

# Design and Practice of Digital Value-Added in Jiaosi Hot Spring Tourism Industry

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With an aim to promote the digital value-added design of local tourism, the study adopted Skilbeck's situational model to examine the promotion of local tourism through a digital value-added approach and integrated the design of APP: Tour Guide for Jiaoxi Hot Spring into the Study of Technology and Applications of Mobile Services and Augmented Reality for Cultural and Creative Industry and Tourism in Yilan. Through the development and demonstration of design, students are allowed to build and enhance their capacity for integration in addition to fulfilling university social responsibility (USR). The study found that students used different methods in each phase to continuously absorb knowledge and discover problems and then propose creative solutions based on facts. By creating a mental map, students pondered promoting local tourism via digital value-added design and came up with a strategy of hot spring + primary industry (agriculture + aquaculture) tours, which integrated local gourmet, hot springs, religion, and the hot spring museum. Three routes are designed, namely Route 1: Hot Spring Park + Aquaculture, Route 2: Tangweigou Hot Spring Park, and Route 3: Jiaoxi Old Street to make up the gap in the unilateral marketing of Jiaoxi Hot Spring. The study will further promote location-based services of the APP to fulfill the technology and applications of mobile services and augmented reality for local tourism.

*Keywords:* Jiaoxi Hot Spring, APP, design, situational model, university social responsibility

## Preface

### Motivation

Jiaoxi boasts the world's rare lowland hot springs. Foot spa areas and public pools are available free of charge on streets or in parks. 24-hour public pools (for males and females separately) are also offered. Going to hot springs is the culture of residents in Jiaoxi and one of the must-visit attractions for visitors. It is unique to stay at the home of hot springs, where visitors may enjoy local food in the old street, take a walk in the hot spring park, and have a foot spa while tasting ramen. Developed in the Japanese colonial period, Jiaoxi Hot Spring has evolved with time and transformed from the wine stalls to tourism. With large-scale investment in hot spring resorts that results in the rise in house prices, inauguration of Freeway 5, and a variety of ecological landscapes, Jiaoxi has attracted tourists at home and abroad, making it one of the top ten tourist towns in Taiwan.

### Purpose

Yilan County Government's policy is to promote cultural tourism and Jiaoxi Hot Spring is the core of development. Integrating the design of APP: Tour Guide for Jiaoxi Hot Spring into the Study of Technology

and Applications of Mobile Services and Augmented Reality for Cultural and Creative Industry and Tourism in Yilan, the study aims to discover the characteristics of Jiaoxi Hot Spring and combine the digital value-added concept based on Skilbeck's situational model to design the APP that promotes tourism in Jiaoxi. After building local knowledge through lectures and data analysis, the study adopted the field survey, questionnaire, and in-depth interviews to build the first-hand data and identified problems with regard to marketing of Jiaoxi Hot Spring, and ultimately proposed the design of APP: Tour Guide for Jiaoxi Hot Spring based on the problems identified.

## Literature Review

### Tourism Image

Dichter (1985) believed that an image is cognitive and emotional satisfaction, an overall impression of an entity in a personal mind, and not just formed by a single feature; images are not just objective data or details but formed by a variety of different dimensions. Thus, an image is an attitude or a concept covering diverse dimensions. People often make different decisions because of different images. Visitors' overall impression of the tourist area consists of functional and psychological characteristics. The destination image is a belief, idea, or impression of a place (Clawson & Knetsch, 1966), while travel is phased experience consisting of pre-travel, during travel, and post-travel. Part of the factors that affect travelers' decision-making on tourist destination is tourism image (Crompton & Ankomah, 1993; Gartner, 1989). Visitors may be attracted by tourism images ranging from history, culture, geography to ecology, areas (Briedenhann & Wickens, 2004).

### Endogenous Development and External Development

Endogenous development first appeared in the special economic association of Swedish Dag Hammarskjöld in 1957. Proposed by Kazuko Tsurumi (1996), endogenous development is self-invented development that is based on the local cultures and traditions as well as external knowledge, skills, and systems and suitable for the original ecosystem. Endogenous development focuses on diverse values developed based on the local traditions and cultures and aims to satisfy area-based desire and find the possibility of human nature. Takehiko Hobo (1996) emphasized that endogenous development is to respect the diversified society embedded with different religions, history, cultures and areas.

