

The Application of the UI Interaction Design of the RPG Game "Gold Panning" in Cultural Communication

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ABSTRACT

In the context of the intelligent information era, the popularization of mobile networks and smartphones has accelerated the global dissemination of culture. As a game genre deeply loved by players, role-playing games (RPGs) have long been limited by traditional UI frameworks in their interface design, making it difficult to achieve a balance between cultural depth and interactive innovation. Taking the American Gold Rush in the 19th century as the background, this paper proposes a cultural theme UI innovation design method based on the situational experience theory, and designs the interface and interaction of the RPG mobile game "Gold Panning". Through the modern translation of cultural symbols, the construction of a dynamic interaction mechanism, and the multi-dimensional implantation of educational value, it breaks through the limitations of traditional UIs in cultural communication and demonstrates the unique potential of historical-themed games in cross-cultural communication.

Keywords: Role-playing game, Gold Rush, Interaction design, Cultural communication.

1. INTRODUCTION

Historical themes are constantly facing challenges and impacts in the context of online communication. The cyberspace has become the main field for the dissemination of historical nihilism. Through fragmented forms such as short videos, emoticons, and games, historical events are deconstructed into entertaining content. In response to the new trends of historical nihilism on the Internet, it is necessary to construct a governance system of "theoretical criticism - contention for positions - educational guidance". For example, by embedding the "cultural annotation" function in games, historical comparative education can be achieved, which not only meets the entertainment needs but also adheres to the bottom line of values.

1.1 Research Background of Historical Themes

In the UI interface and interaction design of role-playing games, themes with the inheritance of cultural genes are preferentially selected, such as

the American Gold Rush in the 19th century. In the middle of the 19th century, the Gold Rush was an important event inscribed in the historical chapters of the American West. It had a profound impact on the development, historical culture, and economic development of the American West. It was a unique era full of adventures and challenges. Gold panning played a very important role in the economic improvement, political changes, and the development of the labor movement in the United States. However, the other side that the Gold Rush left to the world was the looted mountains, dried-up rivers, and damaged vegetation; what was left behind were abandoned mines, bare hills, desolate grasslands, and deserted mining camps [1].

1.2 Research Purpose and Significance

The interface design has long been restricted by the traditional UI framework, making it difficult to achieve a balance between cultural depth and interactive innovation. Based mainly on the situational experience theory, the author designs the UI interface and interactive prototype of an RPG

mobile game titled "Gold Panning" against the backdrop of the American Gold Rush in the 19th century.

The research purposes of this project are as follows. Firstly, by choosing the Gold Rush as the background, it aims to disseminate cultural and historical education. Secondly, through the design of the game interface, it serves as a warning against environmental damage and provides educational warnings from the perspective of the game.

The significance of the interface design of the game "Gold Panning" lies in the fact that while users are enjoying the game for entertainment, it also provides educational value in multiple aspects, such as historical education, environmental protection education, teamwork, and resource management. By designing an embedded "Gold Panning Encyclopedia" module in the game, knowledge is transformed into interactive levels, enabling players to complete the learning process in the form of a knowledge graph during the growth of their in-game characters.

This kind of game UI interaction design verifies the assertion that "cultural adaptation requires the integration of traditional aesthetics and modern interaction."

1.3 Current Situation of Relevant Research at Home and Abroad

According to the "2022 Report on China's Game Industry" officially released by Zhang Yijun, Chairman of the Game Working Committee of the China Audio-Video and Digital Publishing Association, role-playing games, card games, and strategy games account for 24%, 12%, and 11% respectively. The three types of themes with the highest proportion in terms of quantity are mysterious/fantasy themes, weak themes, and historical themes, accounting for 25%, 18%, and 13% respectively. Therefore, among the popular RPG games, there are relatively few games with themes that integrate historical culture, and there are also few adventure games set in the Gold Rush period.

Against the backdrop of the integration of culture and technology, digital games have not only become a crucial medium in the digital transformation of the cultural heritage field but also an important stage for interpreting cultural heritage and inheriting historical knowledge. In the journal "Science Education and Museums", Cao Chenxing has conducted an in-depth analysis of the types of

digital games related to cultural heritage [2]. Therefore, the historical culture of the Gold Rush can be integrated into digital games to enable the world to have a better understanding of it and facilitate its dissemination.

