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Research on the Design of WeChat Applet of Persimmon Dye Culture from The Perspective of Scenario Construction

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Abstract: With the rapid development of information technology, the dissemination and preservation of traditional culture face new opportunities and challenges. This study aims to explore design strategies for a WeChat Mini Program focused on persimmon dyeing culture, to promote the inheritance and development of this intangible cultural heritage. Through user needs analysis, a user experience design framework based on contextual theory was constructed, and a Mini Program was developed that integrates cultural display, education, community interaction, and immersive experiences. The results highlight the importance of contextual construction in enhancing cultural experiences and user engagement, providing a reference for the digital transformation of other traditional cultures. The study explores the characteristics and direction of contextual construction in the design of the persimmon dyeing Mini Program, introduces key points in the program's development, and analyzes its current state and future development trends, offering support for the growth of persimmon dyeing traditional culture.

Keywords: Persimmon Dye; WeChat applet; interactive design; scenario construction.

1. Introduction

1.1. Research Background

Persimmon dyeing is a traditional technique that uses persimmon lacquer for fabric dyeing. This natural dye is made by crushing unripe persimmons to extract the juice, which is then fermented and processed [1]. Compared to most plant-based dyes, persimmon dyeing is renowned for its high color fastness and has been widely practiced in East Asia since ancient times. It is mentioned in historical texts such as "Yun Xian Miscellany" by the Tang Dynasty writer Feng Zhi, "Folklore History of Persimmons" by Japanese scholar Imai Keijun, and "Historical Treatises on Jeju Island" from Korea. The composition of persimmon lacquer is complex, with natural tannins and glutinous substances that give fibers exceptional color fastness, enhancing the fabric's wash and light resistance [2]. It also imparts a leather-like texture to the material, while offering water-resistant, anti-corrosion, and antimicrobial properties.

According to the latest official data, as of the end of 2020, WeChat had more than 1.1 billion monthly active users, with its user coverage extending not only across China but also overseas. The introduction of WeChat Mini Programs has provided users with a convenient experience. By the end of 2020, over 2 million Mini Programs had been launched, spanning various fields such as travel, home, entertainment, culture, and e-commerce, with 850 million users utilizing these Mini Programs for services or purchases [3]. Since the release of the "13th Five-Year Plan for Cultural Development and Reform," cultural development has received increasing attention, and international interest in Chinese culture has steadily grown. In this flourishing cultural era, persimmon dyeing, as one of China's ancient intangible cultural heritages, must seize this opportunity. Creating a WeChat Mini Program for persimmon dyeing will leverage this platform's massive user base, enabling more people to discover and appreciate this art. Moreover, Mini Programs related to persimmon dyeing are currently very scarce in the market, making this the perfect opportunity to fill that gap.

1.2. Research Purpose and Significance

This study is primarily dedicated to integrating persimmon dyeing culture with WeChat Mini Programs and achieving the following objectives: first, to further preserve and improve persimmon dyeing culture; second, to leverage WeChat's vast user base to promote persimmon dyeing through the Mini Program, enhancing its visibility and attracting more attention to this traditional craft as well as other excellent local handicrafts; finally, to attract investment through the Mini Program's promotion, increase economic benefits, and support the sustainable development of persimmon dyeing culture.

By establishing a WeChat Mini Program for persimmon dyeing culture, it will not only facilitate better dissemination, protection, and development of this heritage but also promote its integration with modern internet technology, bringing new vitality to persimmon dyeing in the contemporary era. This initiative aligns with current trends, fostering innovation and transformation, while keeping pace with the times and showcasing a fresh perspective. Moreover, it plays a crucial role in promoting cultural innovation, enhancing cultural confidence, and strengthening the nation's cultural soft power.

2. Theoretical Basis of Persimmon Dyeing Culture and Scenario Construction

2.1. Core elements and value analysis of persimmon dyeing culture

The core elements of persimmon dyeing culture include its unique dyeing process, cultural heritage, and artistic value[4].