Table 1

#### *Comparison Between External Development and Endogenous Development*

Theory	External development	Endogenous development
Plan	Government-led plan	Independent plan
Process	Single	Multiple
Approach	Large-scale development plan	Area-based plan
Purpose	Economic development at national level	Regional development

*Note.* Source: Matsumiya Ashita, 2007.

External development is an economic structure which is formed without respect to existing cultures and introduces new technology and depends excessively on foreign capital (national subsidies), technology and theory (Miyamoto Kenichi, 1989). According to Table 1, external development involves single process and large-scale development for the purpose of achieving economic policies at national level; in contrast, Ashita Matsumiya (2007) pointed out that endogenous development is led by residents based on regional cultures and

resources at regional level. Due to economic development, Jiaoxi is segmented into commercial and agricultural areas. As hot springs have high economic value, the local government opens up external funds, leading to excess development of upscale resorts and hotels, decreases in hot spring temperature, and population migration.

### Design of APP: Tour Guide for Jiaoxi Hot Spring

The situational model proposed by Skilbeck (1982) refers to the curricular design and development in the social and cultural structure, where school teachers improve and transform their experience by providing students with an opportunity to understand social and cultural values and interpret structures and symbolic systems. The situational model also emphasizes that every curriculum is experience in interaction and communication between teachers, students and the environment and that teaching and learning is the process of experience exchange between teachers and students and changes in students' capacity. Instead of setting approaches and purposes first, the situational model encourages curriculum planners to consider different elements and aspects of curriculum development and their special connotation, regard the process as an organic whole, and ultimately determine based on a wider cultural and social discussion (Huang, 1984; Taylor & Richards, 1979).

