Nationality Based Context-Aware Scenario of Cultural Heritage Guidance as Informal Learning

Abdul Kadir Jailani∗ Keijiro Arakiφ Shigeru Kusakabeϕ
Department of Advanced Information Technology
Kyushu University Japan∗φ
Department of Information System
University of Nagasaki Japanϕ
akjailani.dp@gmail.com∗, araki@ait.kyushu-u.ac.jpφ, kusakabe@sun.ac.jpϕ

ABSTRACT
With the objective of supporting user to enjoy a deep cultural experience, interactive learning tasks and elements are highly needed. It would be a good motivation for the user/visitor as a learner for enjoyable learning. In the previous work, we have proposed an adaptive context-aware model based on the user’s interests with Unified Modeling Language (UML) approach to supported cultural heritage information to the user. However, a motivating scenario with interactive learning tasks and elements is missing. Cultural heritage as a place which has a varied collection of the cultural history opens widespread curiosity for learning in an informal way. The visitor 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 task with interactive elements. Our goal is to guide the visitor to learn in informal other country’s cultural object in terms of its relationship with the visitor’s country.

KEYWORDS
Context-aware, Cultural heritage, Nationality based context, User’s interests, Informal learning scenario

1 INTRODUCTION
With the enormous growth of knowledge, increasing mobility and the increased accessibility of travel, there is a widespread curiosity about cultural heritage places and a huge demand to visit for acquiring personal experience of cultural objects. 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. 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 of learning support, which is enabling to motivate user enjoys a deep cultural experience is missing. A user as a visitor of cultural heritage might be coming 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 to 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. This study, we adapt nationality-based context and create a scenario to assist the visitor for acquiring cultural heritage experiences.

2 INFORMAL LEARNING

Informal learning is a type of learning activity that occurs outside the curriculum of formal educational institutions and program [7]. In informal learning, the learner has more opportunities for self-directed learning than formal setting. It means if the learner considers his/her cultural experience is uninteresting, 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]. Therefore, creating and maintaining a well-designed scenario with interactive tasks and elements to attract user attention is desirable. 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>
</tr>
</tbody>
</table>

The self-directed learning activity is occurring when the learner intentionally wants to involve in the learning process 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 toddler decides that she wants to start putting her socks on by herself, and after many attempts finally succeed.

The incidental learning activity is occurring 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 toddler touches a hot iron and immediately learns that it is not wise to do it again.

Socialization or tacit learning activity is occurring during everyday life which refers to the internalization of values, attitudes, behaviors, skills, etc. This is unintentional because learner does not have a priori intention of acquiring them, and he/she also not aware has learned something. For instance, a toddler learns to speak the first language, without being aware that he/she has learned speak activity.

According to the Council of Europe [5], there are several 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 cultural heritage informal learning. This study, we invent yes-no questions based on the aforementioned indicators to simplify user in exploring the matters related to the cultural object and prepared answers from user’s questions.

3 NATIONALITY BASED CONTEXT-AWARE

According to [2], context can be defined as "any information that can be used to characterize the situation of an entity". The entity could be a person, place, or object which considered 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.

This paper, our application uses context to provide information for the visitor as a learner where the authority depends on the user. The visitors are categorized into three dimensions
[9]. However, based on the motivation dimension, the main reason to visit cultural heritage object is their curiosity about the history of the cultural object. According to [4], tourist/visitor tends to be interested in ‘real’ and educational of cultural experiences, it will be increasingly 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 is related to nationality, ethnicity, religion, social class, generation, locality or any kind of social group that has its own distinct culture. Most researchers are a focus in developing technical tools and social aspects of digital cultural heritage. However, only a few empirical research are investigated in user’s perceiving, experiences, and interacts with locational content to build a community heritage[13].

A 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 not only the local community but might also from the international community. This cognitive perspective opens an opportunity of how to attract visitors outside the community.

According to [6], the visitors outside the community-host are generally or partially attracted by an interest in the historical, artistic, scientific or related to the lifestyle and traditions reality and facts of a community, region, group or institution. Therefore, we involved nationality context in attracting the visitors outside the community-host to learn the visited cultural object which related to their nationality. Our approach purposes to help the learner 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].

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 selects as much as categories according to his/her interests. However, we have a perception that visitor, especially foreigner visitor will be more motivated to learn the cultural object which has a relationship to the visitor’s cultural identity, such 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 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)

The objects are selected 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 [17]. 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 2 and Figure 3. 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 in-
terests 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)

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 4.

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?

Figure 3. Screenshots of the informal learning questions

Figure 4. Zen garden’s summary for just visiting option
5 CONCLUSION AND FUTURE WORKS

This study is devoted to designing an interactive scenario based on the user’s interests and the 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 user easier to explore deep cultural heritage experiences. 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 intend to evaluate our system performance through user’s self-assessment quizzes.

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