

Geo-Mapping Of Educational Tourism Sites: A Case Study Of The Balinese Subak Cultural Lanscape Heritage

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Abstract

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There is growing concern about the future of the Balinese subak cultural landscape (BSC), after UNESCO declaring as world cultural heritage. The importance of the BSC underlying educational tourism destinations are increasingly recognized, however the sites for educational tourism are still poorly identified. This study represents a preliminary attempt to empirically geological mapping (geo-mapping) the sites of the subak cultural heritage. Data will be collected through field observation and mapping to cover all areas of the BSC, from March to June 2018. The mixed method is used to analyze data, before converted to geo-spatial information by using Google Earth. The findings are expected to support educational tourism concepts, designs and practices of the BSC.

Keywords: geo-mapping, subak cultural heritage, preliminary study, educational tourism,

1. Introduction

The preservation Subak concentration of various threats increasingly common place, after UNESCO declared the Cultural Landscape Subak as a World Cultural Heritage in 2012. The Subak is one of the uniqueness of Bali. For the environmental uniqueness of Bali tourism is tourism asset that is priceless. Tragically uniqueness is increasingly eroded by the phenomenon of homogenization and "land hunger" which were triggered by the development of tourism itself (Surata, 1999: 35). By making Subak as a model of environmental education is expected to provide multiple benefits, namely to Subak and for environmental education itself. The aim is for Subak Subak preservation remains the socio-agro-religious (Suradisastra, 2002) based on the *Tri Hita Karana* – balance the relationship between the God-human-environment (Surata, 2003). While the ultimate goal of environmental education is to create a sustainable environment where people live and work (Amemiya & Macer, 1999). On the other hand, the tourism sector is growing very rapidly in Bali. Bali's economy, largely on the tourism sector. According to (Puspitadewi, 2015), the tourism sector and the agricultural sector is an area of *strategic* nature determine economic growth in Bali.

The idea to develop the potential of the site on the World Cultural Heritage Region in Bali as the development of educational tourism can be an alternative to address the threat to the conservation of Cultural Landscape Subak in Bali. Education in this case the World Heritage

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Subak in Bali. Tourism education is a program that combines elements of tourism activities to the charge of education in it. Education tourism is not only a fun course melaiikan learning outside the classroom is to visit the places that contain knowledge and traveled at the same time gain knowledge(www.wisata-pendidikan.com). However, the potential of the site as an educational tourism development is still not been identified.

Geo-Mapping is a visual representation of the geographic location of an object with satellite imagery (www.igi-global.com). *Geo-Mapping* to map and represent a potential development educational tour into an interactive map with the help of *Google Earth*Software. Interactive Map is a *Preliminary Study*, which is expected to support further research related to the development of educational tourism concept, design, and the practice of Subak in Bali Cultural Landscape.

2. Materials and Methods

The location of this research is that sites which the World Heritage Cluster Subak established by UNESCO in 2012 and also the sites that belong to the "*SacredLine*West". Web-site include: Subak Museum, Pura Taman Ayun, Subak Jatiluwih, Subak Gunung Sari, Pura Luhur Batukaru, Pura Tamba Sane, Ulun Danu Ulun Danu Buyan and Tamblingan. This study was conducted from March to June 2018.

Data collection techniques of this analysis are observation, interviews, and mapping the landscape. Further, the technique of data analysis in this study, using taknik analysis of mixtures. Data on observations and interviews were analyzed using qualitative descriptive analysis techniques. The results of the analysis in the form of a description of the potential and problems of development of educational tours of each site. Meanwhile, landscape mapping is done with digitization techniques in *software*. mapping The results of this analysis is the base map data format(*Shp*)in the form of extents, lines, and points. Furthermore, the results of the analysis are combined, converted and visualized into an interactive map using *the Google Earth software*assistance.

3. Results and Discussion

Geo-Mapping to map and represent the analysis results in the form of the potential and problems of tourism development in the area of educational research. The discussion in this study include the Geo-Mapping on the whole region and Geo-Mapping the potential and problems of each location in the study area.

3.1 *Geo-Mapping of Research Area In Overall*

Geo-Mapping of the overall study area displays the map position of the location of each site and the route connecting. Overall the location of each site has the potential to be developed as a tourist route, because it is connected by a network of roads and the position of the location of each site adjacent in the same lane. The travel route can be started from the south. The location is the site that has the best position south is the museum Subak (can be developed as an *Information Tourism Center*), heading north then the order of the locations that can be found, Pura Taman Ayun, Subak Gunung Sari, Subak Jatiluwih, Pura Luhur Batukaru, Pura Tamba Sane, Pura Ulun Danu Ulun Danu Buyan and Tamblingan. Geo-Mapping the region as a whole can be seen in Figure 1.