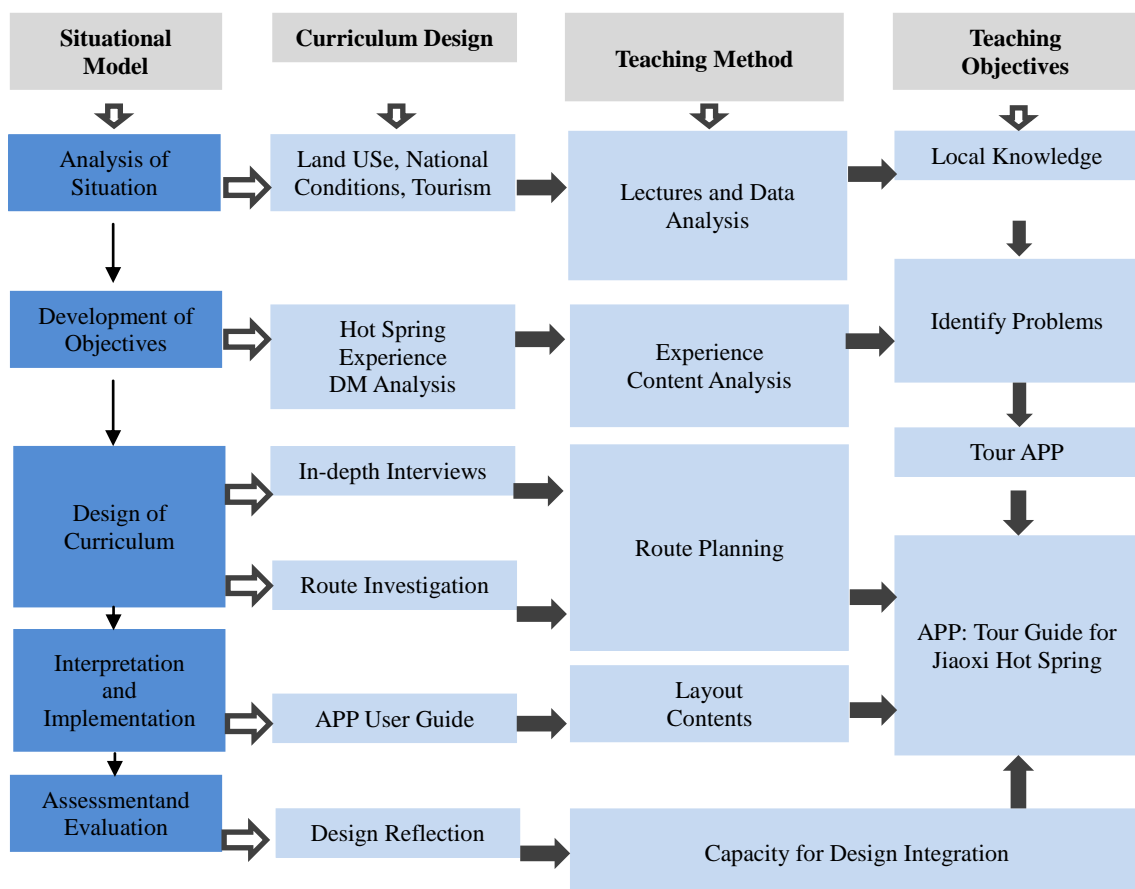


Figure 1. Application of Skilbeck's situational model to design of APP: Tour guide for Jiaoxi Hot Spring.

The study carried out teaching activities outside regular class time. Participants included 3 graduates and 6 undergraduates. Based on the five components of Skilbeck's situational model, namely analysis of situation,

development of objectives, design of curriculum, interpretation and implementation, and assessment and evaluation, the study took up the design of APP: Tour Guide for Jiaoxi Hot Spring (see Figure 1). In the analysis of situation, teachers lectured on social changes and customs and industrial transformation related to Jiaoxi Hot Spring and guided students to identify problems from related data; the development of objectives focused on Jiaoxi experience, identification of problems, knowledge-seeking methods, and participation in problem-solving cooperation; in the design of curriculum, first-hand information was obtained through field survey, questionnaire and in-depth interviews; in the interpretation and implementation, graphic and layout design for the APP were carried out; in the assessment and evaluation, teachers and students reflected on the APP: Tour Guide for Jiaoxi Hot Spring to sum up the students' capacity for design integration.

### **Analysis of Situation**

The study explored the impact of hot springs on land use, natural conditions, and tourism in Jiaoxi in three aspects, namely development of hot springs, development of the commercial area, and development of agriculture and aquaculture and built local knowledge and identified problems and needs, and further found out measures to respond to problems and needs.

**Development of Jiaoxi Hot Spring.** Developed in rare plains, Jiaoxi Hot Spring is a unique resource in Yilan County. Originating from abundant groundwater of Lanyang Plain, Jiaoxi Hot Spring is 5m - 7m below the ground. Consisting of  $\text{NaHCO}_3$ , Jiaoxi Hot Spring is also known as beauty springs, which is the key to the formation of the hot spring industry. Hot springs are located at Jiaoxi Station within a radius of 1 km with the area of 80 hectares. Discovered by Wu Sha in the 40th year during the reign of Qianlong Emperor in the Qing dynasty (1775), hot springs were fenced for bathing; in the Japanese colonial period (after 1895), Japanese built hot spring hotels for commercial uses. After retrocession (1945), the hotel industry flourished. Jiaoxi Hotel was founded in 1970s to serve customers with wine and entertainment in company with waitresses. After Taipei City Government abolished prostitution in Beitou in 1979, wine stalls and hot spring hotels designed for businessmen were popular in Jiaoxi. After 1990s, wine stalls waned gradually due to the migration of small and medium enterprises. With political and economic development, implementation of two-day weekends, and the inauguration of Freeway 5, Jiaoxi Hot Spring has transformed itself into a leisure and tourist attraction.