The dyeing process involves a series of intricate steps such as selecting unripe persimmons, crushing, juicing, and fermenting, as illustrated in Figure 1. Each step plays a crucial role in determining the final dyeing outcome[5]. Cultural heritage is reflected in the transmission of persimmon dyeing techniques across generations, as well as its deep connection to local society, economy, and cultural life. The artistic value is embodied in the distinctive aesthetic of persimmon-dyed works and their rich cultural significance. These creations are not merely functional items but also serve as artworks that carry and convey cultural meaning.

Figure 1. The production process of persimmon dyeing

The value of persimmon dyeing culture lies in the organic unity of its historical, artistic, and practical aspects[5]. As a time-honored traditional craft, persimmon dyeing carries rich cultural information and national memories. Its artistic value is reflected in the colors, patterns, and textures of the works, showcasing the creativity and aesthetic pursuits of the artisans. The practicality of persimmon dyeing is evident in the daily use of its products, which are known for their durability, waterproofness, and resistance to decay. Compared to indigo dyeing, persimmon dyeing offers greater stiffness and superior color fastness, making it more resistant to fading. A comparison between persimmon dyeing and indigo dyeing is shown in Figure 2. Additionally, persimmon dyeing can be combined with tie-dye techniques, resulting in distinctive pattern styles, as illustrated in Figure 3.

