Hakka Culture Learning-A Mobile Gaming Approach

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Abstract: Taiwan's Hakka culture is unique in the world. Rapidly assimilated by contemporary Taiwanese society, the unique Hakka culture needs to be preserved. Several Hakka culture parks have been established in the past 10 years for exhibiting traditional Hakka life. However, paying a visit to these parks seems to be monotonous and lacking incentive for people to do so. This study developed a mobile game-based learning tool for students to recognize the traditional Hakka culture. Mobile technologies and game schemes were employed simultaneously for developing the activities. In order to enhance the learning motivation, students have to pass a sequence of challenges during the gameplay. The gaming location is intended to be the Taipei City Hakka Cultural Park, in which various Hakka cultures and crafts are available. A questionnaire survey is purposed to investigate student's game satisfaction and information system acceptance. It is expected that Hakka culture recognition will be improved by this mobile game-based learning tool.

Keywords: The Hakka culture, mobile game-based learning, culture preservation

Introduction

In recent years, culture preservation has been a serious topic for research and development worldwide. Mobile learning has been widely and successfully employed in various culture preservation projects. However, only few studies applied it in learning Hakka culture. Using games in instruction, students could be more immersed into the topic. Through game experience, students could have more imaginations while playing in the context. Students in the situated learning environment is likely to demonstrate sophisticated problem-solving skills, exhibit metacognitive awareness, produce coherent artifacts, and show high level of motivation [8]. Therefore, this study is intended to integrate learning environment with the gameplay and mobile communications, expecting for it to promote the learning motivations by overcoming challenges during the mobile game. As a result, inspire more technology-based activities that help introduce Hakka spirits, and grounded Hakka culture. In this study, traditional Hakka cuisines, and unique Hakka crafts will be introduced through the mobile gameplay.

1. Literature Review

Hakka culture

The arduous journey made by Taiwan's Hakka people from the Chinese mainland not only cemented their cohesion but also offered them new horizons. Thus, they created a

distinctly new Hakka homeland, remarkably different from those left behind in mainland China [1].

Through the shift from "the traditional Hakka" to "the new Hakka" and to the "Taiwanese Hakka", the Hakka have tried to reconstruct their ethnic identity to gain a position in the new national discourse on "multicultural Taiwan". For many Hakka cultural workers, the most important problem is "how to develop the Hakka culture in modern society" or "how to combine the Hakka culture and modern culture" [20].

In summary, Taiwan's Hakka culture is unique in the world due to its particular formation history. The remarkable components of Hakka cultures such as its cuisine, clothing, architecture and religious beliefs are all attractive. In order to preserve Taiwan's Hakka culture, it is important to recognize its uniqueness.

Mobile learning

The advancement of mobile and wireless communication technologies has resulted in an increasing number of studies concerning mobile learning, in which students are able to learn via mobile devices without being limited by space and time [10].

Adding flexibility to the learning process, mobile learning offers great opportunities for education, especially for teenagers who show great attentiveness to mobile technologies [7]. Implementing the course especially with electronic activities had positive effects on students from a learning and evaluation perspective. Students stated that the blended learning environment supported their active participation to the course activities [6]. According to the results of the related researches, this study employed mobile learning as the main strategy for the Hakka culture recognition.

Game-based learning

Using mobile games in education combines situated and active learning with entertainment in a potentially excellent manner [9]. As regard to the past researches, two elements should be included in designing a game-based learning: the design element of the game and the game should have sufficient educational functions. The design of digital games also offers many unique benefits for learning. Yang reviewed various researches [4,15] [5] [18] [19] [14] [11] and summarized that digital games should include the following elements: (a) challenge, curiosity, control, and fantasy, (b) embed practice and drills, (c) provide immediate feedback, (d) offer opportunities for self-assessment, (e) activate prior knowledge, and (f) support students in experiential learning [21]. From a constructionist perspective, there are theoretical reasons for believing that making games can be educationally beneficial. When making games, learners also construct knowledge and their relationship to it [16]. Learners can solve problems and overcome challenges through game-based learning so that learners get a sense of self-fulfillment and achieve education through entertainment.