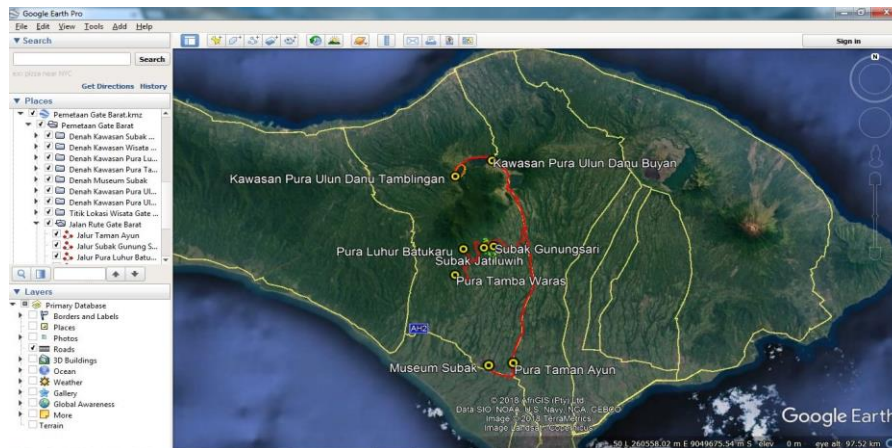


Figure 1. Geo-Mapping Research Areas In Overall

3.2 Geo-Mapping of Potential and Problems of Each Location

Potential and problems of each location obtained from the analysis of data, represented through interactive maps with the help of Google Software Earth. Map landscapes and information on potential problems each location, accessible via Geo-Mapping product. The way to access this information by doing a "Zoom In" on the destination location. Furthermore, the location point that has been linked to information about potential problems, you can "Click" to display the information contained therein. Here will be further detailed results of the Geo-Mapping the potential and problems of each location in the study area.

3.2.1 Subak Museum

The historical background Subak museum is derived from the idea of an expert on customs and religion in Bali named I Gusti Ketut Kaler on August 17, 1975, who had the idea to preserve the traditional institution Subak. October 13, 1981 inaugurated by the Governor of Bali Prof.Dr. Ida Bagus Mantra. The Attractiveness of the museum there are various kinds of farming tools in Bali over time, which is the cultural heritage since the XI century. Visitors can see, know and learn about the development of agriculture and traditional equipment commonly that use in Bali's aliculture and get complete information about how the system Subak irrigation and processing of paddy from beginning to the end, like to begin the rice fields, dividing the water, making water tunel, measuring waterways and the complete process of religious rituals. The facilities and services that is there is an audiovisual room, classrooms, exhibition halls, libraries, miniature irrigation, bali traditional house, paddy field as a natural miniature, office, parking area, bathroom/toilet, Resting place, and the canteen. Means of transport that could wear personal vehicle such as a motor car or private. The directions of the toursm destination can be asked to travel guides Subak Museum in Tabanan Bali on *google maps* that installed in the smartphone. Because the use of private vehicles will be more fun than use public transport. Use public transport arrived at the Terminal Kediri and next can ride motorcycles or *gojek* that exist around the terminal. The management is the Government Tabanan regency, due to it is a service office then Subak Museum is open daily schedule Monday - Thursday & Saturday from 7:30 am until 16:30 pm, and Friday is open from 7:30 am until 13: 00 noon. While Sundays and public holidays Subak Museum is closed. Visits are declining due to lack of promotion from lokal part about Subak Museum so that domestic tourist doesnt much aware of the museum. The hope is that a vigorous campaign for the

existence of Subak Museum, improved transportation path to the Subak museum, making Subak museum as an educational tour visit on various school's education in Bali. Landscape map of Subak Museum can be seen in Figure 2 (a) and information from any location Subak Museum in software Google Earth can be seen in Figure 2 (b).