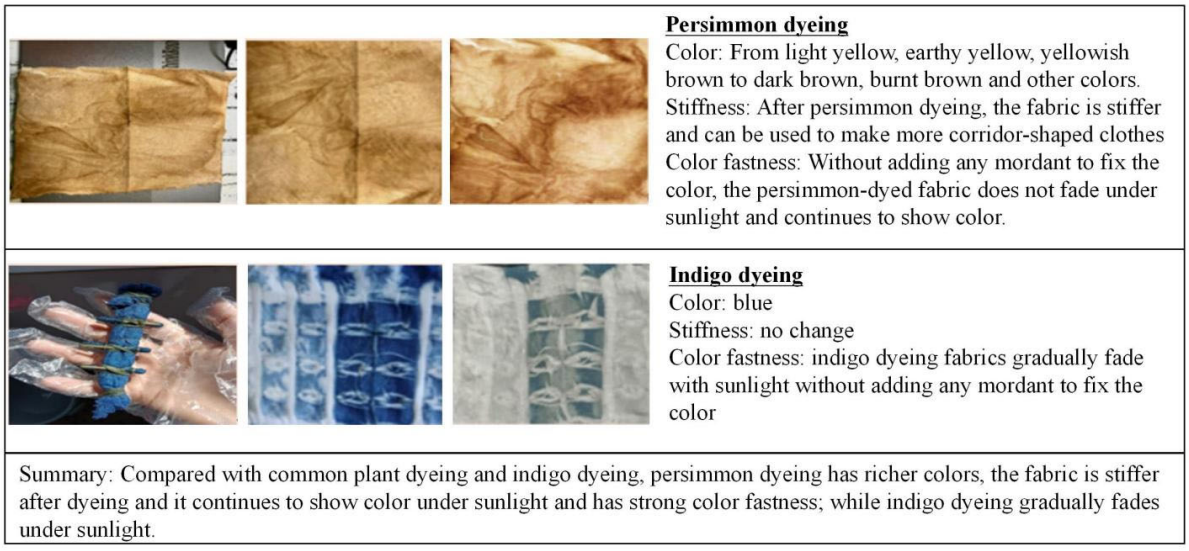

Fig. 2 Comparison between persimmon dyeing and indigo dyeing

Fig. 3 T-shirt made by combining persimmon dyeing and tie-dyeing

2.2. Theoretical framework and application scenarios of scenario construction

2.2.1. Theoretical framework of scenario construction

Scenario construction is a user-centered design method that emphasizes understanding and designing user experience in a specific context. Its theoretical framework includes scenario definition, construction elements, activities, theoretical basis, scenario chain construction, behavioral perspective, dynamics and uncertainty, scenario deduction, and practical basis[6]. Scenario definition is a description of possible events in a specific environment, based on the cognition and expression of objective laws. Scenario construction includes three major elements: scenario, consequences, and tasks, which correspond to the description of risk events, the circumstances and results caused by the events, and the measures taken to reduce the possibility of events and mitigate the consequences[7]. In the scenario construction activity, scenario analysis focuses on the evolution law and possible consequences of risk events, task sorting lists and sorts the emergency management tasks corresponding to the consequences, and capability assessment tests whether the existing emergency capabilities meet the task requirements[6]. Scenario chain construction involves a series of scenario transformations during the development of emergencies, which helps to achieve forward-looking emergency decision-making. In addition, the behavioral perspective considers the behavioral characteristics of decision makers, disaster victims, and rescuers and their mutual influence to construct scenario chains[7]. In unconventional emergencies, dynamics and uncertainty make the transformation of event scenarios highly complex. Scenario deduction deduce the possible development sequence of scenarios through matching fuzzy rules with real-time scenarios, forming a scenario chain. Scenario construction has been applied in practice at many levels at home and abroad, such as the national planning scenario construction work in the United States and the catastrophic scenario construction work in Beijing. Its results can be used to establish or improve emergency plans, conduct emergency drills, conduct risk assessments, and enhance emergency capacity building.

2.2.2. Application scenarios of scenario construction

In the persimmon dyeing culture applet, scenario construction can be effectively applied to multiple scenarios such as cultural education, interactive experience, community communication and cultural communication. Through scenario construction and scenario story design, a virtual user community can be created, allowing users to learn the history and skills of persimmon dyeing in an immersive environment, while sharing their respective experiences and communication insights. This kind of interaction can not only deeply explore the value and significance of persimmon dyeing culture, but also stimulate users' sense of participation and belonging, thereby spreading persimmon dyeing culture with greater efforts. In this way, more people can be attracted to pay attention and participate, thereby significantly improving the user group base of the applet. In addition, through activities and events within the community, such as online dyeing competitions or persimmon dyeing art exhibitions, interaction and communication between users can be further promoted, cultural identity can be enhanced, and the inheritance and development of persimmon dyeing culture in the new era can be promoted

2.3. The fit between persimmon dyeing culture and scenario construction

The alignment between persimmon dyeing culture and contextual construction lies in how the rich heritage and techniques of this traditional craft can be presented through contextualized design and experiences, enabling users to gain a more intuitive and profound understanding of its cultural and innovative aspects. Contextual construction offers powerful creativity, providing new ways to showcase persimmon dyeing culture, such as through the application of virtual reality (VR) and augmented reality (AR) technologies. Through contextual construction, users can immerse themselves in the world of persimmon dyeing, experiencing its deep historical roots and cultural significance. This approach goes beyond the limitations of text-based explanations, allowing users to better grasp the complexity and intricacy of the dyeing techniques.

By designing specific educational contexts, such as the historical background, production process, and cultural meaning of persimmon dyeing, user interest can be further enhanced, encouraging deeper exploration of the craft. Additionally, the narrative storytelling and scenario simulations offered by contextual construction help users establish emotional connections with persimmon dyeing culture, fostering a stronger sense of cultural identity. Furthermore, a community platform can be created where users can share their own persimmon dyeing works and experiences, promoting interaction and exchange among users. Ultimately, contextual construction can help build a brand image for persimmon dyeing culture, enhancing its recognition and influence.

3. Design strategy of the persimmon culture applet based on scenario

3.1. User demand analysis and positioning

Demand analysis helps designers understand users' needs and behaviors in specific situations[8]. Designers can use scenario construction to identify and analyze users' needs in specific situations, analyze users' emotional changes during their interactions with mini programs, and understand their pain points and pleasure points. Drawing a user journey map for mini programs helps identify users' needs and experiences at each touchpoint, and continuously iterates and optimizes demand analysis based on user feedback and market changes. Scenario analysis helps reveal users' potential needs, which may be difficult to discover in traditional questionnaires. Through scenario construction and demand analysis in user experience design, the development team of the WeChat mini program of Shiran Culture can ensure that the product meets users' needs in different situations and provides a richer and more personalized user experience.