Information System (IS) success model

Establishing a success model of a specific information system (IS) is critical to understand the mechanism of IS success, the various dimensions of IS performance, and their causal relations in IS success [13]. The most popular model for assessing the successfulness of technology adoption could be Davis's technology acceptance model(TAM) [2].The model show that information technology has perceived that usefulness and ease of use are the two main determinants of usage. Furthermore, perceived ease of use has a positive impact on perceived usefulness, and indirect impact on usage. Therefore, perceived usefulness is

the main factor that affects usage and perceived ease of use is the second factor. But the researchers believe that usefulness and ease of use are different from person to person. It is hard to distinguish the primary or secondary.

Alternatively, Delone and McLean's IS success model [3] viewed the thing in a different angle. They divided IS into six assessment indicators to measure the system benefits. The six assessments are: Information quality, system quality, service quality, use, user satisfaction, and net benefits. Therefore, this study will use DeLone and McLean IS success model to design the games information system and questionnaire.

2. The game design

Introduction

Instead of traditional paper content, the designed mobile game allows students to learn how to overcome challenges and have peer competitions at the same time through solving tasks. Learning in a group provides many opportunities to develop ideas, consolidate concepts, and learn about social interaction [17]. A specific design of the game may be able to induce feelings of envy together with collaborative victory, and may also to provoke a collective enjoyable atmosphere [12].

Compared to the traditional educational media and tools, learners would gain deeper experience through game-based learning. The game quality is the key to achieve a successful game. Therefore, our game design elements mainly focus on challenge, curiosity, embed practice and drills, immediate feedback, and support for students in experiential learning. These are considered to be the game construction criteria for the study. An outline for the game design is shown in the following table:

Table 1: Game successfulness guidelines

	Challenge	**Curiosity**	**Practice and drills**	**Immediate feedback**	**Experiential learning**
1st stage Hakka ground tea	Remember the production process of Hakka ground tea.	How to make Hakka ground tea.	Hand-made of Hakka ground tea.	Remember the production process of Hakka ground tea or not.	To experience of Hakka ground tea.
2nd stage Tobacco building	Play 5x5 monopoly.	The past use of tobacco building is what.		Understand the purpose of tobacco building	To experience of tobacco building.
3rd stage Oiled paper umbrella	Drawing	How to paint on oiled paper umbrella.	Painting on oiled paper umbrella.	Understand the materials of oiled paper umbrella	To experience of oiled paper umbrella.
4th stage Hakka costume culture	Raise O or X.	Discuss Hakka costume	Wearing Hakka costume.	Understand Hakka costume culture	To experience of Hakka costume.
5th stage Hakka religious culture	Distinguish religious as the original or local.	Hakka has what kind of religious.	Worship in the virtual temple.	Understand Hakka religious culture	To experience of virtual temple.
6th stage Distributions of Hakka	Play 3 by 3 Ti-Ta-Toe	Hakka people distribute over which place in Taiwan.		Understand distributions of Hakka	

Team structure

The game will be played in teams of five or six students. Each team has one smart phone, in which they will know where they should go and check which stage they have done or not. The messages in smart phone will guide them towards and through the learning tasks by using various information sources. Each team also gets a part of puzzle that will be necessary to complete the tasks. The teams will switch places when they finished one stage, so that each student can participate in all stages.

The gameplay

At the start of the game, students will gather at the main location, namely the Taipei city Hakka cultural park. Before the game, students will have guidance to the Hakka culture in Taipei city Hakka cultural park. After guidance, choose six cultures as the game stage point. Students will be guided to understand the main stage line of the game, the game structure, the tasks, and the tools to be used.

The game has six stages. Each team should finish all stages in order to know the last task. Six stages will show on the smart phone, tap the stage logo on the screen and students will know which stage they are in. The stages included Hakka ground tea, tobacco building, oiled paper umbrella, Hakka costume culture, Hakka religious culture, and distributions of Hakka. Students will start the game with the help of the Internet, smart phones and videos.

