experience.

Figure 4-14 UI design of discover page

4.3.3.2 Front-End Development

➢ Hover effect in CSS [27]:

  - $.image - container:hover::after\{\}$

In this CSS design, when a user clicks a button, a picture will appear showing the current picnic problem. When the mouse hovers over this image, it will be covered by a semitransparent gray mask, and the relevant explanatory text will also be clearly displayed on the mask.

Figure 4-15 Hover effect in CSS

4.3.4 Define page

4.3.4.1 UI & UX design

The Define page places a quaint picture of flowing wine cups and flowing water in the background, combined with emerging text, to guide users back to ancient picnic scenes through time, following by the concepts development.

Figure 4-16 UI design of define page

4.3.5 Development page

4.3.5.1 UI & UX design

The Development page presents a comprehensive design process from preliminary sketches, storyboards, material selection, stakeholder map, to 3D models, exploded view illustrations and multifunctional explanations. The interface design is concise and clear, showcasing each key stage of product development through coherent steps.

Figure 4-17 UI design of development page
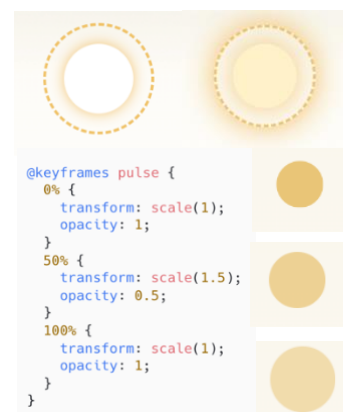
4.3.5.2 Front-End Development

➢ Button design in CSS:

■ $\#nextPageButton: hover \{\}$

■ $\#nextPageButton: hover :: before \{\}$

The first effect is to increase the blurry radius of shadows through CSS style when hovering over an element, which can give the element a prominent visual effect.

The second effect can be achieved through CSS keyframe animation, where the size of the element constantly changes, like breathing. This dynamic effect can arouse user curiosity, imply that the element is an interaction point, and encourage users to click, and provide visual prompts for users.

```
@keyframes pulse {
  0% {
    transform: scale(1);
    opacity: 1;
  }
  50% {
    transform: scale(1.5);
    opacity: 0.5;
  }
  100% {
    transform: scale(1);
    opacity: 1;
  }
}
```

➢ Image move, text pop-up:

■ $water.style.left = '10\%';$

After clicking the button, the image moves to the left while the text pops up.

Figure 4-18 Image move, text pop-up

4.3.6 Deliver page

4.3.5.1 UI & UX design

The Delivery page presents product prototypes, user manuals, application designs, service blueprints, and user testing and SWOT analysis results (shown in Appendix).

