

Innovative AR for E-Learning on Ruen Thai Villages in Central Region Phai Dam Pattana Sub-district Municipality, Ang Thong Province

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Abstract

This research aims to produce E-learning of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province, create Augmented Reality (AR) of 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province and invent patterns of tourism with Beacon to promote marketing of the 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province. The research starts from 1.) studying data and reference documents related to Ruen Thai Villages in Central Region 2.) producing E-learning of Ruen Thai Villages in Central Region 3.) creating Augmented Reality (AR) of 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province 4.) inventing patterns of tourism with Beacon to promote cultural tourism of the 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province 5.) conclusion, discussion and suggestions.

The research results have indicated as follows:

1. Details and Data of E-learning System of Ruen Thai Villages in Central Region

URL: <http://www.ruenthaivillage.com>

User: Ruenthai

Password: Ruenthai123

2. Beacon has been installed already to promote cultural tourism of the 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province
3. Augmented Reality (AR) of Ruen Thai Villages in Central Region

Keywords: Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province, E-learning, Augmented Reality (AR), Patterns of Tourism with Beacon

I. Introduction

Samruay Chimchawee (Interviewee), Woralak Phothong (Interviewer) at Ruen Thai Villages on May 5, 2018

Phai Dam Pattana is a sub-district in Wiset Chai Chan District, Ang Thong Province, well-known for local wisdom of preservation of Traditional Thai Houses, within Phai Dam Pattana Sub-district are approximately 400 Traditional Thai Houses, both ancient Thai houses and applied Thai houses with spire and hip roof. The houses of people in Phai Dam Pattana Sub-district were

formerly located along waterway. Currently, the villages are changed; however, the traditional Thai houses have been preserved until now. Although we have opportunity to see Traditional Thai houses in various provinces throughout the country or around Ang Thong Province, we can see the highest number of really occupied traditional Thai houses in Phai Dam Pattana, especially in the area close to Phai Dam Pattana Sub-district Municipality.

Phai Dam Pattana is surrounded by agricultural land, as it was formerly an agricultural sub-district. In the future, tourism activities may be developed to

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be more open for rural tourism and relaxation, such as demonstration of organic farming and Thai way of life. Most people in Phai Dam Pattana Sub-district work as agriculturalists by adopting joint plantation, referring to Philosophy of Sufficiency Economy and as producers of Thai food and desserts.

Construction of Phai Dam Ruen Thai houses with uniqueness in Phai Dam Pattana Sub-district cannot be traced back in terms of settlement period, so it is necessary to verify the history in the future. It is not possible to know the beginning period; however, we can presume that the construction of Traditional Thai Houses probably begin when humans know how to make use of wood for building accommodations, not less than 200 years ago. Phai Dam Pattana Sub-district has built Traditional Thai Houses by hiring local constructors of not less than four generations. Presently, there are four-five teams of constructors specializing in building Traditional Thai Houses. In addition, the teams are hired to build Traditional Thai Houses in various provinces. However, most of them give first priority to the construction in the sub-district.

Cultural tourism is outstanding and unique, and Phai Dam Pattana Sub-district Municipality, Ang Thong Province has the largest Ruen Thai Village of Central Region in Thailand. Way of life in the community is simple and plain while there are plenty of Traditional Thai Houses, and several houses sell OTOP products. By these reasons, the researcher is interested in passing on knowledge of E-learning technology management of Ruen Thai Villages in Central Region and creating patterns of tourism with Beacon to promote marketing of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province in order to distribute income to the community and promote cultural tourism in Ang Thong Province.

II. Research Objectives

1. To produce E-learning of Ruen Thai Villages in Central Region
2. To create Augmented Reality (AR) of 10 Houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province

3. To invent patterns of tourism with Beacon in order to promote marketing of 10 Houses of Ruen Thai Villages, Phai Dam Pattana Sub-district Municipality, Ang Thong Province

III. Literature Review

Asst. Prof. Patravadee Siriwan has explained about Ruen Thai Villages in Central Region as shown below. (Asst. Prof. Patravadee Siriwan, 2019)

Ruen Thai House is a single-storey wooden house with high floor and open ground floor. The house often has three pillars with pumpkin partition called "Carved-Wooden Partition". The room has small and narrow windows, opening inward, located on wooden pivot, and doors are built with the same method. The walls are located on wooden boards of four sides. Corridor is built in parallel with the length of the house. High gable roof covers part of the corridor, and terrace is connected with kitchen, probably located separately.

We can see that Ruen Thai House is built by taking topography and weather into account. In addition, custom, tradition and Thai people's disposition lead to accommodation style. Formerly, construction of Ruen Thai House is prefabricated, indicating social status and leading to construction pattern.

Style and size of the house depend on the number of residents and money. Normally, if there are two families living in the same house, one more house will be built on either side of the first house. Meanwhile, big houses are built in the same style. Moreover, surrounding structures are built, including parlor, rest-house in garden, dove house, waterfront rest-house, etc. These structures are all built in Thai style. We can see that ancient Thai houses are built culturally as shown in Perfect Thai House Pattern.