3.1.1. User Group Identification

User needs analysis is the first step in the design strategy and a crucial part of product design, service provision and marketing. For the WeChat applet of Persimmon Dye Culture, identifying the target user group can better meet user needs, improve user experience, and effectively promote Persimmon Dye Culture. Therefore, it is particularly important to clarify the target user group and its characteristics. These target users may include cultural enthusiasts, craftsmen, educators, and

students. By analyzing the user's age, gender, educational background, interests and hobbies, we can deeply understand their cognition and expectations of Persimmon Dye Culture, thereby providing a strong basis for the design and function optimization of the applet.

3.1.2. User Demand Research

User demand research is a systematic process aimed at collecting and analyzing users' needs, preferences, and usage habits to guide product design and development. The purpose of the research is to understand users' awareness of persimmon dyeing culture, their usage habits, and desired features. To achieve this, a survey questionnaire can be developed, encompassing multiple-choice questions, true/false questions, Likert scale questions, and open-ended questions to gather users' basic information and demand-related data. Additionally, combining one-on-one in-depth interviews and user behavior observations will help analyze users' needs and preferences more comprehensively. The combination of these methods will provide comprehensive user insights for the design of the persimmon dyeing Mini Program, ensuring it better meets the expectations of the target users.

User research is a crucial part of the product design and development process, involving the understanding and analysis of users' needs, behaviors, motivations, and attitudes. For the WeChat Mini Program focused on persimmon dyeing culture, user research not only helps developers gain a better understanding of the target user group but also lays the foundation for designing products that meet user expectations. Contextual construction, as an effective method, allows for a deeper understanding of users' needs, behaviors, and motivations. By creating user stories and usage scenarios, designers can better comprehend users' daily lives and usage environments. Through these studies, the development team for the persimmon dyeing culture Mini Program can ensure that the product attracts and meets the needs of the target users, thereby enhancing user engagement and satisfaction.

3.1.3. User Needs Classification

User demand categorization is the process of organizing and classifying the collected user needs, which helps determine product features and optimize the user experience[9]. Users expect the Mini Program to have a variety of functions, including the display of cultural knowledge, interactive experiences, and community engagement, along with requirements related to performance, content, personalization, security, entertainment, social interaction, emotional connection, and commercial aspects. Additionally, users have clear expectations regarding the Mini Program's performance, safety, and usability, which encompass factors such as response speed, loading time, stability, and compatibility.

By systematically categorizing user demands, the development team for the WeChat Mini Program focused on persimmon dyeing culture can more effectively plan, design, and develop features to meet the specific needs of different user groups. This approach ensures that the Mini Program not only includes a rich array of functions but also delivers a high-quality user experience, thereby effectively promoting persimmon dyeing culture.

3.1.4. User portrait construction

User persona construction involves creating virtual characters based on user demand research data that represent the characteristics and behaviors of specific user groups [10]. By analyzing the research results, the team can gain insights into how users interact with similar applications, as well as their usage habits, preferences, and behavioral patterns. This understanding helps determine users' objectives for using the WeChat Mini Program focused on persimmon dyeing culture, such as acquiring knowledge, purchasing products, or engaging in social interactions.

On this basis, users are segmented into different groups, each sharing common characteristics and needs. For each segmented group, one or more virtual personas are created, encompassing basic information, interests, preferences, and usage scenarios. The user personas are prioritized based on the significance of the user groups and the urgency of their needs. By constructing user personas, the development team for the persimmon dyeing culture Mini Program can gain a deeper understanding of the target users, enabling them to provide more personalized products and services that meet users' needs. This approach not only enhances the user experience but also strengthens the product's market competitiveness.

