Enjoying Cultural Heritage Experiences as Informal Learning through User’s Nationality Context-Awareness

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ABSTRACT
Developing effective and easy-to-follow learning guide models for supporting user to enjoy a deep cultural experiences become an important issue for cultural heritage context-aware ubiquitous learning. Therefore, in order to motivate learners for enjoyable learning, interactive tasks and elements are highly needed. Cultural heritage as a place which has a varied collection of the cultural objects history opens widespread curiosity for learning in an informal way. A visitor as a learner of the cultural heritage objects might come from local or international communities. This study, the authors investigate how to explore cultural experiences of the visitor outside the community by adapting nationality based context and propose an informal learning scenario which implements learning tasks with interactive elements. For assessment, we propose a summative approach for using multiple choice questions (MCQ) to let the learner know his accomplishment achievement. Our goal is to guide the visitor to learn in an informal way the historical relationship between the cultural heritage and the visitor’s country.

KEYWORDS
Cultural heritage, nationality based context-aware, user’s interests, informal learning scenario, summative assessment

1 INTRODUCTION
The growth of the internet during the past couple of decades, allowing us to learn cultural objects without time and space limitation. Accompanied by increasing of travel accessibility, there are a widespread curiosity and a huge demand to visit cultural heritage for acquiring cultural heritage experiences. Cultural heritage is a place which represents a varied collection of the cultural objects history. Cultural heritage is also a place for learning. This type of learning is categorized as informal learning. Visitors can learn about the history of the cultural heritage in a more relaxing and less threatening way due to is conducted outside the curriculum. However, people tend to disengage the learning activities if they consider it is uninteresting. Therefore, we should consider enjoyment as a prominent factor in informal learning to stimulate visitor’s motivation [19]. Presenting interactive and easy-to-follow learning tasks by involving individual’s perception, such nationality might encourage a learner to engage the cultural heritage learning process. The enhancement of mobile and wireless technology opens a possibility to develop methodologies and tools for cultural heritage learning via mobile devices without being limited by space and time. Hence, the development of methodologies and tools are an important issue in the learning works [10].

To utilize this situation, we have proposed a context-aware UML-based framework for providing information of cultural heritage which suitable to the user needs [3]. Our motivation is to serve users with cultural information according to their needs. The system provides an interactive interface to assist the user in selecting his/her cultural heritage interests and presents maps and figures with texts as its outputs. However, the interactive elements for learning support, which is enabling to motivate user enjoys a deep cultural experience is missing. A user as a visitor of cultural her-
itage might come from a local visitor or foreign visitor. We have an assumption that the people tend to be interested in the entity which relates to their own personality such nationality. For example, in Dazaifu city area in Fukuoka-Japan, a visitor from China which has an interest in landscape category might be attracted to visit Zen garden or Dry landscape, a garden which largely adopted from the Chinese gardens of the Song Dynasty, and the rocks groups symbolized Mount Penglai, the legendary mountain-island home of the Eight Immortals in Chinese mythology, known in Japanese as Horai [14]. This example motivates us to support visitor both in self-directed and incidental learning for cultural heritage not only based on his/her interests, but also based on his/her nationality. In this study, we adapt nationality-based context and create a scenario to assist the visitor for acquiring cultural heritage experiences. To evaluate learner activities in cultural heritage learning, we propose the summative assessment approach by presenting multiple choice question (MCQ).

2 INFORMAL LEARNING

Informal learning is a type of learning activity which taken outside the curriculum of formal educational institutions and programs and heavily rely on intrinsic motivation [7]. In informal learning, the learner has more opportunities for self-directed learning than formal setting. It means if the learner meets uninteresting learning activity, he/she will simply disengage or seek other activities. By disengaging this activity, the learner does not worry about the consequence of obtaining such a poor grade like in formal setting [11]. There are three forms of informal learning which proposed by [8], as seen in table 1.

<table>
<thead>
<tr>
<th>Form</th>
<th>Intentionality</th>
<th>Awareness</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Directed</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Incidental</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Socialization</td>
<td>No</td>
<td>No</td>
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</tbody>
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Self-directed learning is a process where the learner has the initiative to involve in the learning activities even before the process begins, and the learner is aware that he/she has learned something. Thus, it is intentional and conscious. For instance, a visitor decided to know more about some specific cultural objects and come to visit the objects. The incidental learning is a process when the learner did not have any previous intention of learning something out of that experience, but after the experience, he/she becomes aware that some learning has taken place. Thus, it is unintentional, but conscious. For instance, a visitor encounters a cultural object and after that he/she immediately learned about the object.