Clark Spence is known as the "dean of mining historians". He has spent many years exploring the commercial and technological history of gold panning, which is a form of large-scale and often overlooked destructive mining [3]. The research conducted by Bigdeli Shoaleh, Hosseinzadeh Zohreh and other scholars concluded that gamification is a strategy that utilizes game design techniques in non-game experiences to achieve more effective learning, and it provides a more engaging environment for both teaching and learning [4]. Educational games stimulate students' learning motivation and improve the teaching and learning process through the application of game design and game elements in the learning environment.

2. INTRODUCTION TO THE GAME INTERFACE DESIGN PROJECT

2.1 Overview of the UI Design of the RPG Game "Gold Panning"

The design project of "Gold Panning" transforms the theme of an important historical period into an educational and entertaining gaming experience by designing its mobile interface and user interaction. The core of this project's design is to create a realistic situational experience, and through this approach, it promotes the integration of historical learning and immersive experience in the game. The inherent connection between the game's theme and gameplay enables players to enhance their historical cognition, logical thinking, and strategic planning while enjoying the game. "Gold Panning" is not just a game; it is a meticulously woven history lesson. Through highly interactive means, it allows players to gain a broad understanding of the history and culture of the American Gold Rush era and delve into the social impacts of that turbulent period.

2.2 Design Ideas of the UI for the RPG Game "Gold Panning"

The RPG game "Gold Panning" aims to immerse players through its carefully designed game interface. The design ideas mainly focus on creating a situational experience, enabling players

to feel the adventures and challenges of the gold panning period through visual and interaction design. It is mainly divided into two dimensions: visual design and interaction design.

In terms of visual design, users' most intuitive and comprehensive perception of the product comes from the visual style of the platform [5]. The overall style of the game presents the features of the American West in the 19th century, including elements such as gold panners' tools and the environment, as well as the social background of the Gold Rush period, such as mining camps, mines, and pits. The interface design incorporates historical elements and symbols, such as gold mines, tools, maps, and character designs. The user interface of the game should be simple, intuitive, and easy for new players to understand and operate.

In terms of interaction design, it allows users to experience the process of gold panning through intuitive operations, such as digging, screening, and trading. The interaction design should, while ensuring the completeness of functions and the smoothness of the process, ensure that users meet their expectations when using the product and generate as few negative emotions as possible [5].

3. ANALYSIS OF GAME USER REQUIREMENTS

3.1 User Requirement Survey and Collection

The UI interface and interaction design of games themed on the history of gold panning require conducting user requirement surveys and collections. This is helpful for the precise dissemination of historical and cultural content among the target audience. When selecting competing products for the game, it is usually possible to proceed from three dimensions. The first dimension is the direct competitors in the specific market segment of the product itself. The second dimension is the products in related industries. The third dimension is the associated products without a competitive relationship [6]. Therefore, the analysis is carried out on this basis.

The questionnaire survey is a common research method, and its main purpose is to obtain the opinions, views, and behavioral information of a specific sample to support the conclusions of the research. The design principles and basis of the questionnaire for the design of the RPG game "Gold Panning" are mainly to design questions

based on the objectives of the user research. The first part of the questionnaire mainly collects the basic information of users for group classification, such as: age group, gender, and usage frequency. The second part mainly collects users' game preferences and playing habits. The questions in the third part aim to collect information about game interaction behaviors, game plots, and themes. The fourth part mainly consists of multiple-choice questions to screen out the main playing elements of the game.

The form of the questionnaire survey is mainly as shown in the following "Table 1":

Table 1. Questionnaire survey

Questionnaire Channel	Questionnaire Distribution	Distribute	Collect
Survey on Wenjuanxing	Internet platform	310	307

3.2 Building User Personas

In order to better design the interface of the RPG game "Gold Panning", it is necessary to create detailed user personas based on the questionnaire survey. These personas will help the author understand the diversity and needs of the target user group. Each persona reflects unique interests, preferences, and behavior patterns, which will provide important guidance for game development and marketing strategies.

User Persona 1: Elena, a 30-year-old female digital marketing expert. Elena has a strong interest in fantasy literature and historical novels. She likes to share her reading and gaming experiences on social media and online communities. Usually, she tends to purchase high-quality content and doesn't mind paying for excellent game content. This user is a player with high requirements for the depth and quality of the content. She is looking for games that can provide rich stories and in-depth interactive experiences.