**Development of the commercial area in Jiaoxi.** In 1973, the urban planning of Jiaoxi was promulgated for implementation with the west hot spring area classified as the commercial, residential, and hotel area and the east hot spring area classified as the agricultural area. Since the inauguration of Hotel Royal Chiaohsi in May 2005, more consortiums have invested in hotels in Jiaoxi. In 2014, there were 6 hotels under construction; in 2015, additional 600 rooms were offered. A large hotel is expected to open in 2017. Excess development of external investors has seriously affected the operation of traditional hot spring hotels. According to the statistics compiled by Yilan County Government with regard to house prices and population (2006-2015) and hot spring temperature (2012-2014) (Figure 2), the price of suites at Jiaoxi Hot Spring was NT\$600,000/ping in 2015, three times the price of town houses in the non-hot spring area. During the decade (2006-2015), house prices in hot spring area have risen by 6 times. Although the number of houses was increased by 1,816, the population was decreased by 235. From 2012 to 2014, the hot spring temperature was reduced by 6°C. According to the interviews, the cultural and economic benefits of 13-year Jiaoxi Hot Spring Festival since December 2003 were not as expected due to (1) the unclear conception cause by frequent changes in organizers and (2) different positions between the traditional hot spring association and hotels built by external funds.

**Development of agriculture and aquaculture at Jiaoxi Hot Spring.** In the agriculture and aquaculture area, the farmers' association guided local farmers to improve farming and aquaculture through hot springs: (1) vegetables: Vegetables were grown at the most suitable temperature of 22°C-33°C and available in four seasons. Water spinach, loofah, and water shoots were grown in March - November, April - October, and September - November respectively and sold by fruit and vegetable companies in Taipei; tomatoes were grown in January - April and sold by home delivery; (2) rice: The cultivable area of Jiaoxi Township is about 3,000 hectares, including 1,400 hectares of paddy fields, and suitable for quality rice planting based on the planning of Hualien District Agricultural Research and Extension Station. Rice is divided into three varieties, namely hot spring rice, hot spring jasmine rice and organic rice; (3) water: Due to the northeast monsoon in winter, the aquaculture industry in Jiaoxi set the temperature at 30°C constantly to accelerate the growth and reproduction of soft-shelled turtles and tropical fish; (4) mineral water: rich in sodium, magnesium, calcium, potassium, and carbonate ions, Jiaoxi Hot Spring is transparent, colorless and tasteless and drinkable after being treated. Mineral water made of hot springs can calm nerves, dilate blood vessels, facilitate longevity, and cure illnesses and is sold domestically and internationally.

According to reflection on external development and endogenous development, problems identified included excess development of consortiums. What did it bring to Jiaoxi? Did it lead to increases in land and house prices, job opportunities, or local prosperity? Did visitors prefer traveling in Jiaoxi? How did the agriculture and aquaculture industry grow area-based knowledge of hot spring agriculture using the characteristics of Jiaoxi Hot Spring?

### **Development of Objectives**

To understand tourism-related problems and needs of Jiaoxi Hot Spring, the study analyzed DMs promoted by Jiaoxi Township Office and conducted the questionnaire to identify travelers' intentions to travel in Jiaoxi.

**Analysis of DMs.** To promote tourism in Yilan County and Jiaoxi Township, Jiaoxi Township Office published multiple versions of DMs, including a leaflet containing a stroll map (30cm\*21cm) and a leaflet featuring the home of Jiaoxi Hot Spring (70cm\*42cm) both published in July 2016. The stroll map covers 12 attractions near Jiaoxi Hot Spring Park and Tangweigou Hot Spring Park. Inside Jiaoxi Hot Spring Park are a swimming pool, a visitor center, and a theater. Yushi Public Pool, Japanese dorms of Jiaoxi Station, Luodong Forest District Office, and Jiaoxi Public Square are also nearby. Attractions near Tangweigou Hot Spring Park include Tangweigou Park, Japanese dorms of Bank of Taiwan Training Center, SieTian Temple, Piazza, and the multi-storey car park. There 12 attractions are under the jurisdiction of Jiaoxi Township Office.

As a 14-page leaflet printed on both sides, the home of Jiaoxi Hot Spring introduces the attractions of Jiaoxi, including Taiwan Tourist Shuttle Jiaoxi Route, Marian Hiking Trail, Linmei Shihpan Trail, Paoma Historic Trail, Longtan Lake, Dezikou Creek Bike Path, and Wufengchi Waterfalls. Attractions in downtown include Tangweigou Hot Spring Park and SieTian Temple. FoGuang University and Tamkang University Lanyang Campus are also located here. However, the leaflet does not cover hot spring agriculture and aquaculture businesses, souvenir shops or local gourmet. Attractions, scenes, historical buildings and natural landscapes in Jiaoxi Township were only promoted through DMs published by Jiaoxi Township Office under its jurisdiction from the perspective of a public sector.