Socialization or tacit learning is a process during everyday life which refer to the internalization of values, attitudes, behaviors, skills, etc. This is unintentional because the learner does not have a priori intention of acquiring them, and he/she also not aware has learned something. For instance, a visitor who visited a place for several weeks is unintentionally and unconsciously heard and learned the local language from people speak activities.

One way to attract user's attention is creating and maintaining a well-designed scenario with interactive tasks and elements. According to the Council of Europe [5], there are nine indicators to explore the cultural objects, i.e.: name and source, location, function type, historic date, people and organizations, materials and techniques, current condition, legal status, and notes/summary of the cultural object. We consider that these indicators are useful for designing the scenario of cultural heritage informal learning. In this study, we invent yes-no questions based on the aforementioned indicators to simplify user in exploring the matters related to the cultural object.

3 NATIONALITY BASED CONTEXT-AWARE

According to [2], context can be defined as "any information that can be used to characterise the situation of an entity". The entity could be a person, place, or object which con-
sidered relevant for user-application interactions, including the user and applications themselves. If the application uses context to provide and serve the user with relevant information according to the user’s task, then it is defined as context-aware.

In this paper, our application uses context to provide information for the visitor as a learner where the authority depends on the user. The visitors categorized are mapped into three dimensions, i.e. domain expertise, technical expertise and motivation [9]. Based on the motivation dimension, the main reason to visit cultural heritage object is curiosity about the history of the cultural object.

Most studies focus on technical tools and social aspects of digital cultural heritage development. However, only a few empirical research are investigated in user’s perceive, experiences, and interacts with locational content to build a community heritage[13].

Previous study [13] investigated the ability of their application Lost State College (LSC) to explore user interactions and experiences of historical places, to evoke historical awareness in the local community. The study involved 34 local residents as participants. However, the visitors of the cultural object might come from the international community, not only the local community. This cognitive perspective opens an opportunity of how to attract visitors outside the community.

According to [4], a ‘real’ and educational of cultural experiences will attract tourist/visitor interests. Therefore, it is important to determine the similarities and differences of motivations and interests among tourist groups. Cultural identity or cultural background is the identity or feeling of belonging to a group. It is part of a person’s self-conception and self-perception and it is related to nationality, ethnicity, religion, social class, generation, locality or any kind of social group that has its own distinct culture. In other words, cultural characteristic of visitor plays a role in tourist motivation and tourist behavior. Hence, it is vital to observe visitation patterns to places where cultural objects are presented [6].

Poria et.al found the link between tourist and heritage object, which namely tourists’ perception [20]. It is the perception that the cultural object has a relation to their own heritage. Based on this viewpoint, we argue that nationality context which is a part of tourist individual-perception might be involve to attract the visitor outside the community-host in learning the visited cultural object. Our approach purposes to help learners improve their cultural experiences regarding of the country which being visited, and also improve learner’s knowledge in terms of its historical relationship between learner’s country. We have an expectation that the cultural experiences, indirectly will evoke learners’ nationalism, and enhance their respects to the culture of the other country.

4 THE NATIONALITY-BASED SCENARIO OF CULTURAL HERITAGE LEARNING

The scenario-based design is a popular tool for human-computer interaction. Scenarios are at once concrete and flexible, helping developers manage the fluidity of design situations. Scenarios emphasize the context of work in the real world; this ensures that design ideas are constantly evaluated in the context of real world activities, minimizing the risk of introducing features that satisfy other external constraints [15].

In our previous work, we have proposed nine categories of cultural heritage, i.e: artifacts and monument, buildings, shrine, work of art, folklore, traditions, language and knowledge, landscapes, and biodiversity [3]. The visitor can select as many as categories according to his/her interests. Based on the tourist’ perception which is introduced by [20], we have a hypothesis that visitor, especially foreigner visitors will be more motivated to learn the cultural object which has a relationship to their cultural identity, i.e. nationality.

Let us consider this example scenario;

Zhao, a visitor from China, is in the Dazaifu
city, Fukuoka prefecture, Japan. According to the location, there are 8 kinds of 5 categories of cultural heritage found in that area;

1. Komyozenji temple (buildings categories),
2. Kanzeonji temple (buildings categories),
3. Government Office Ruins (buildings categories),
4. Dazaifu Tenmagu (shrine categories),
5. Kamado (shrine categories),
6. Zen garden or Dry landscape (landscape categories),
7. Kyushu National Museum (work of art categories),
8. Onisube (traditions categories)

Suppose he is interested in buildings and landscapes categories, then our system will provide him with two options; learning or just visiting, as seen in Figure 1.