User Persona 2: Mike, a 35-year-old male IT project manager. He is enthusiastic about technology and video games in his daily life. In his spare time, he likes programming and developing small games. He has basic knowledge of software development and game design, and is also very interested in the technological innovation and gameplay design of games. He is willing to invest money in games with unique gaming experiences

and high technical content. This user represents players with high requirements for the depth and complexity of games, seeking games that can both challenge themselves and provide learning opportunities.

4. GAME UI INNOVATION AND CULTURAL DISSEMINATION

4.1 *Building the Cultural Symbol System of the Game UI*

From Static Presentation to Immersive Narration. Compared with the flat treatment of historical elements in traditional RPG UIs, "Gold Panning" reconstructs the cultural symbol system through the design of concretizing historical situations. Then, a low-fidelity prototype design is carried out. The design of the low-fidelity prototype wireframe is an essential step in the user-centered application software development process [7]. Subsequently, it proceeds to the high-fidelity refinement design.

From Dynamic Texture Mapping: Elements such as the armor and tools, tents and ropes, gold mines, and green plants from the gold panning period are transformed into interactive dynamic backgrounds. Players can trigger animations of historical events such as mine cave collapses and region switches by sliding the screen, breaking through the limitations of the static symbol display of traditional UIs.

From the Multimodal Perception System: Adopting a color system with a main earthy yellow tone and a metallic light texture, and combining the artistic pictures to connect with the real scenes, enabling players to perceive the "historical scene" during gameplay. Compared with the single visual output of traditional UIs, it realizes a multi-sensory collaborative experience.

From Space-Time Folding Interaction: Fragments of 19th-century maps are embedded in the backpack interface. Players can compare modern geographical information through zooming operations, forming a cross-time dialogue between history and reality, and innovating the linear information presentation mode of traditional UIs. This design enables players to complete the construction of a three-level cultural identity of "cognition-emotion-behavior" while being entertained.

4.2 *Innovation in UI Interface Design*

Historical culture requires certain innovation in the interface design of role-playing games, which has great characteristics compared with traditional UIs. As a visual language, color not only plays a role in beautifying the overall web page but also has the function of highlighting key content [8]. In this design, referring to the tones of the gold mines and mountains during the Gold Rush at the end of the 19th century, the main colors chosen are warm gold and brown to create a retro atmosphere. Gold is used to highlight important elements, such as rewards, gold coins, etc., in the design to emphasize the theme of the Gold Rush background. The auxiliary colors are natural tones, such as green and blue, which are used for natural landscapes, such as forests, rivers, etc., in the design to balance the main warm color tones.

In the design of characters and icons, it is a crucial link in shaping the game's worldview and enhancing the player experience. Ingenious design can balance the relationship between the picture and the characters [9]. The icon design should be consistent with the overall visual style of the game in historical culture, and adopt colors and styles that are coordinated with the character design. The icons are simple and easy to understand, and can clearly represent their functions or meanings even in small sizes. The icon design of the RPG game "Gold Panning" needs to be closely integrated with the theme of gold panning. Using earthy yellow as the base map, combined with a blue bottom frame and the golden text "Gold" representing the game, and then embellished with gold material elements. ("Figure 1")



Figure 1 The font of the game startup screen.

The design of the game map interface is of vital importance. It is mainly designed as a multi-map module, allowing users to choose from maps, each of which has a unique environment and challenges. Starting from the initial draft of the elements, and then to the imitation design of small elements such as trees, stones, buildings, and road surfaces, the game map is constructed based on the small

elements that should exist in the reality of the gold panning period.

In the game's social page, the main social functions focus on the player chat channel, the requirements of the story missions, and the interaction of social information, etc. For the chat channel, according to the triangular button in the upper right corner of this section, it can be expanded, set to the normal state, and collapsed in three steps. When expanded, it is convenient for players to browse the game chat and recruit teams. When collapsed, it gives players a wider view of the game map so that they can concentrate on playing.

5. GAME INTERACTION DESIGN

5.1 *Dynamic Interaction Mechanism*

From function-oriented to cultural cognition construction, aiming at the problem of the disconnection between the interaction logic of traditional RPG UI and cultural dissemination, "Gold Panning" has constructed a trinity interaction model of "mission-scene-education".