3.1.5. Requirements Prioritization

Demand prioritization is the process of determining which user needs should be met first, typically based on factors such as the importance, urgency, scope of impact, and implementation difficulty of the demands. During this process, the team needs to evaluate the technical difficulty and resource consumption associated with fulfilling each demand, as well as the range of impact these demands have on the user group and their contribution to the overall product objectives. Additionally, potential risks associated with fulfilling the demands must be considered, with priority given to those demands that pose lower risks. Finally, based on the importance and urgency of different demands, along with resource and time constraints, the team can establish the prioritization of demand fulfillment.

By employing this method, the development team for the WeChat Mini Program focused on persimmon dyeing culture can ensure that the most critical user needs are met first, effectively enhancing user satisfaction and the likelihood of product success. This prioritization not only optimizes resource allocation but also provides clear direction for subsequent product iterations, allowing the team to respond more flexibly to user feedback and market changes.

3.1.6. Requirements Prioritization

Demand validation is a crucial process to ensure that a product or service meets user needs and expectations. During the early development of the Mini Program prototype, the team should invite target users to participate in testing to gather their feedback. By analyzing this feedback, the development team can continuously iterate and optimize the product to better meet user needs. Demand validation not only confirms whether the development direction of the WeChat Mini Program focused on persimmon dyeing culture is correct but also ensures that the final product truly meets the expectations of the target users, thereby enhancing user satisfaction and the likelihood of product success. Through this process, the team can gain a more accurate understanding of users' actual needs, increasing the engagement between users and the product, ultimately driving market recognition and promotion of the product.

3.2. Scenario Setting

3.2.1. Educational Scenario

The educational scenario aims to help users, particularly the younger generation, understand and learn about the history and techniques of persimmon dyeing. The scenario is broken down into a series of manageable scenes, identifying representative situations to facilitate easier testing[11]. Utilizing multimedia formats such as images, videos, and audio, information about the history, techniques, and cultural values of persimmon dyeing is systematically organized and presented. Additionally, interactive experiences, such as simulating the dyeing process, are designed to allow users to learn about persimmon dyeing culture through active participation. These educational scenarios not only promote persimmon dyeing culture but also facilitate its integration with modern internet technologies, breathing new life into this cultural heritage in the contemporary era. Through such designs, the WeChat Mini Program focused on persimmon dyeing culture can effectively attract young users, enhancing their engagement and fostering a sense of identity with traditional culture.

3.2.2. Experience Scenario

Developing interactive games related to persimmon dyeing culture, such as matching games and puzzle games, can effectively enhance user engagement and retention. Through interactive simulations, users can experience the dyeing process within the Mini Program, including selecting fabrics, mixing persimmon dye, and mastering dyeing techniques. The program can also provide relevant tools and templates, allowing users to design their own persimmon dye patterns and enjoy the creative process. Additionally, establishing a community platform where users can share their persimmon dyeing creations, insights, and experiences will promote communication among users. By creating these interactive experience scenarios, the WeChat Mini Program focused on persimmon dyeing culture can offer an immersive cultural experience, enabling users to intuitively and profoundly understand and appreciate the charm of persimmon dyeing culture.

3.3. Design practice

3.3.1. Concept design

Concept design is the preliminary design stage of translating user needs and market positioning into the prototype of the WeChat Mini Program product of Shiran Culture. Its goal is to create a clear product vision, determine the core functions and design direction. Through scenario building, designers are able to explore and define the concept of the product or service, and evaluate the applicability and user experience of different design solutions. Specific steps include clarifying the design goals and expected results, such as product positioning, target user groups and market differentiation; reviewing the results of user research and demand analysis to ensure that the design meets the core needs of users; drawing sketches and preliminary ideas to explore different design directions and layouts; and determining the core functions of the Mini Program, such as cultural knowledge display, interactive experience, community communication and e-commerce.