4.3.5.2 Application design

The application has designed five interfaces: 1. make a reservation. 2. select a picnic park. 3. find a picnic location. 4. share picnic photos 5. return the picnic box. Figma [28] was used to create GIF dynamic images to display the interaction process (shown in Appendix VI).
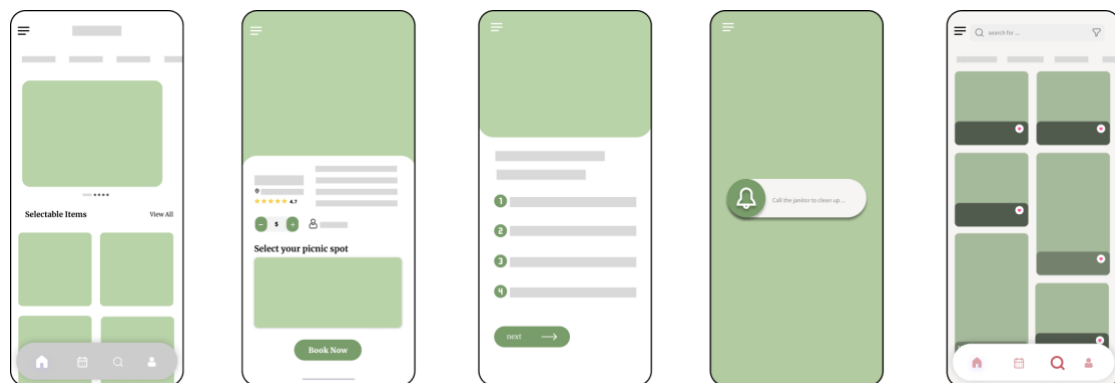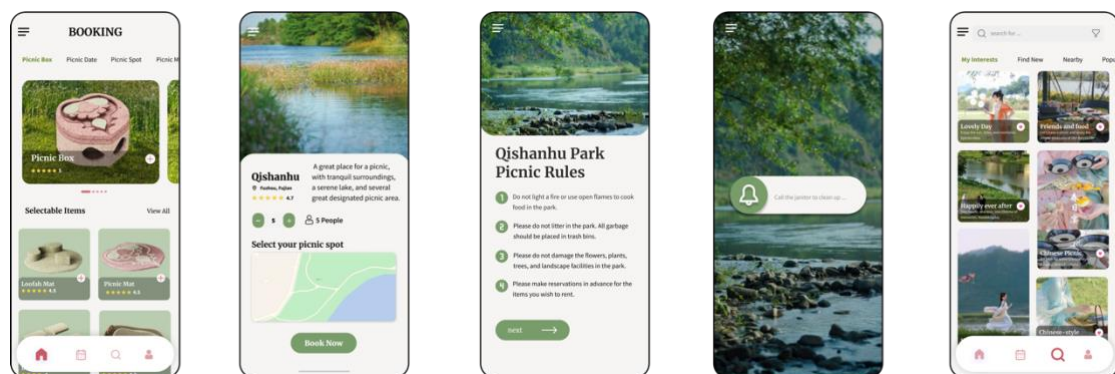

Figure 4-19 Low fidelity wireframe design

Figure 4-20 High fidelity wireframe design

Chapter 5 Evaluation

5.1 Service Blueprint

In order to evaluate the service, a service blueprint was used in the process design. Users collect picnic boxes at the reception and follow clear instructions. The blueprint records the user's experience and feelings throughout the entire picnic process, as well as the corresponding front-end and back-end business and related support (shown in Appendix VII).

5.2 Stakeholder Map[29] & User Feedback

An analysis was conducted on the feedback from all park stakeholders (shown in Appendix IV). The service center staff suggested accelerating the distribution speed of the boxes. Park visitors praised the intuitive design of the product, and the cleaners emphasized the practicality of the boxes during the cleaning process. The feedback from other employees informed about the role of the product in maintaining park order. Interviews with service personnel and users provide insights into the picnic experience. Staff stay in touch with customers through this application to assist in setting up and resolving issues, while users enjoy tree centered picnic settings and post picnic cleaning services, enhancing their natural engagement.

5.3 SWOT analysis

SWOT is a popular strategy and evaluation tool, which could analysis highlights the market position and future potential of the product from perspectives of strengths, weaknesses, opportunities and threats (shown in Figure 5-3).
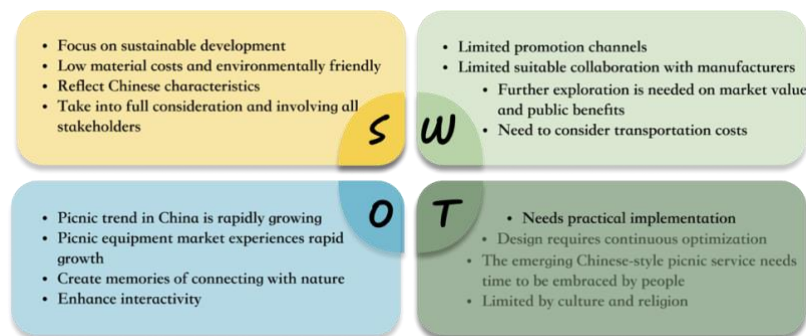

Figure 5-3 SWOT analysis

The strengths are sustainable design, multi-dimensional presentation using digital media technology, and consideration of all stakeholders. Weaknesses include limited promotional channels and the need to explore market value and transportation costs. The opportunity comes from the growing trend of picnics in China and the demand for interactive experiences connected to nature. The threats include the need for continuous design improvements of new picnic services, while considering cultural and religious factors.