Main house is often located in the center, belonging to parents called "Central House", and the Central House is a big house with 3-5 rooms. On the left or on the right of the Central House is a house called "Oval House", being a kitchen and houses of married children. Meanwhile, next to the Oval House is a house vertically built called "Vertical House", being vertical in the sun direction. Thus, the Vertical House is not used

for sleep. The Vertical House has three walls, used for welcoming guests. When houses are built, terraces are connected with significantly wide space. By this reason, hall is built in the middle of the terrace called “parlor” to be used as a rest area and for ceremonies, such as offering food to monks. If this house is left open, area behind the parlor will be used as a bird house and for planting flowers and ornamental plants.

IV. Research Methods

1. Study related data and reference documents as follows: Textbooks, Books and Researches Related to Ruen Thai Villages in Central Region
2. Produce E-learning of Ruen Thai Villages in Central Region.
3. Create Augmented Reality of 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province
4. Invent patterns of tourism with Beacon to promote cultural tourism, 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province
5. Conclusion, Discussion and Suggestions

V. Research Results

Details of E-learning System of Ruen Thai Villages in Central Region

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Augmented Reality (AR) of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province

Uses of Augmented Reality (AR)

1. Android Smart Phone: Turn on Line Application. IOS Smart Phone: Turn on Camera Application.
2. Scan QR Code.
3. Click at URL to see Augmented Reality (AR) of Ruen Thai Villages.
4. Use Smart Phone to scan XR+, three-dimension models of Ruen Thai Villages will be displayed.
5. Touch the screen with a finger to rotate the models and use two fingers to enlarge the models.
6. Click the button below to see the video of Ruen Thai Villages in Central Region and various styles of Ruen Thai Houses

The picture shows the installation of Beacon at



Thai House 1

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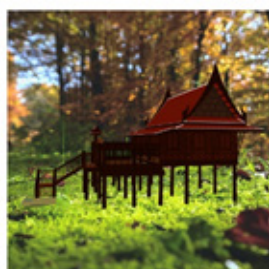


Thai House 4

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House No. 1



Thai House 7

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Thai House 9

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Thai House 10

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VI. Discussion

1. Receive E-learning lesson of Ruen Thai Villages in Central Region.

URL: <http://www.ruenthaivillage.com>

2. Receive Augmented Reality (AR) of 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province.

3. Install Beacon Transmitter to promote mar-

keting of 10 houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province

Conclusion

E-learning lesson of Ruen Thai Villages in Central Region aims to learn construction method of Ruen Thai Villages in Central Region, and Augmented Reality (AR) of Ruen Thai Villages in Central Region is a motion picture.

Ruen Thai Villages in Central Region can be seen in all dimensions and patterns of tourism are invented with Beacon to promote cultural tourism of 10

houses of Ruen Thai Villages in Central Region, Phai Dam Pattana Sub-district Municipality, Ang Thong Province. Beacon is installed at Ruen Thai Villages in Central Region to allow tourists to obtain details of Ruen Thai Villages in Central Region by scanning QR Code in that house.

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References

- Thongyoo Lapwet (Interviewee), Patravadee Siriwan (Interviewer), House No. 14/1 Village No. 6, Phai Dam Pattana Sub-district, Ang Thong Province on March 17, 2019
- Thongluan Klinbugna (Interviewee), Patravadee Siriwan (Interviewer), House No. 38 Village No. 2 Phai Dam Pattana Sub-district, Ang Thong Province on March 20, 2019
- Buppha Krajaisang (Interviewee), Patravadee Siriwan (Interviewer), House No. 15 Village No. 3 Phai Dam Pattana Sub-district, Ang Thong Province on March 18, 2019
- Panthip Poonsombat (Interviewee), Patravadee Siriwan (Interviewer), House No. 5 Village No. 5 Phai Dam Pattana Sub-district, Ang Thong Province on March 18, 2019
- Patchara Phuwow (Interviewee), Patravadee Siriwan (Interviewer), House No. 40/1 Village No. 7 Phai Dam Pattana Sub-district, Ang Thong Province on March 20, 2019
- Patravadee Siriwan. 2019, Ruen Thai Villages, Phai Dam Pattana Sub-district Municipality, Complete Research, Rajamangala University of Technology Suvarnabhumi, Nonthaburi Campus
- Wanchai Chimchawee (Interviewee), Patravadee Siriwan (Interviewer), House No. 23 Village No. 6 Phai Dam Pattana Sub-district, Ang Thong Province on March 17, 2019
- Samruay Chimchawee. (2018). Brochures of Ruen Thai Village Museum, Phai Dam Pattana Sub-district, Worasilp Printing 2018 : 1
- Patravadee Siriwan. (2010). Thai Architecture, Sky Books Company Limited