3.3.2. Functional design

The WeChat Mini Program focused on persimmon dyeing culture will systematically categorize knowledge related to this heritage, including its historical origins, dyeing techniques, cultural significance, and related stories. It will utilize a combination of images and text to present high-definition pictures along with detailed descriptions and explanations. Additionally, video tutorials will be provided to help users understand and query the production process, techniques, and practical applications. Furthermore, a comprehensive knowledge base will be constructed to vividly showcase persimmon dyeing culture through multimedia formats (such as images, videos, and audio). Users will be encouraged to participate in discussions and share their experiences. The content will be regularly updated with the latest research findings, user creations, and cultural events to enhance interactivity and engagement. This approach aims to contribute to the dissemination and preservation of persimmon dyeing culture.

To deepen users' understanding of persimmon dyeing culture, the Mini Program will also provide audio commentary and audiobooks, allowing users to acquire knowledge through listening. It will utilize 360-degree panoramic images to showcase relevant locations or events, creating an immersive experience. Interactive learning modules, such as simulating the dyeing process, will encourage users to engage and explore virtual reality technology to create an immersive experience. To enhance interaction among users, a community platform will be established to encourage sharing of creations and experiences. Additionally, a Q&A system will be set up for users to pose questions and receive answers, along with regular competitions to stimulate creativity and enthusiasm for participation. All images and video content will be closely related to persimmon dyeing culture, accompanied by text descriptions and subtitles to ensure understanding for different users, particularly those with visual impairments. By showcasing the details and results of the dyeing process through high-quality images and videos, the program will collect user feedback for continuous optimization and improvement. By integrating animation and virtual reality technology, the WeChat Mini Program focused on persimmon dyeing culture achieves the digital presentation of traditional content and creates a brand new user experience, effectively disseminating and preserving persimmon dyeing culture in a modern and interactive way.

Functional realization is the core of design practice, and we must ensure that each function can meet user needs and provide a good experience. For the persimmon dyeing culture applet, the core functions include knowledge display, interactive experience and community communication. The knowledge display function needs to fully display the history, craftsmanship and cultural value of persimmon dyeing, and present it in various forms such as pictures, texts, and videos; the interactive experience allows users to participate in experience activities such as simulated dyeing through the operation of the applet; the community communication platform supports users to publish works, share experiences and participate in discussions, promoting interaction and learning. Through the implementation of these functions, the applet can provide a rich user experience and effectively spread the persimmon dyeing culture.

3.3.3. Interaction Design

Interaction design focuses on the engagement between users and the WeChat Mini Program dedicated to persimmon dyeing culture, aiming to create an intuitive, user-friendly, and enjoyable experience. The design process includes

sketching interface layouts, creating low-fidelity interactive prototypes, designing buttons and labels, and ensuring clear user responses for each element, such as clicks and swipes.

Additionally, the design will incorporate feedback mechanisms (like animations or sound prompts) and plan the navigation structure to allow users to easily locate the desired features. The prototype will be iteratively improved based on user feedback to refine interaction flows and interfaces, considering users of varying skill levels and their usage environments.

To enhance user experience, a guided onboarding process will be provided for new users, introducing the Mini Program's key functions through simple tutorials. This will reduce the number of steps needed to complete tasks and offer one-click or drag-and-drop functionalities to simplify processes, ensuring users can easily accomplish core tasks, such as browsing cultural knowledge and participating in interactive experiences. Moreover, the operational flow will be optimized for coherence to prevent users from losing their way during tasks. Feedback mechanisms, such as button click effects and loading animations, will enhance the overall experience. The Mini Program will also support multilingual operations to ensure accurate information delivery. Through meticulously designed operational processes, the WeChat Mini Program focused on persimmon dyeing culture can provide a smooth, intuitive, and user-friendly experience, enabling users to easily explore and enjoy this rich cultural heritage.

3.3.4. Visual Design

Interface design directly affects the user's initial impression and usage experience. The interface design of the persimmon dyeing culture applet should focus on the following features: First, incorporate persimmon dyeing cultural elements, such as using persimmon dyeing patterns as backgrounds or icons to enhance the cultural atmosphere; second, use harmonious color matching to reflect the color aesthetics of persimmon dyeing and ensure visual comfort; finally, the interface layout should be clear and reasonable, and the functional areas should be clearly divided, so that users can quickly locate the required functions. These design features will help improve the user experience and better convey the unique charm of persimmon dyeing culture.