Chapter 6 Conclusion

This project's "Peony Picnic Flex" utilizes digital media technologies and interactive design principles to explore how to optimize the traditional picnic experience. During this process, 3D modeling was utilized to accurately create a prototype of the picnic product, and an interactive platform was provided for users through web design. These works reflect a new trend of integrating traditional cultural elements in modern product design, while also providing a more intuitive user experience and understanding of product functions.

According to test feedback, the project significantly improved the user engagement and satisfaction during picnic activities. By applying digital media technology, the interactivity of products has been enhanced, making it easier for users to explore and utilize product features. The multifunctional 3D product design has a beautiful appearance and a Chinese style, which is eye-catching. The smooth operation and simple interface of the interactive web design make it easier for users to access product information and understand user guides. At the same time, such picnic products have made people pay more attention to the combination of modern needs and traditional cultural inheritance, providing us with a new way of thinking, and creating more possibilities in various fields such as education, culture, business, and environment.

It is worth considering that we have found that the integration of digital media and interaction design has certain universality in improving user experience and engagement. Especially in this project, by combining traditional Chinese picnic culture with modern digital display technology, the online interactive platform and picnic products I created have achieved significant results in enhancing user interaction. However, to achieve the widespread application of these design principles, it is necessary to overcome the limitations of technological implementation and ensure user acceptance. For example, although our product has unique craftsmanship in simulating traditional picnic activities with flowing cups and winding water, its complexity may limit its popularity in different cultural backgrounds.

Therefore, future work needs to focus on simplifying operational processes and enhancing user friendliness, so that users from different cultures and habits can easily enjoy a combination of traditional and modern picnic experiences. At the same time, there are still issues with insufficient samples in this project, and it is necessary to further expand the sample size for testing to over 300 people in the future, and further improve the dimensional differences of the problems. Furthermore, I plan to add backend support for the "Peony Picnic Flex" website to achieve user registration and account management functions.

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Acknowledgments

As my pen flows, a myriad of thoughts arise.

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Lastly, I want to thank myself—the kind, strong, and optimistic me. I know there are many challenges ahead, along with new experiences to embrace, but I am ready to face each one sincerely. I believe that good things will always come in due time.

Appendices

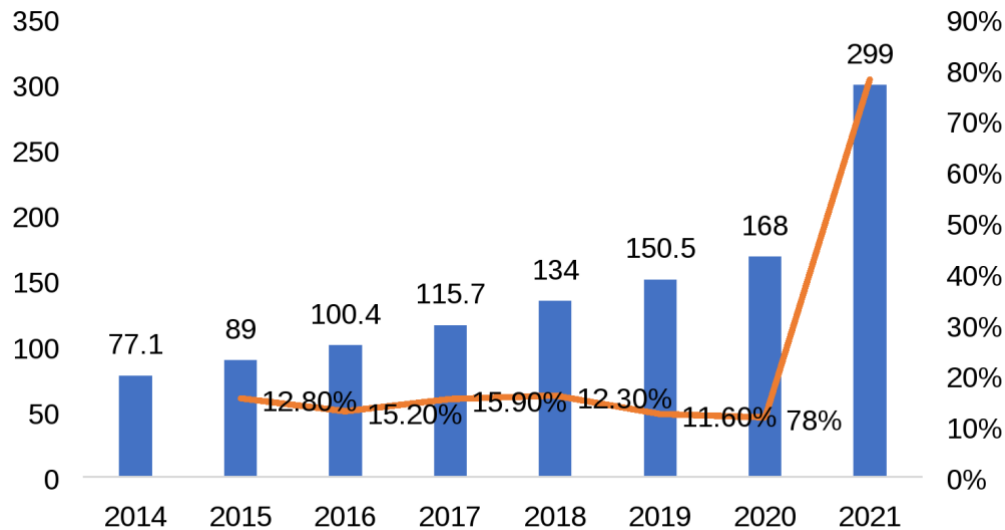## Appendices I: The size and growth rate of China's camping market