**Characteristics of Jiaoxi.** Benefiting by hot springs, Jiaoxi is segmented into the agricultural area and commercial area. Due to a large amount of external investment, large hotels have been established in the commercial area. Promoted as one of the top ten tourist towns in Taiwan, Jiaoxi attracts lots of tourists at home and abroad. Attractions, historical buildings, and natural landscapes under the jurisdiction of Jiaoxi Township Office are highlights. To clarify the characteristics which attract visitors to travel in Jiaoxi, the study conducted the questionnaire containing the following: (1) How many times have you been to Jiaoxi as of today? What is your purpose of traveling to Jiaoxi today? (3) What is your means of transportation today? (4) What do you think are the reasons for attracting tourists to travel in Jiaoxi? (5) How many people travelled with you today? The questionnaire was conducted at Tangweigou Hot Spring Park from June 17 (Friday) to June 20 (Monday), 2016.

Among 100 valid questionnaires, 58%, 3%, 10%, and 12% of the respondents have been to Jiaoxi for 5 times or more, 4 times, three times, and twice respectively, showing a high revisiting rate. 17% of the respondents visited Jiaoxi for the first time, while 83% of the respondents revisited Jiaoxi and were familiar with the destination.

In terms of the purpose of traveling in Jiaoxi, the total number of questions answered is 231 with an average number of 2.31/person. Main purposes included going to a hot spring (51.7%), followed by gatherings (30.8%), appreciating landscapes (30.8%) and tasting local gourmet (25.0%). As the derivative service in the hot spring area, SPA (15.0%) has become one of the destinations in Jiaoxi. Although many hotels have been established in the hot spring area in recent years, only less than 1% of the respondents travelled in Jiaoxi for staying at hot spring hotels (9.2%). None of the respondents ticked the item "Sports".

In terms of the reasons for attracting tourists to travel in Jiaoxi, the total number of questions answered is 265 with an average number of 2.65/person. Main reasons included going to a hot spring (80.8%), followed by visiting famous tourist sites (39.2%) and tasting local gourmet (38.3%). Thus, "going to a hot spring" is the main reason attracting tourists to travel in Jiaoxi, while "staying at hot spring hotels" is not the main purpose or main reason for attracting tourists to travel in Jiaoxi. Most of the respondents traveled to Jiaoxi by car (69%) or by bus (15%). Travelers usually visited Jiaoxi with their families or friends.

According to the questionnaire, the main purposes of traveling in Jiaoxi included going to a hot spring, gatherings, appreciating landscapes, and tasting local gourmet; the main reasons for attracting tourists to travel in Jiaoxi included going to a hot spring, visiting famous tourist sites, and tasting local gourmet. When comparing hot springs, tourist sites and local gourmet with the stroll map and the home of Jiaoxi Hot Spring, the study found that the introduction of tourist sites in Jiaoxi was the most detailed. Surrounding attractions related to hot springs, the agriculture and aquaculture industry, and even local gourmet were not promoted. How to effectively promote surrounding attractions related to hot springs, the agriculture and aquaculture industry, and even local gourmet becomes the top priority.

**Design of Curriculum.** David Bridges (1979) thought that the most important step in the design of curriculum is to decide on social and cultural materials and pass them down. Denis Lawton (1989) clearly pointed out that curriculums specifically demonstrate knowledge, languages, technology, tools, values and thinking that can be passed down to the next generation. Through field survey, in-depth interviews, and experience and participation in hot springs, the study gradually built local awareness and focused on the promotion of local tourism by agriculture and fisheries and hot springs. According to the flowchart in Figure 1, in the design of curriculum, the study investigated into the three routes and their surroundings, namely Jiaoxi