In the process of interface visual design, the design that incorporates persimmon dyeing cultural elements, such as using persimmon dyeing patterns as backgrounds or icons, can enhance the cultural atmosphere; at the same time, use harmonious color matching to reflect the color aesthetics of persimmon dyeing and ensure visual comfort. The interface layout should be clear and reasonable, and the functional areas should be clearly divided, so that users can quickly locate the required functions. Users can customize the interface and functions according to their personal preferences and needs, use big data analysis to understand users' usage habits and preferences, and intelligently recommend relevant content and functions. Overall, the applet should be designed to be simple and intuitive, so that users can browse and use it easily, helping them to shuttle smoothly in the applet.

In addition, users are allowed to choose different themes or skins, such as traditional style and modern style, to suit their personal aesthetics. Users can also adjust the interface layout according to their own usage habits, rearrange functional modules or change the order of information display. Based on the user's browsing history and points of interest, the system will intelligently recommend relevant persimmon dyeing cultural content, while providing font options of different sizes to meet the reading needs of users with poor eyesight. In addition, the privacy setting option enables users to control the visibility of personal information and activity data. By providing personalized settings, the persimmon dyeing culture WeChat applet can better meet the personalized needs of users, improve user satisfaction and loyalty, and enhance the user's stickiness to the applet. In addition, multilingual versions are provided to enhance the accessibility of the applet so that users from different language backgrounds can enjoy the service.

3.3.5. Emotional Design

Emotional design is a method that incorporates users' emotional reactions and experiences into the design process. It aims to focus on the emotional experience of users when they interact with products or services, enhance the humanized design of the interface[13], and thus create a more attractive and enjoyable user experience[14]. In the Persimmon Dye Culture WeChat applet, emotional design can greatly enhance users' emotional connection and identification with Persimmon Dye Culture. By designing a warm welcome interface in the UI, users feel at home as soon as they open the applet. With soft transition animations and visual effects, a warm and inviting atmosphere is created. The "My Collection" function is added to facilitate users to collect their favorite Persimmon Dye works and enhance their sense of belonging. At the same time, "Persimmon Dye Culture Knowledge" is pushed every day to stimulate users' curiosity and interest in learning. The goal of emotional design is to create products that are not only powerful but also touch the hearts of users, thereby improving user satisfaction and loyalty[14].

3.3.6. Design Evaluation

The design evaluation of mini programs requires setting a series of indicators, such as user satisfaction, frequency of use, functional usability, interface adjustment, content update, and user retention rate. Users' overall feelings and specific opinions on mini programs can be understood through data analysis (such as the number of daily active users and retention rate) or through qualitative indicators (such as user feedback and comments). Prototype testing is the process of creating a preliminary version of a product and showing it to users to collect feedback. For the WeChat mini program of Shiran Culture, prototype testing can help developers understand the real reaction of users to the design and whether the product meets their needs. By setting test scenarios and user tasks, obtaining the final version of the prototype, observing the interaction between users and the prototype, collecting feedback and optimizing the design, and conducting iterative design evaluation and verification, product quality and user experience can be improved [15].

According to the evaluation and test results, formulate improvement measures, optimize the functions that do not meet the needs or have problems, adjust the interface design to improve the aesthetics and ease of use, and enhance the user's visual experience. At the same time, maintain communication with users, let them participate in the design and testing, and continuously monitor feedback and usage data to ensure the effectiveness of improvement measures. Maintain the vitality of the mini program by regularly updating content (such as persimmon dyeing cultural

knowledge, interactive experience, and community activities). Continuous iteration as a methodology in the product design and development process emphasizes continuous evaluation, improvement, and release of products, helping the team to gradually improve the mini program based on user feedback and market changes, so that it can better meet user needs and adapt to the market environment. The interface design of part of the mini program is shown in Figure 4.