Figure I   The size and growth rate of China's camping market
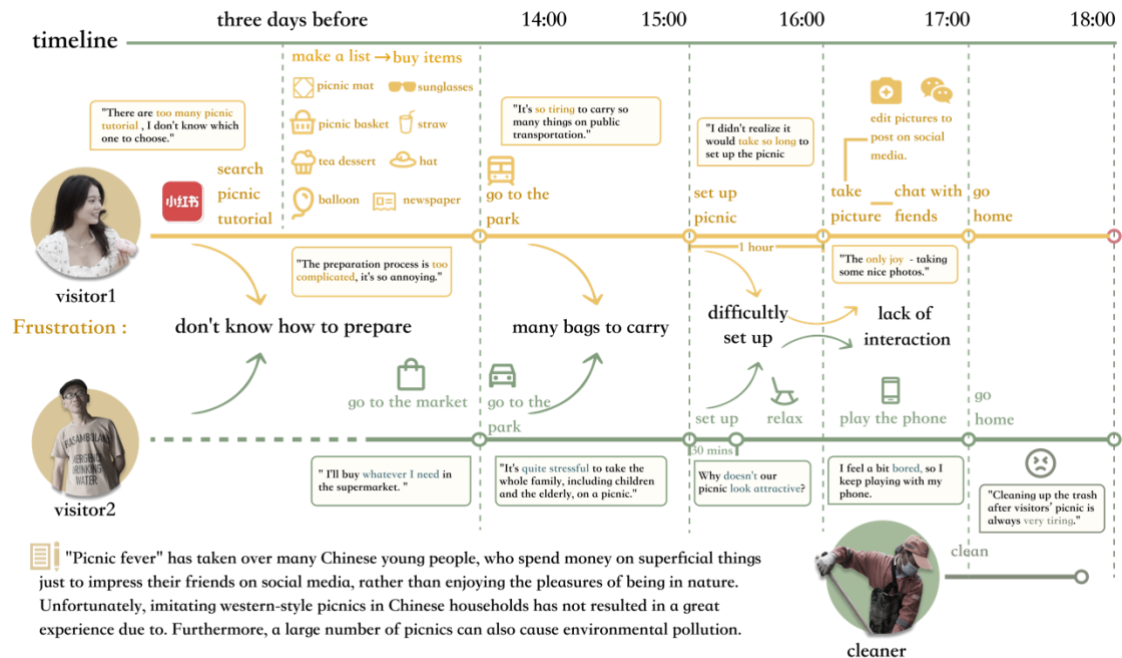
Appendices II: User Journey Map

Figure II   User Journey Map

Appendices III: User Scenario rendered by Keyshot

Figure III   User Scenario rendered by Keyshot
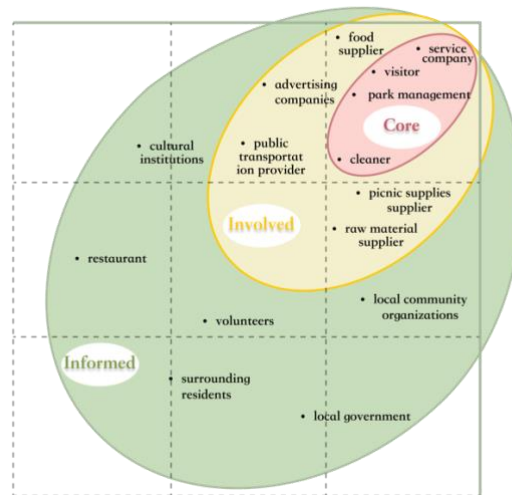
Appendices IV: Stakeholder Map