They can view a Taiwan map on the smart phone, and the map has six symbol pictures. Each symbol represents a stage. After click the stage symbol, the stage location will show on the screen. When students reach a stage, they should scan QR code to read stage task. They have to complete the task according to each stage task.

The first stage is Hakka ground tea, in which after they read the task content, the screen will play a film about how to make Hakka ground tea. Students are required to follow the film's content to make Hakka ground tea. When adding the material, the order must be the same. The second stage is tobacco building, the third stage is oiled paper umbrella, the fourth stage is Hakka costume culture, the fifth stage is Hakka religious culture, and finally, the sixth stage is the distributions of Hakka. Each stage has different task, the team which has completed the task, they should take a photo with the stage logo and upload the photo to the Internet. The purpose of uploading photos is that each team could know how many stages their competitors had finished and other competitors' progress of the game. When complete a stage, each team will get a part of puzzle. At the end of all stages, all teams will have six pieces of puzzle. Finally, they can solve the puzzle to find final place. The team should run to the final destination to get the ultimate reward. A diagram illustrates the game process is displayed as follow:
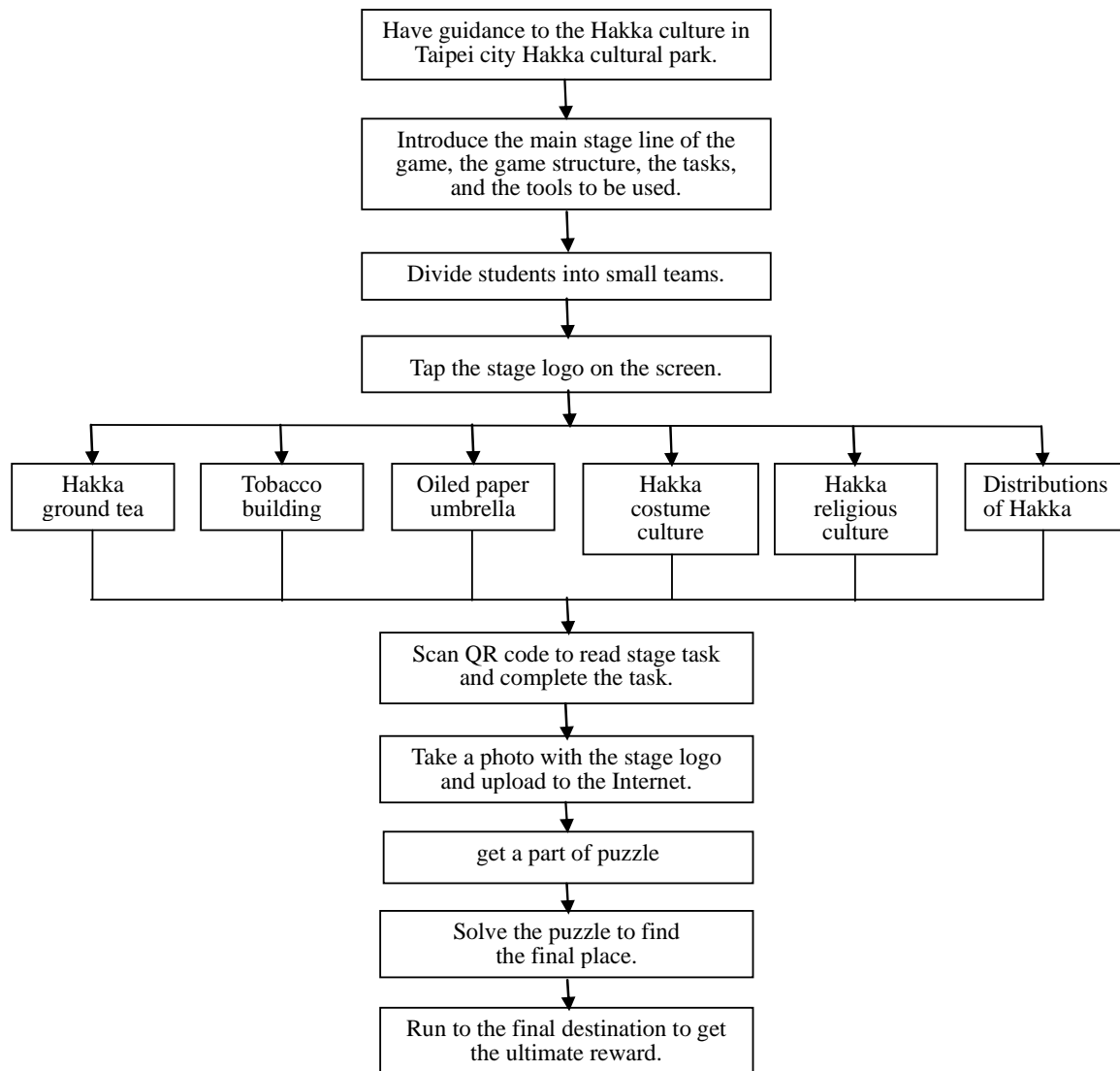
Figure 1 The Game Structure

