Designing Edutainment Games for Intangible Cultural Heritage: the BNREG Project

Xiaoshuang Jia[1,2], Yue Tan[1], Qianyun Xiong[1], Yifang Li[1], Wei Hai[1]

[1] School of Information Resource Management, Beijing, China
[2] Humanities Beijing Research Center, Renmin University of China, Beijing, China
`jiaxs1219@ruc.edu.cn, chloerr@126.com, 18811010076@163.com,`
`elvaliyifang@sina.com, hw203306227@163.com`

Abstract. This paper presents the preliminary investigation and game design process of Beijing Nursery Rhyme Edutainment Game (hereinafter referred to as BNREG), from which we think edutainment concept can provide an innovative gamification method for the impart and inheritance of Intangible Cultural Heritage (hereinafter referred to as ICH). It will also finally identify and discuss the most significant challenges in the design and adoption of edutainment games in ICH field.

Keywords: Edutainment Game, Intangible Cultural Heritage, Nursery Rhymes, Beijing.

1   Introduction

In recent years, experts around the world have made efforts to promote "edutainment". Now it has been accepted by the public as an effective way of learning with the help of advanced technologies—AR/VR, games, mobile devices, computers, and software. Edutainment games then come out and refer to the games that combine education and entertainment, from which the definition of 'edutainment games' is obtained. Through this good combination, information technology strikes the mass culture of alliteration and serves for the popularization of collections of libraries, archives and museums (Sotirova, 2004). Ideally, edutainment games have three advantages including interactivity, adaptivity and narrativity, which can offer users fun and engaging experiences and motivate them to keep interacting with the game and further its contents.

Nowadays it is widely recognized that edutainment games offer a suitable environment to support cultural heritage purposes of historical teaching and learning, or for enhancing museum visit. Meanwhile, they appear as a new and useful tool to preserve and inherit cultural heritage in an engaging way. There are many best practices for using edutainment games in the cultural heritage field. So far, there has been little work done in intangible cultural heritage, which is the main goal of this paper. This paper thinks edutainment concept can provide an innovative gamification method for the impart and inheritance of ICH by presenting the preliminary investigation and game design process

of BNREG (Beijing Nursery Rhyme Edutainment Game). It will also identify and discuss the most significant challenges in the design and adoption of edutainment games in ICH field.

2   Preliminary Investigation

Beijing Nursery Rhyme (BNR), usually means nursery rhymes originated in and spread among children in the form of singing and recitation in old Beijing. BNR has a very distinctive "Peking style", a clear cadence between sentences and within a sentence. In 2008, this oral art form was listed in the second batch of National Intangible Cultural Heritage List, in the hopes of encouraging the oral art's preservation and dissemination. BNR began to propagate as folk art 3000 years ago in ancient China. It records the trace and reflects the memory of the old Peking lifestyle as well as the common people's public living condition, opinion and culture. Consequently, the rhythms were well-known and appreciated in old Beijing. Almost all the kids in Ming and Qing Dynasty used to be familiar with BNRs. But in modern society, BNRs have been rarely sung by children and have begun to fade out of people's lives and memory.

From January to march, 2019, the BNREG project team conducted a questionnaire survey on Beijing nursery rhymes among Beijing residents which resulted in 148 valid sample return. According to the survey, about 70 percent of respondents claimed that they did not hear about the BNRs for more than a month; more than 85 percent of respondents recollected less than 5 pieces of BNR. Above shreds of evidence suggest the disconnection between modern people and the nursery rhymes, which makes it is necessary to take immediate protective measures.

The survey also showed that about 90 percent of respondents recognized the BNR's cultural values, over 60 percent realized its historical value, while over 50 percent believed the rhymes have educational value. Meanwhile, about 85 percent of respondents are passionate to protect BNR, and about 90 percent of respondents are willing to teach their child the rhymes. Regarding the methods for protecting BNR, living protection, digital protection and productive protection received as much support as 90%, 50% and 40% of the respondents.

Considering all the above, we finally decide upon designing a Beijing Nursery Rhyme edutainment game in support of preserving and inheriting the intangible cultural heritage in a participatory way. The project started with data collection. From January 2018 to June 2019, we have been working hard to collect different kind of resources about BNR, including 200+ texts, 20 paintings, 249 audios and 37 videos. Most of the resources are transferred into digital format and stored into the database for long term preservation and reuse.

3 Game Design Process

3.1 Game Goals

Since this is an edutainment game, we must first set the goals of the edutainment H5 mini-game with the subject of *Explore: Beijing Nursery Rhymes*. The goals of the *Explore BNR* game include: 1) create a more accepting and attractive way to impart and inherit original BNRs other than misrepresented ones; 2) educate game users through the listening, watching, singing BNRs, as well as traditional Beijing culture; 3) collect more resources in a crowdsourcing way.

3.2 Game Structure and Game Implementation

Explore BNR game structure has the advantage of embodying goals to guide the players, who become autonomous in their experience of the game. The game structure is shown in Fig. 1.