Figure IV   Stakeholder Map

Appendices V: Exploded View Diagram

Figure V   Exploded View Diagram
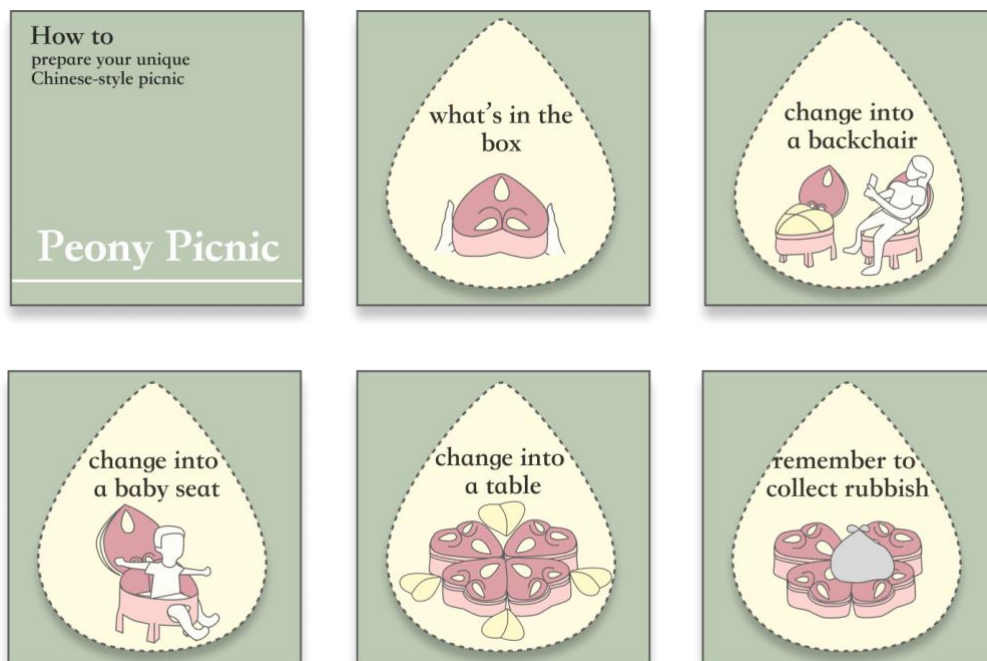
Appendices VI: User Manual

Figure VI   User Manual

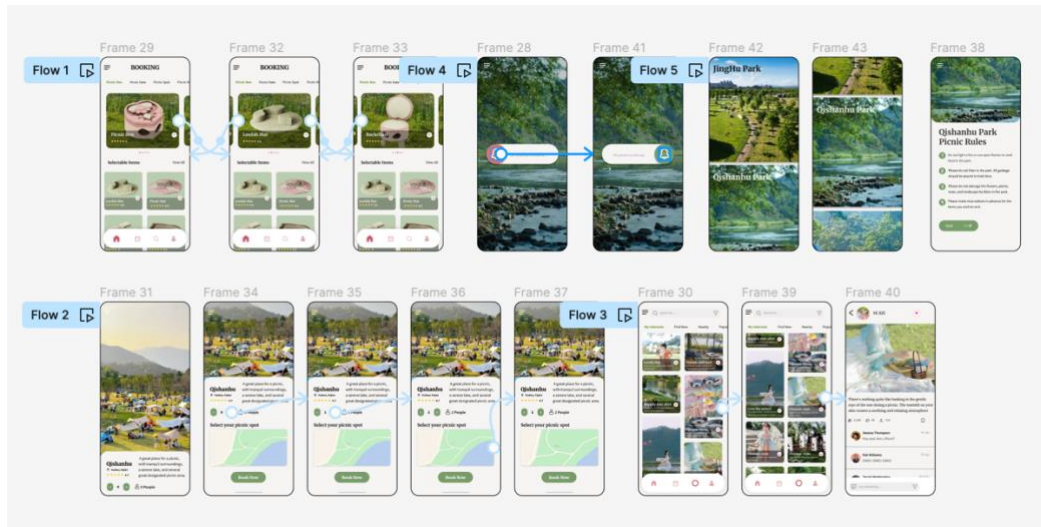## Appendices VII: Application prototype design in Figma