3. Methods

Research questions

Past research on mobile game-based learning has tended to focus on the motivational effects. This study, however, tries to investigate student's game satisfaction and information system acceptance. In addition, there may have gender differences of boys' and girls' game-play sessions. Specific research questions are displayed as follows:

1. H1 Game satisfaction:
   H1.1 How do the students be satisfied with the mobile game-based learning?
   H1.2 Is game-based culture recognition strategy beneficial for educational purposes?
2. H2 Information system acceptance:
   H2.1 Do students accept the designed digital information system?
   H2.2 How well is the quality of the information system?

Research design

This study will employ quasi-experimental research design and questionnaire survey. Students will divide into small teams with five or six students per team, and they can choose their own partners. The game has six stages, each stage has different tasks. All students will work on the same tasks. The game will take place at Taipei city Hakka cultural park and the process will take about two hours. After the end of the game, students have to finish the questionnaire. The questionnaire will be in a quantitative manner. It tries to investigate students' game satisfaction and information system acceptance.

Data collection

Questionnaire will be given to the students after the game finished. A Likert scale will be applied to gather student's feedback. Table 2 provides some examples of the survey questions for the game satisfaction; and Table 3 provides some sample questions for information system acceptance.

Table 2 Sample Survey Questions for Game Satisfaction

	Factor	Questions
1.	Challenge	I consider this set of games is challenging.
2.	Curiosity	I am curious about the content of game stages.
3.	Practice and drills	I am interested in operate the game.
4.	Immediate feedback	Through the game-based learning, I can answer questions immediately.
5.	Experiential learning	I am interested in the experiential learning of the game.

Table 3 Sample Survey Questions for Information System Acceptance

1.	Information Quality	Assessment of the information system output, contains:	
		Integrity	I think the system had output for complete information.
		Timeliness	I think the system had output the information timely.
		Relevance	I think the system had output for relevance information.
		Clarity	I think the system had output the information clearly.
2.	System Quality	Assessment of the information system itself, contains:	
		Learn easily	I think the system is easy to learn.
		Operate easily	I think the system is easy to operate.
		System correctness	I think use this system in learning is correct.
		System response time	I am satisfied with the response time of this system
3.	Use	Assessment of user information systems used in the case, contains:	
		Voluntariness of Use	I am voluntarily to use this information system.
		Recurring Use	I want to use this information system again
4.	User Satisfaction	Assessment of user reaction to information system output, contains:	
		Software Satisfaction	I'm satisfied with the software of this system.
		Information Satisfaction	I'm satisfied with the information of this system.
		Overall Satisfaction	I'm satisfied with the whole of this system.

It is also interesting to know if the students have learned Hakka cultural knowledge or not after the gaming process. Therefore, there will also be a quiz in accordance with the stages' content of the game to evaluate student's learning achievement. This could help verify the educational functions of the game.

4. Potential applications

The mobile game-based learning could make a monotonous culture recognition trip more interesting. This study intends to use Hakka culture as teaching materials to explore the student satisfaction and information technology acceptance. We expect that positive feedbacks will be obtained from both teachers and students. This would help further extensive investigations into technology-supported Hakka culture recognition strategy design therefore the unique Hakka traditional culture will be learned and preserved in a more jubilant manner.

Acknowledgements

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