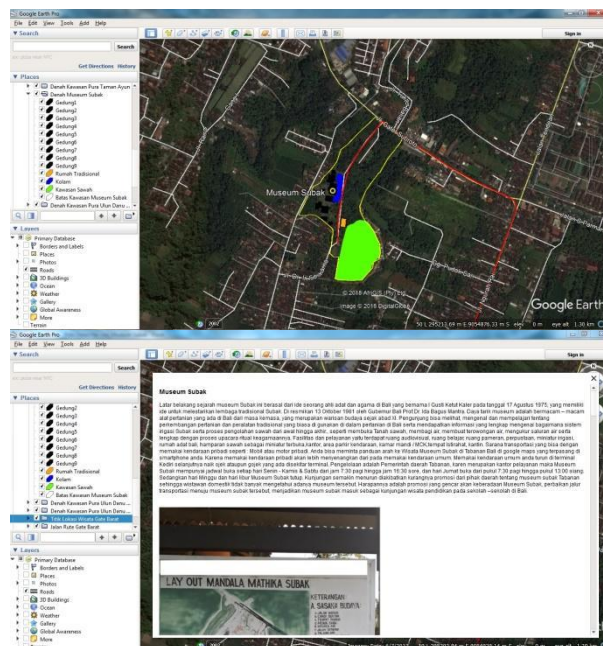


Figure 2. (a) Landscape Mapping Subak Museum; (b) Information Potential and Problems Location Subak Museum

3.2.2 Taman Ayun Temple

The tours appeal in the region such as relics Kingdom Mengwi are still preserved, Manusa Yadnya Museum, pond surrounding the temple and the visit peak of the month is June, July, and August. Tourists who coming is the domestic and international travelers. The accommodation used by tourists is a personal vehicle, travel agents. Area Management is currently managed by *Pengempon* temple and the local indigenous villages. The infrastructure in the region is very adequate and very well maintained. Retribution for tourists already there (foreign = Rp 20,000 / person, domestic = Rp 10,000 / person). Retribution for the car park is Rp 5,000 / car and motorcycle parking is Rp 2000 / motorcycle. Infrastructure in the region is very adequate only parking area is still lacking. The temple link with the subak around it as a source of irrigation fields. Hope in future of society area managers is the preservation of the temple area and the environment stay exist, parking area need to be expanded, and need attention from the government. Landscape Map of Taman Ayun Temple can be seen in Figure 3 (a) and Information of Taman Ayun Temple Area that there in the Google Earth software can be seen in Figure 3 (b).

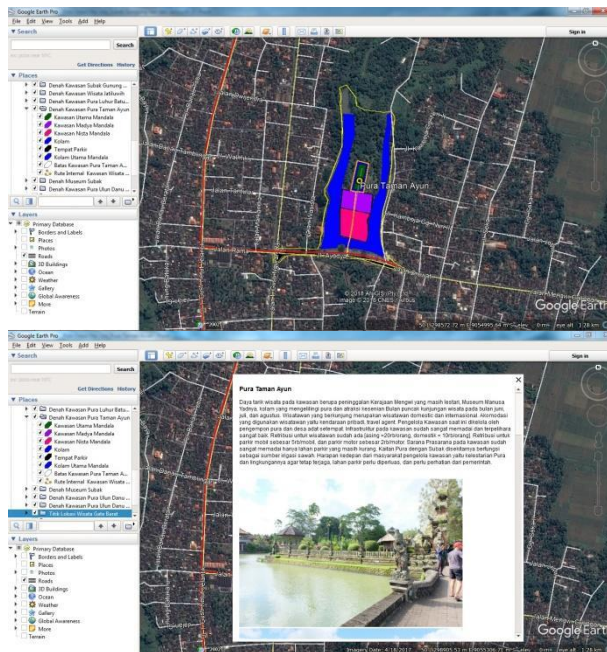


Figure 3. (a) Mapping the Landscape of Pura Taman Ayun; (b) Potential and Problems Location Information Taman Ayun Temple

3.2.3 Subak Gunung Sari

Jatiluwi and Gunungsari Subak included in the landscaping area. Subak from Catur Angga Batukaru is one of five regions in Bali that is defined by UNESCO as a World Cultural Heritage (WBD) since June 29, 2012 because it has a unique and characteristic of the agricultural system by using the concept of Tri Hita Karana philosophy. In 1994-1995 established as Tourist Destination Region (DTW) with the number of visits are 30,000 people / year. Total are of Subak Gunung Sari is about 45 ha, total membership of 35 group (Tempek) or approximately 150 members, consists of three irrigation canals, irrigation length of about 2.5 km and each group (Tempek) led by a Chair. Tourist attraction in the region as same as Jatiluwi form of terraces, the subak system, tourism activities such as hiking, cycling, tracking fields and tracking of forest, there is an inn/cottage, cafe and shop or restaurants that specialize in serving typical food with red rice from Gunung Sari and Jatiluwi agricultural products that its land reached 303 hectares. The current manager is the travel management agency. Infrastructure in general from the government and in particular from subak members after obtaining recognition from UNESCO regularly received subsidies from the government. The accommodation that used by tourists are travel agents, back packer/private. Retribution on the region already exist include [into the local government = 45%, and 55% = managed for tourism], from 55% was made to be 100% back and returned to the village fund, Gunung Sari gets 20% parts. Subak income in the form of Bali rice harvest every 5.5 months (January to June) and Bali white rice/64 (July to December), red rice yields more than Bali white rice because of each stalk has a grain that much, other than that the price of red rice is more expensive than ordinary rice types. Means in terms of infrastructures, the main obstacle is not available parking space. Management Subak optimal debt due to unavailability of *koprasi* that manages the results of Subak. Hope in the future is there is government attention primarily related to facility provision of fertilizers and payment of the tax that still borne by the members of Subak and is not expected to occur over the land.