Hot Spring Park, Tangweigou Hot Spring Park and Jiaoxi Old Street and carried out the in-depth interviews with eight respondents from Jiaoxi Farmers' Association, Jiaoxi Township Office, Qing CheYou You Company, and representatives of the hot spring agriculture and aquaculture industry to further discuss how to promote in-depth hot spring tours and local gourmet. The field survey found that Jiaoxi Hot Spring Park and the hot spring agriculture and aquaculture industry are close and may be integrated into one route; Tangweigou Hot Spring Park is located downtown with various shops; Jiaoxi Old Street features traditional snacks. These three routes have different features and present cultures, landscapes, and industries in Jiaoxi. Thus, the design is named APP: Tour Guide for Jiaoxi Hot Spring, which is different from DMs promoted by Jiaoxi Township Office with the focus on the introduction of famous tourist sites.

### Interpretation and Implementation

**Planning of APP: Tour Guide for Jiaoxi Hot Spring.** APP: Tour Guide for Jiaoxi Hot Spring (Figure 2- Figure 6) was planned in cooperation with L-instyle Boutique Travel Services to demonstrate industries, cultures, and local gourmet of Jiaoxi. The study investigated into the attractions and private spots like Jiaoxi Hot Spring Park, Tangweigou Park and Jiaoxi Old Street as well as local snacks and shops and ultimately planned the following three routes departing from Jiaoxi Station or Jiaoxi Transfer Station: Route 1 Jiaoxi Hot Spring Park, Route 2 Tangweigou Hot Spring Park, and Route 3 Jiaoxi Old Street. The layout of the APP includes the cover page of APP: Tour Guide for Jiaoxi Hot Spring, the menu containing three routes, and the introduction of 28 attractions and local snacks and shops. After these routes are tested and confirmed, the APP will be launched for travelers in Jiaoxi.



Figure 2. APP Cover.



Figure 3. Route Menu.



Figure 4. Route Map.



Figure 5. Route 1 Attractions.



Figure 6. Understand Hot Spring agriculture.

Route 1 Jiaoxi Hot Spring Park is the combination of the hot spring park and the hot spring agriculture. The hot spring agricultural area is on the east side of Jiaoxi Transfer Station and produces different vegetables in different seasons, including tomatoes (January - April), spinach (March - November), loofah (September - November), water shoots (April - October) and rice. In addition to vegetables, there is an aquaculture area for soft-shelled turtles. Jiaoxi Hot Spring Park is on the west side of Jiaoxi Transfer Station with the area of 10 hectares. Inside the park are a visitor center, a free foot spa area, 24-hour public pools, and a performance stage. The 24-hour public pools are divided into a male pool and a female pool. Near the park is Yushi Public Pool,



which is one of the few free public pools in Jiaoxi. At the entrance of the park, LeShan Ramen House 2 allows customers to enjoy ramen and foot spa at the same time.

Route 2 Tangweigou Hot Spring Park is located downtown and surrounded by hot spring hotels and shops. Route 2 introduces public pools, local snacks, cultural and creative shops, and blind massage shops near Tangweigou Hot Spring Park. Tangwei bath houses are divided into male bath houses and female bath houses with a free public pool; Spring Hotel is located at the source of hot springs and thus attracts the locals; Yuqing Public Pool is one of the early hot spring pools, so buildings and facilities are relatively old. Route 2 also features a variety of food at affordable prices, such as stir-fried food, duck cuisine, and seafood.

Route 3 Jiaoxi Old Street ranges from Deyang Temple to SieTian Temple and features temples, local snacks and JiaosiTownlan Mall. Major temples include Deyang Temple and SieTian Temple, which are the religious centers of local residents; local snacks are eight-treasure glass noodles, meat soup, rice noodles with fish balls, egg toast, Ke'sscallion pancake, and meat buns; JiaosiTownlan Mall exhibits agricultural features of Jiaoxi Hot Spring and DIY activities.