Case 1:
He chooses for learning option, based on his interests (buildings and landscapes categories) and nationality (China). From that option, the system will select 2 of 8 kinds of cultural heritage objects because the objects are related to Chinese culture, i.e.:

1. Komyozenji temple, (buildings categories)
2. Zen garden or Dry landscape, (landscape categories)

Figure 2(a) shows the objects which are selected by the system in terms of their historical relationship with the learner’s country. For instance, Komyozenji temple is selected because it was founded in 1273 during the Kamakura Period of Japanese history by Tetsugyu Enshin (1254-1326), a nobleman of the Sugawara family, who had studied Zen in China [22]. Zen garden is selected because it has a relationship with China’s myth as explained in the introduction section. Furthermore, the system will present yes-no questions to explore learner’s curiosity. If he wants to know more about the cultural object, he can answer ‘yes’, and if does not, he can answer ‘no’. The flowchart of the yes-no questions and the screenshot example are shown in Figure 3 and Figure 4. This case is an example scenario of self-directed learning because he intentionally involves the learning process as a sequel of chosen context for learning.

Case 2:
He chooses for just visiting option, based on his interests (buildings and landscapes categories) and nationality (China). From that option, the system will select 4 of 8 kinds of cultural heritage objects because the objects are selected exclusively based on the visitor’s interests without considering the visitor’s nationality, i.e.:

1. Komyozenji temple, (buildings categories)
2. Kanzeonji temple, (buildings categories)
3. Government Office Ruins, (buildings categories)
4. Zen garden or Dry landscape, (landscapes categories)

In this option, the system will present the summary of the cultural object. This case is an example of incidental learning because he unintentionally involves the learning process. It is defined as unintentional because he does not aim to learn, hence he chooses 'just visiting' context. The screenshot example is shown in Figure 5.

Despite yes-no questions will not appear in this kind of option, the visitor will accidentally engage with the learning process through the display of summary information and the location of the cultural object.

The list of yes-no questions for our informal learning concept is shown as follows:

Q1: Do you want to obtain an address of the location of the cultural?
Q2: Do you want to obtain an explanation of the function of the cultural?
Q3: Do you want to obtain an explanation of the historic date of the cultural?
Q4: Do you want to obtain an explanation about the people and the organizations which are engaged in the cultural?
Q5: Do you want to obtain an explanation of the materials and techniques that have been used in the cultural?
Q6: Do you want to know about the current conditions or the legal status of the cultural?

Furthermore, we could not hinder the fact that there is a possibility that the cultural object is not related to any historical relationship nationality. The system will present an interactive interface, such Figure 2(b) to cope this kind of case and the system will guide the learner to obtain summary information like just visiting option.

5 SUMMATIVE ASSESSMENT BY MULTIPLE CHOICE QUESTIONS (MCQ)

One of the six challenges in evaluating mobile learning is the assessment of learning processes and outcomes [16]. The assessment...
is distinguished into two, i.e. formative and summative assessment [17]. In this study, we propose a summative approach by presenting MCQ as the assessment’s tool to determine learner’s achievement. It is a common belief that MCQ assessment is not a valid means to test the adult learner cognitive skills. However, a carefully designated MCQ test will lead to assess learning even at the highest level of Bloom’s Taxonomy of Educational Objectives [18].

In order to keep up our intention for enjoyable learning and due the learning is conducted outside the curriculum, the assessment will not become a binding rule. However, we have to keep trying to engage a user in this activity by involving a variety of interactions question type such images, texts, and their combinations. Here, we have a bank database of questions which will automatically select in randomly by the system according to the related context. Figure 6 shows the example of assessment activity.

At the end of the assessment, our system will show the score and the amount number of correct answers. Then, we encourage the learner to obtain feedback on incorrect answers via ‘check’ option button. Figure 7 shows the example of feedback of MCQ number 2. The correct answer will represent by blue color.

6 CONCLUSION AND FUTURE WORKS

This study is devoted to designing an interactive scenario based on user’s interests and user’s nationality with the intention to encourage the user to engage the informal learning process. We invented yes-no questions in order to make the user easier to explore deep cultural heritage experiences. We presented MCQ as summative assessment which are accessible by learners if they want to know their learning achievement. Our approach opens a new paradigm that the visitor will able to informally learning other country’s cultures in terms of their relationship with visitor’s nationality. In the future works, we would like to implement...
our model and evaluate its performance by asking the user to fill a questionnaire and writing down the advantages and the disadvantages of the system.

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