From the contextualized task chain: By linking the dynamic progress bar with the historical timeline, players are required to complete tasks such as gold panning and material trading within a limited time. Incorrect operations will trigger punishment mechanisms that conform to historical logic, such as the character going "bankrupt", which is more culturally authentic compared to the numerical task system of traditional UIs.

From collaborative resource management: In the team mode, the interface displays the "team tacit understanding" value in real time. Players need to divide labor and cooperate through gesture recognition (for example, one person operates the joystick for gold panning, and the other manages resources), transforming the abstract cultural spirit of cooperation into quantifiable interaction behaviors.

From the moral decision-making system: Design interactive plot nodes between Chinese laborers and Native Americans. The choices made by players directly affect the game's ending. Through non-linear narration, it breaks through the fixed plot framework of traditional UIs and strengthens the critical thinking nature of cultural dissemination.

5.2 *Interaction Innovation Promotes the Dissemination of Historical Culture*

Different from the traditional UI's single pursuit of entertainment functions, "Gold Panning" achieves innovation in educational functions through a three-level communication model of "cognition-emotion-behavior". It transforms knowledge into mine exploration levels. Players can unlock historical documents through character growth, and their degree of knowledge mastery directly affects the efficiency of resource acquisition. Compared with the information-stacking design of traditional UIs, it has a stronger cognitive driving force, and then enables learning in the form of knowledge mapping.

When designing multiple language versions later, the "cultural annotation" function is embedded. Players can trigger a comparison of the cultural differences in gold panning between China and the United States (such as the efficiency of tool use and trade rules) by clicking on interface elements. The system automatically generates a visual analysis report, breaking through the one-way cultural dissemination mode of traditional UIs.

Furthermore, through the analysis of players' behavioral data (such as the repeat play rate and the completion degree of collaborative tasks), the effect of cultural dissemination is quantitatively evaluated, providing dynamic data support for the static evaluation system of traditional UIs.

The design project shows that the UI innovation of historical-themed games needs to be based on the synergistic effects of decoding historical and cultural genes, expressing with the empowerment of technology, and guiding users' cognition, providing a reusable digital solution for cross-cultural communication.

6. CONCLUSION AND PROSPECT

The interface design of RPG games is a complex subject involving multiple factors, including user experience, visual aesthetics, social interaction, personalized design, cross-platform adaptability and game updates, visual effects, interaction design, etc. One of the deficiencies is that there is relatively little understanding of the historical records of the Gold Rush, and the work on the RPG game "Gold Panning" only stays in the art design part. The interaction operation is only realized based on the Adobe XD software, and the program has not been developed.

In the RPG game "Gold Panning" themed on gold panning, the UI interaction design adheres to the design concept of "intuition and immersion", mainly featuring interface elements with a sense of design and simple and intuitive interaction operations. It focuses on the innovative path of UI design in the translation of cultural symbols and cross-cultural communication. Based on the situational experience theory, it combines historical themes to carry out UI interaction design. By breaking through the static framework of traditional UIs and constructing a dynamic and multimodal cultural narrative system, it has realized the innovative value of the innovative path for the UI design of historical themes, and provided richer solutions for cultural communication in the digital age.

ACKNOWLEDGMENTS

Fund project: Innovation and research on the "production, learning and research" system of practical teaching of new engineering majors under the SPOC model of Guangzhou Institute of Science and Technology's 2023 school-based research project (2023XB027).

Guangzhou Institute of Science and Technology's 2024 national-provincial-ministerial cultivation project is based on research on false information and trust crisis in digital media marketing under the background of social media(2024sbp011).

Exploration and practice of the five-integrated talent training model of Guangzhou Institute of Science and Technology 's 2023 innovation and entrepreneurship education special project "Course Training, Competition and Creation"(2023SCY13).

Implementation of the 2023 school-level education and teaching reform project of Guangzhou Institute of Science and Technology to construct a new engineering major practical teaching system based on the SPOC model(2023JG021).

Fund project: Guangzhou Institute of Science and Technology 2024 Research Feedback Teaching Special Project on Innovation and Practice of Deep Integration of Industry, Academia and Research in New Engineering Science (2024KB004) Funding.

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