**Interpretation of knowledge of the hot spring agriculture and aquaculture industry through the APP.** As to the promotion of the hot spring agriculture and aquaculture industry, the study conducted the interviews with Jiaoxi Farmers' Association, vegetable growers, and soft-shelled turtle breeders and found that the agricultural and aquaculture area does not directly link with tourism. Visitors only purchased seasonal vegetables along Provisional Highway 9. As visitors lacked understanding and knowledge of lowland hot springs and industrial applications, they suspected that vegetables grown by Jiaoxi Hot Spring were false. Through interviews, the study obtained knowledge of the hot spring agriculture. For example, water shoots are grown by hot spring paddy fields; tomatoes and loofah are grown in soil through which hot springs pass; soft-shelled-turtles are bred at the suitable temperature of hot springs to shorten the breeding time and improve quality. With the design of the APP, the above knowledge of the hot spring agriculture industry can be promoted.

**User guide of the APP.** The study carried out the open interviews with users of APP: Tour Guide for Jiaoxi Hot Spring during Jiaoxi Hot Spring Festival 2016 (from December 3, 2016 to January 1, 2017) to examine the design of APP: Tour Guide for Jiaoxi Hot Spring. First, APP: Tour Guide for Jiaoxi Hot Spring was downloaded with the consent of Android users to navigate Route 2. Among 120 users, 82.5% of the users were familiar with the APP and thought that (1) it is easy to operate APP: Tour Guide for Jiaoxi Hot Spring; that (2) it is easy to arrive at the destination using the APP; and that (3) they are willing to use APP: Tour Guide for Jiaoxi Hot Spring for the second time. The respondents also commented that the APP could add more functions, such as special offers, GOOGLE MAP, price lists, and calling a taxi, to respond to consumers' needs of local tourist services.

**Assessment and evaluation.** The study adopted Skilbeck's situational model to examine the promotion of local tourism through digital value-added design of APP: Tour Guide for Jiaoxi Hot Spring for the purposes of building students' capacity for design integration and fulfilling the university social responsibility. Facing the improvement in local tourism, the study built local knowledge, identified problems and determined solutions based on a digital value-added approach. In the phase of reflection, students examined their learning process of design through a mental map and built the capacity for design integration.