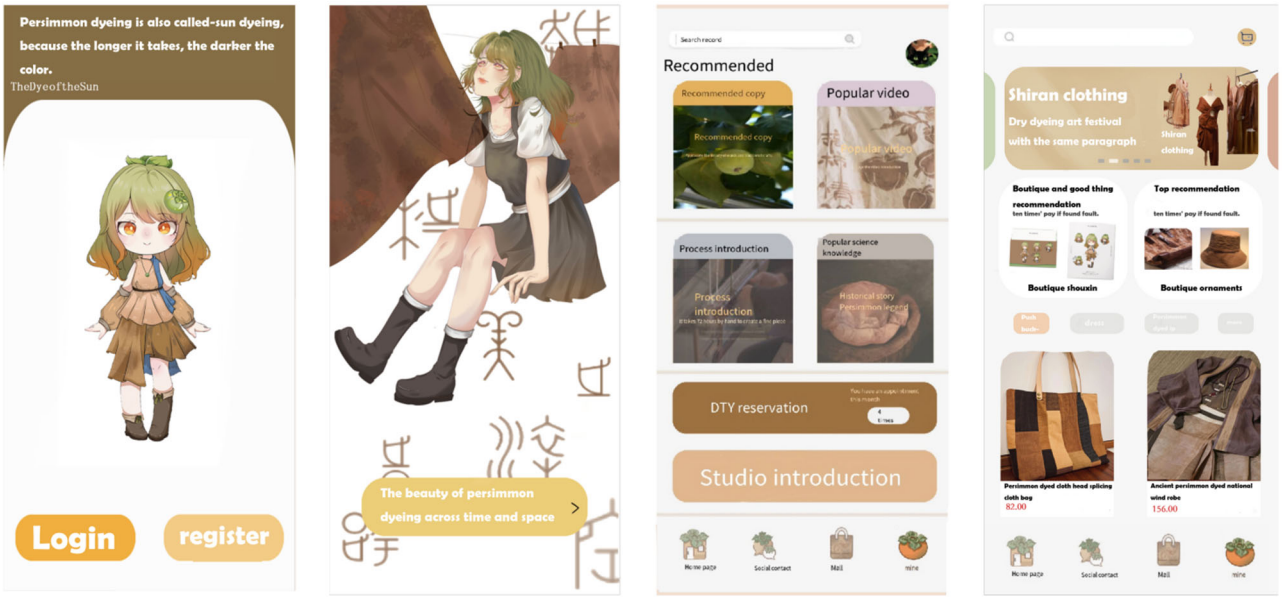

Figure 4. Part of the interface design of persimmon dyeing

4. Conclusion

Based on the scenario construction method, the WeChat applet of persimmon dyeing culture was designed and developed. Through user demand analysis, interaction design, function planning, user testing and feedback, the persimmon dyeing culture is combined with modern technology to provide users with a platform that integrates education, experience and social interaction. In the future, augmented reality (AR) and artificial intelligence (AI) technologies can be used to enhance user interaction and personalized recommendation capabilities, provide immersive experience, and enrich the content of persimmon dyeing culture, including historical stories, process flow, scene experience and IP image, and develop online courses, virtual exhibitions and cultural activities to meet the needs of different users. Regularly conduct user research, such as questionnaires, user interviews and focus groups, to understand user needs and experience, optimize user journeys and key touch points, ensure that the applet runs well under various conditions, and optimize compatibility and performance through continuous iteration. Expand the user community, attract persimmon dyeing culture enthusiasts and professionals to participate, strive to cooperate with educational institutions, cultural organizations and designers to promote persimmon dyeing culture, support multiple languages, reach a wider international user group, and promote cultural exchange and integration. When studying the business model of the applet, its sustainable development should be taken into account, and how to achieve the long-term development of persimmon dyeing culture through innovation and inheritance should be explored. The research results show that the mini program has significant potential in spreading and protecting persimmon dyeing culture, and also provides a feasible path for the digitization of other traditional cultures.

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