3.2.4 *Jatiluwih Subak*

In 1994-1995 was designated as the Tourism Destination Region (DTW) with the number of visits 30,000 people/year. This area consists of 9 village offices/11 Village People who get into Catur Angga Batukaru. Tourist attraction at this location is subak terraces view, tracking fields and forests. Month peak tourist visits in the month of February-April and June-July is domestic (20%) and international (80%). The accommodation used by tourists is travel agent, back packer/private. The current manager is Jatiluwih tourist (consisting of many villages). Levies on the regions (Local adult = Rp. 15.000, child = Rp. 5000 / Foreign adult = Rp 40,000 adults, children = Rp 30,000). Infrastructure in the region is already available (toilet, parking, ticket booth, guard post), but with the more popular and well known Jatiluwih travel, so the need for additional land for facilities and infrastructure are needed. The revenue sharing from tourism was 45% for local government and 55% for the village. From the 55% of the village is allocated into several parts to Subak's in it. (Jatiluwih 30%, Gunung Sari 20%, wet Subak 21%, 25% village offices, Subak abian 2%, dry Subak 2%). Restaurant Taxes goes to *desa pakraman*. The obstacles of area development is the manure not for free yet (still buy but already get subsidized by + 55%), the United Nations is still 100%, there is no cooperative that manages the results of subak, incentives or revenue is still less, the Infrastructure still not suffice, the threat of land use changes and can be disadvantageous for people, investors or capitalist threat to hunt down Jatiluwih area to the villa. The expectation for the future is a better economy, free fertilizer, the United Nations does not pay, increased infrastructure but there is not land functional shift. Map of the landscape Gunung Sari Subak and can be seen in Figure 4(a) and Information of Subak Jatiluwih location in the Google Earth software can be seen in Figure 4 (b).

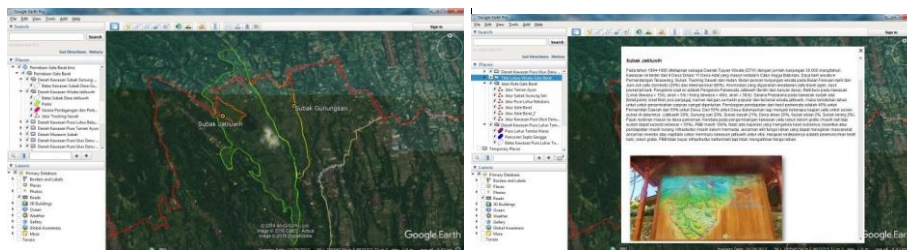


Figure 4. (a) Mapping of the Landscape and Jatiluwih Subak Gunung Sari; (b) Potential and Problems Information Location Subak Jatiluwih

3.2.5 *Luhur Batukaru Temple*

The tours appeal is the ancient artifacts in the form of Menhir and *Palinggih Kampuh* (stone carved or shaped), enjoying the freshness and peace contained in the Pura Batukaru, cultural heritage. In 1977 gradually fledged attention and assistance from the local government and to the present state and condition of Pura Batukaru is getting better. The visit peak of the month is in June, July, and August, with domestic tourists (national holiday season) and international. The accommodation used by tourists is the form of travel agents, back packer. The current manager is that there has been no government interference in the management and organization administratorsLuhur batukaru temple, consisting of 2 (two) village offices, namely: Wangaya Gede village and Tengkidak village, and 8 *pekraman* villages (12 Banjar), all this time for development facilities and infrastructure of donors / donations *pemedek* and *penyungung* of the temple. Levies/ticket in that region, adults = Rp 20,000 children = Rp 10,000, *pemedek* = voluntary. The Infrastructure and facilities in the region are available such as toilet, gazebo, ticket booth, guard posts. The relation between batukaru with

subak around it is seven subak in Catur Angga Batukaru area every time *ngurit* started, *nandur* etc., always pray at Batukaru Temple, so that later the rice harvest is abundant. Expectations ahead of the local community is there is concern of the government mainly related to the road leading to the temple of Batukaru could be wider, so access is becoming more smoothly affectation, and drain repaired so that the water flow more swift.