    Explore BNR is a H5(HTML5.0) mini-game, players can learn Beijing culture and BNRs from it in an immersed and participatory way. The game rules are as following:

1. **Start the game.** Clicking on the link to the interface of the game's app, the player firstly sees the homepage with name of the game *Explore: Beijing Nursery Rhyme*. With a click at the *Start* button, the game introduction shows up.
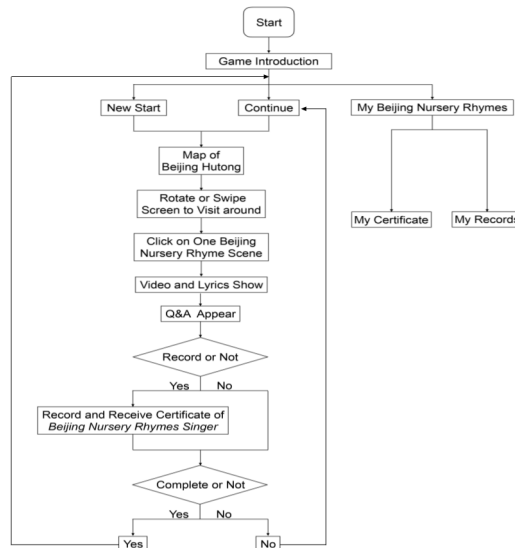

Fig. 1. Game Structure of Explore: Beijing Nursery Rhymes

2. **Personalized selection for an entertainment experience.** There are 3 choices for players: New Start, Continue or enter My Beijing Nursery Rhymes. New Start or Continue chosen, players need to select one Beijing Hutong touring line on Map before the game starts. Every Beijing Hutong, with a 360-degree panoramic view and several BNRs scenes that can create an immersed experience, can be visited around by player's rotating or swiping phone screen. Every scene depicts real life that BNR presented such as telling stories, pulling rickshaw, playing around gate piers. Click on one scene (Fig. 2, a), players can enjoy the audio and lyrics or video (Fig. 2,b) of original BNR other than misrepresented one. This multimedia presentation approach can show players procedural knowledge on how to perform rhymes straightforwardly.

3. **Education and participatory experience.** We offer Q&As on Beijing traditional culture and choice to record players' nursery rhymes after watching videos, to add to interaction rather than one-sided sharing and enhance the sense of participation. After finding and watching rhymes, a single choice question about Beijing traditional culture the nursery rhyme contains will appear. Voice recording function is provided. If players take it, they can record their own BNR and receive a certificate of Beijing Nursery Rhymes Singer for rewarding after audio uploaded. Players can share their recording and certificate in social media. After completing touring one Hutong, the game will go back to the interface of 3 choices; when game not completed, players will continue to visit Beijing.
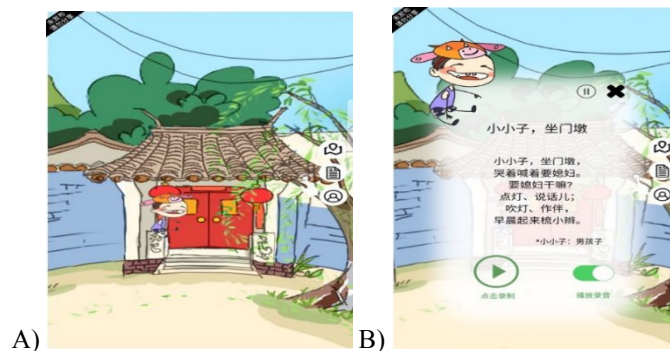

Fig. 2. A) Scene of BNR; B) Lyrics of BNR

4. **Personal digital archives.** If players click My Beijing Nursery Rhymes, there'll be a database of certificates and records of BNRs. During the gameplay, players can enter or quit at any time.

3.3 Game Testing and Future Work

After completing the basic functions of *Explore BNR*, we invited 33 people from 11 to 40 years old to test the game and provide us with feedback and suggestions. 30 percent of test players have never heard of BNRs before logging in the game. In the rest 70

percent who have heard of BNRs, 16 percent said they knew it very well. Test users played the game and evaluated from 3 aspects: 1) simplicity of operation, 2) attractiveness of content and; 3) accessibility to gain knowledge of BNRs. Players can give 1 to 5 points to each aspect. The average score of the simplicity of operation is 3.97, evenly distributed from 3 to 5; The average of the attractiveness of content is 3.82. 40 percent of test players choose 4 points; About accessibility to gain knowledge, we get 4.07 of 5 on average. The average score ranks from 3.82 to 4.07 which means we still have some efforts to take to improve our game. Test players also gave us some very good suggestions. First, more BNRs should be added with diversity contents. Second, Beijing Hutongs should be more distinguishing and all BNRs in each one should have a common theme. Last but not least, more scenes should be added along with historical ones to make it more attractive.

Since the mode has been acceptable, the future work of BNREG Project mainly focuses on collecting more Materials and creating more game scenes. Field studies in Beijing Hutongs are planned, local children and experts will be invited to record audios and videos. Meanwhile, more scenes and contents will be added to the game.

4   Conclusion

The *Explore BNR* game is proved to be a promising way for understanding *BNRs*, which shows that edutainment games may also be a useful tool in ICH filed. Since the existing games are more oriented to cultural awareness, rather than presenting specific cultural expressions and promote participation, we believe this game appears to be innovative in the field of ICH in China. With more advanced technologies in the future, the *Explore BNR* game can have more functions and pretty broad appeal, as well as can provide more resources for developing culture and creative products.

As highlighted by Mortara et al. (Mortara, et al., 2014) and Bontchev (Bontchev, 2015), in recent years, the development of games also in the area of ICH has been increasing; this may certainly be due to the advances at a technological level. We believe edutainment concept can provide an innovative gamification method for the impart and inheritance of ICH. But this also faces some great challenges. For one thing, we should think about how to balance the relationship between entertainment and education. For the other, we should also think about how to think of games as art to provoke creativity in all levels of game making and distributing – from idea through modelling and design to the playing itself. We will continue to explore this promising area.

Acknowledgements

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