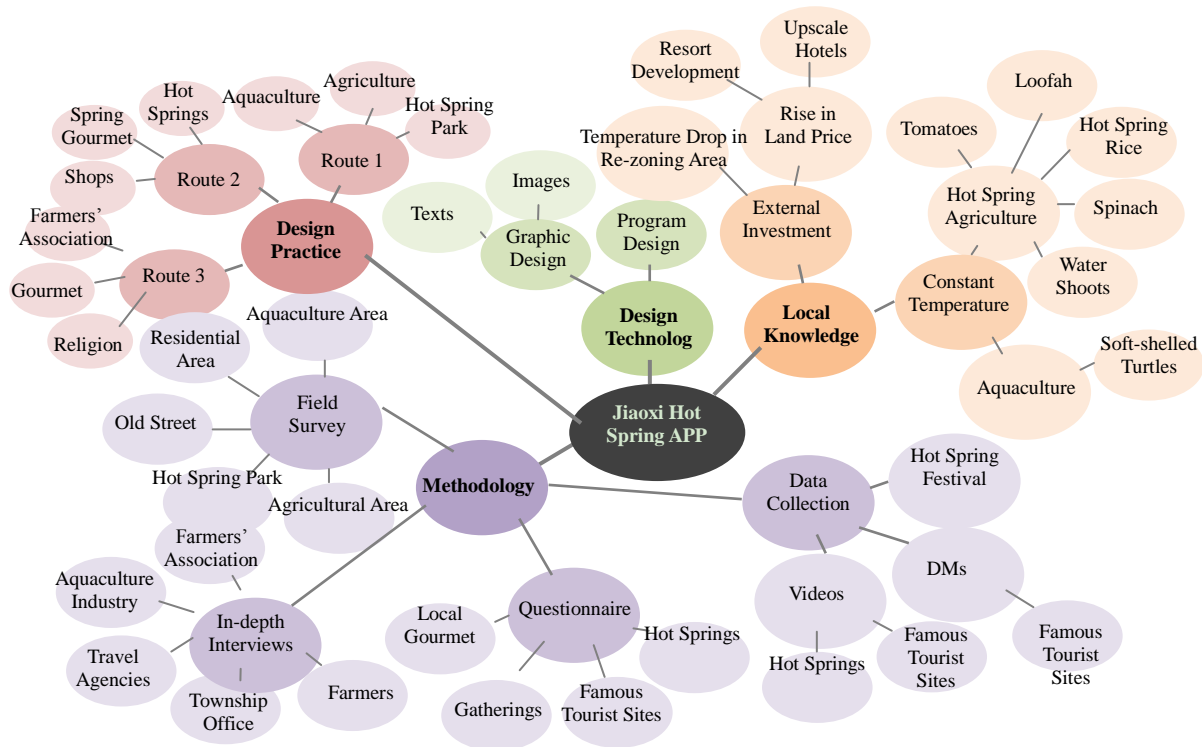


Figure 7. The mental map of Jiaoxi Hot Spring APP.

According to the Figure 7, hot springs + famous tourist spots are the most common in all kinds of advertising, but the promotion of local tourism in Jiaoxi through hot springs + primary industry (agriculture + aquaculture) has never been mentioned. In addition, many respondents agreed that only few people knew that Jiaoxi Hot Spring could promote the agriculture and aquaculture industry. Local gourmet, hot spring landscapes, religion, and the hot spring museum have not been integrated. These three routes, namely Route 1 Hot Spring Park and Hot Spring Agriculture, Route 2 Tangweigou Hot Spring Park, and Route 3 Jiaoxi Old Street just make up this gap.

### Conclusion and Recommendation

#### Conclusion

The study adopted Skilbeck’s situational model to examine the promotion of local tourism through digital value-added design of APP: Tour Guide for Jiaoxi Hot Spring for the purposes. The five components of Skilbeck’s situational model are described separately as follows:

(1) In the analysis of situation, local knowledge was built in lectures. The results of data analysis showed that Jiaoxi Township Office focused on the promotion of famous tourist sites, which drove the study to reflect on the travelers’ opinions on the image of Jiaoxi Hot Spring and their needs.

(2) In the development of objectives, the study analyzed DMs and conducted the questionnaire to confirm the characteristics of Jiaoxi from travelers’ perspectives and aimed to develop the user guide of the APP.

(3) In the design of curriculum, the study conducted the field survey and in-depth interviews to investigate into the hot spring industry and promote local tourism, so as to complete the design of APP: Tour Guide for Jiaoxi Hot Spring.

(4) In interpretation and implementation, the study completed the APP: Tour Guide for Jiaoxi Hot Spring covering Jiaoxi Hot Spring Park and Hot Spring Agriculture and Aquaculture, Tangweigou Hot Spring Park, and Jiaoxi Old Street. These three routes integrated cultures, landscapes and industries of Jiaoxi. From the process and feedback of the operation of APP: Tour Guide for Jiaoxi Hot Spring, the study found that a technology-based service model was strongly accepted and needed by travelers.

(5) In assessment and evaluation, students used a mental map to reflect on the promotion of local tourism through a digital value-added approach. The study came up with a strategy of hot spring + primary industry (agriculture + aquaculture) tours, which integrated local gourmet, hot springs, religion, and the hot spring museum. Three routes are designed, namely Route 1: Hot Spring Park + Aquaculture, Route 2: Tangweigou Hot Spring Park, and Route 3: Jiaoxi Old Street to make up the gap in the unilateral marketing of Jiaoxi Hot Spring.

### Recommendation

The APP: Tour Guide for Jiaoxi Hot Spring developed by the study was integrated into the Study of Technology and Applications of Mobile Services and Augmented Reality for Cultural and Creative Industry and Tourism in Yilan to fulfill the social responsibility of higher education. In addition to elaborating the agriculture and aquaculture industry in Jiaoxi through development of local knowledge, collection and comparison of literature, identification and analysis of first-hand data, and determination of natural conditions, students designed three routes featuring different themes to improve cultural tourism in Jiaoxi. The study will further promote location-based services of the APP to fulfill the technology and applications of mobile services and augmented reality for local tourism. In addition, a lot of land was used for development of five-star hot spring resorts and hotels in downtown Jiaoxi, but it was not one of the characteristics that attracted tourists to travel in Jiaoxi. This question deserves further discussion over the impact of endogenous development and external development on Jiaoxi Hot Spring.

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