3.2.6 *Tamba Waras Temple*

The tours appeal in the region in the form of temples, Pancoran Sapta Gangga. The temple ceremony on *Buda Umanis Prangbakat*. Pancoran Sapta Gangga was established in November 2016. The current manager is *pengempon* Tamba Waras temple (consisting of 5 banjar). The levy on in the region are available (Stalls = Rp 175.000 rb/3 stalls/month)/(parking = 5000/car). Infrastructure in the region is already available (toilet, dressing room, merchant stalls, ticket booth, guard post, parking), but lack of maintenance due to lack of funds. The temple relation with subak around it which started by *mature piuning* or request approval before doing any activity in Subak. The expectation for the future from the local community that is the concern from the government, especially related with facilities.

3.2.7 *Ulun Danu Buyan Temple*

Travel visit the area relatively rare due to issue erupted majestic mountains and lakes Buyan Lake Disclaimer. Tourist transport such as cars, travel, motors. This tourist area managers are local people (Bendega/fishermen) and some contribution from the government. Related with levy on the area that is just from the parking and then only partially paid to the government. Infrastructure has been used since and having a bit of a change. Tourism development 20 years ago was not significant. Buyan lake tour manager relationship with manager Subak not been established, but the management of Subak surrounding the lake still use water as a source of irrigation and water control system managers also often praying to Ulun Danu Buyan Temple. Local community expectations ahead is the lake area must be clean, the toilet must be clean, the innovation development of tourism needs to be improved.

3.2.8 *Ulun Danu Tamblingan Temple*

The area's Ulun Danu Tamblingan Temple is already developed into a tourist attraction. Furthermore, the potential for development of tourism in the region reviewed from the components of the tourist area of "4A" (attraction, amenities, accessibility, ancillary service) with qualitative analysis methods. There are three types of tourist attraction in the region, namely the temple tour, forest (tracking and outbound), and the lake. But the development is still less than optimal, because it has not touched the tourism potential of cultural education Subak as its tourism appeal. Supporting facilities in the area of tourism is already available but still less maintenance due to lack of attention from the government and retribution for entering the tourist area is still low. Another problem is the overflow of water in the lake because of silting and the high intensity of rainfall in the region. This could damage the supporting facilities of the region and hinder the development of tourism in the region. The access road to the area already exist, but the condition is not good. Especially on the road for access into the area. There is a street with a broken condition in some point on the road as an access into the area. It is caused by the unavailability of drainage channels along the access road entrance area, so that the rain water runoff eroded the road. Tourism Regions Ulun Danu Tamblingan currently managed by Seka Bendega Desa adat Dalem Tamblingan. Formerly worked with the government (Department of Forestry), but currently has no cooperation again (loss of contact). Furthermore, coordination between the organizer with institutional Subak not intertwined. This coordination is needed because related to educational tour developing based on subak cultural. Moreover, Ulun Danu Tamblingan temple is subak temple

and and Tamblingan Lake as a source of irrigation for Subak's around it. Map of the landscape of Ulun Danu Tamblingan can be seen in Figure 5 (a) and details of Ulun Danu Tamblingan location that exist in Google Earth software can be seen in Figure 5 (b).

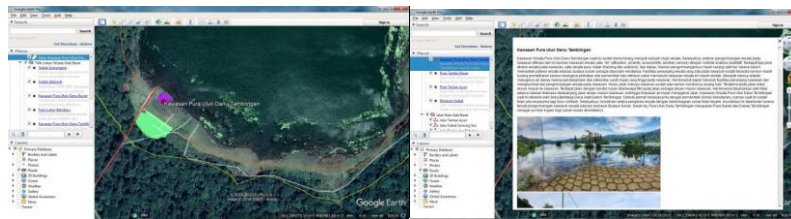


Figure 5. (a) The Map of Landscape Ulun Danu Tamblingan; (b) Potential and Problems Information Ulun Danu Location Tamblingan

4. Conclusion

Geo-Mapping done for mapping and represent a potential of educational tour development into an interactive map with the help of *Google Earth* software. Interactive Map is a *Preliminary Study*, which is expected to support further research related to the development of educational tourism concept, design, and the practice of subak cultural landscape in Bali. Based on Geo-Mapping of this study, has been the identification of the potential and problems of development of educational tours are visualized or represented through an interactive map. In addition, Geo-Mapping of the overall research area shows that there are region's potential as an educational travel route development in terms of connectivity and position from the point of site location in the research area.

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