Figure VII   Application prototype design in Figma
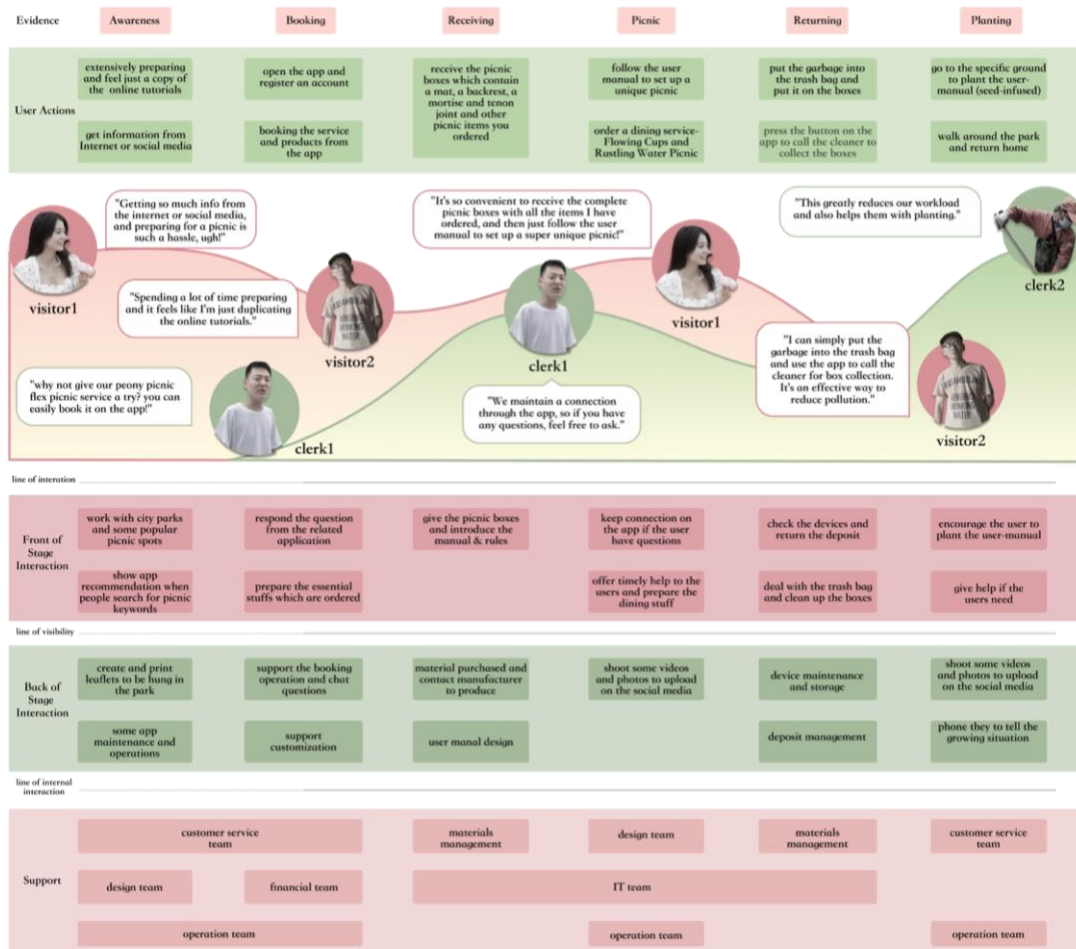
Appendices VII: Service Blueprint

Figure VII   Service Blueprint
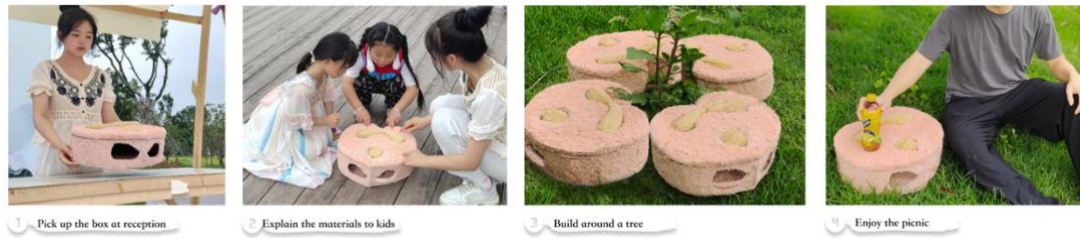
Appendices VIII: User Test & Stakeholder Interview

1. Pick up the box at reception   2. Explain the materials to kids   3. Build around a tree   4. Enjoy the picnic

Figure VIII   User Test

Service Center Staff

Feedback from service center staff
This picnic box can enhance the profitability of the park and create a distinctive feature for the park

Park Visitor

Feedback from park visitor
Just got everything I ordered, and the user manual makes setting up this awesome.

Park Cleaner

Feedback from park cleaner
This picnic box helps reduce littering, making it easier for us while being environmentally friendly.

Park Staff

Feedback from park staff
This picnic box adds a unique touch to the park. It definitely helps ease our workload to some extent.

Figure VIII   Stakeholder Interview