



The Development of Natural Laboratory with Mangroves Ecotourism Concept for Geography Learning in Senior High School in the Olaya Village, Parigi Moutong Regency

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Abstract

The development of this natural laboratory is motivated due to there is no development for learning in schools. The potential of mangroves forest area in the Olaya Village are wide enough so that it can be used as a natural laboratory. The reason chosen Olaya village is as seen from some aspects of the assessment parameters such as mangroves forest wide, the distance of the settlement, the condition of naturally mangroves forest, access to the location and condition of the communities who support it. The development of natural laboratory is aim to be able to facilitate student in learning where student are provided differentiated learning that is direct observing the object being studied. The concept of ecotourism mangroves are used as a natural laboratory support due to in the Olaya Village has an excellent mangroves and the role of local communities are able to maintain mangroves. The plan in the development of this natural laboratory will provide benefits both for student in the learning process and for the local communities in developing the potential of the region. The development of this natural laboratory combines two concepts that are education and tourism.

Keywords: Mangroves, Ecotourism, Geography Learning

Introduction

Parigi Moutong Regency is one of the Regencies that are in Central Sulawesi. This Regency has an area of 6231.85 hectares and about 472 km shoreline (parigimoutongkab.go.id). Boundary of area this Regency that are north bordering by Buol Regency, Toli-Toli Regency, and Gorontalo Province, south bordering by Poso Regency and Sigi Regency, west bordering by Palu City, Donggala Regency, and Sigi Regency, and east bordering by Gulf of Tomini. Parigi Moutong Regency of east is directly adjacent to Gulf of Tomini. Gulf of Tomini is one of the largest in Indonesia with sea area about 59,500 km² (Bappeda Sulawesi Tengah). The gulf passed this the equator is located in a strategic position namely Heart of Coral Triangle. As coral reefs, gulf of Tomini has diverse ecosystems such as seagrass, coral reefs, and mangroves.

Mangroves living along the shoreline gulf of Tomini made panorama and beauty for the people who passed this way. Diversity of mangroves made attraction for visitors who come. In addition, to be used as tourist attractions, mangroves also has another function namely as a fish habitat, shrimp, shell, and other marine biota. In terms of disaster mitigation that mangroves can prevent erosion and abrasion of ocean waves. Mangroves that exist on this beach can be used as learning objects to subject geography. The materials of geography are studied materials and formals object. Materials object are all things that studied in relation to the phenomenon of the geosphere that occur in the atmosphere, hydrosphere, lithosphere, biosphere, and anthroposphere. While the formals object are a way of looking at and thinking of the materials object of geography in viewpoint in the context of regional spatial and environmental.

From the description of the materials and formals object, that biosphere is the most suitable to be examined in this study. Biosphere studied flora and fauna on the surface of the earth including mangroves. The materials subject of geography given by the teachers can be done outside of class that is by direct



observation on the object being studied one of on mangroves. Mangroves located in the Parigi Moutong Regency are pretty much, among other there are in the District Siniu, Sausu, Toboli, Toribulu, Parigi, dan South Parigi. From several this Districts, the most support to develop a natural laboratory is District of South Parigi exactly in the Olaya village. The reason selected Olaya village is as seen from some aspects of the assessment parameters such as mangroves forest area, the distance of the settlement, the condition of naturally mangroves forest, access to the location and condition of the communities who support.

The development of natural laboratory is motivated due to there is no development of geography subject area in the Parigi Moutong Regency. Extensive mangroves forest in the village Olaya can be initiated by a potential for laboratory is useful for student and the local communities. The development of natural laboratory aim to be able to accommodate student in learning where student are provided different learning is by directly observing the object being studied. By observing directly, trained to identify by student, investigate, and analyze those objects. The concept of ecotourism mangroves that serve as a natural laboratory support is due in the Olaya village has an excellent mangroves as well as the role of local communities who are able to maintain mangroves. The reason communities maintain mangroves due to village them is near to the beach, so the existence of mangroves to be preserved. According with the understanding, The International Ecotourism Society (TIES) that ecotourism is tourism travel activity packed professionally, trained, and contains educational element, as an economic sector, which is considered the cultural heritage, participation and the welfare of local population and efforts in conservation of natural resources and the environment.

According to the curriculum in 2013 which highly recommend student centered then with this natural laboratory can make contextual learning which is on the curriculum. Contextual learning by Depdiknas (2002) is a concept that helps student learn linking the material to be taught with real life situations and invites student to make connection between their knowledge with application in them daily life. With the implementation contextual learning then expected that student can get learning which can be contextualized in them life. According the basic competencies of a geography lesson on the curriculum in 2013 that are to analyze distribution of flora and fauna in Indonesia and the world, so there are materials that can be learned outside of the classroom in order for student to observe, to investigate, and to discover themselves the object directly. The learning process like this can be build learning fun and challenging for student where they can interact directly with the environment. Learning outside the classroom is also able to overcome the saturation student everyday learning in the classroom.

Method

The benefits get student when Olaya village can be used as a natural laboratory namely: (1) student get a different experience due to the concept of learning outside the classroom, (2) student get new knowledge, (3) students can practice directly on mangroves, and (4) teachers can explain directly to the student as an object in front of them. The writing of this paper aims to develop a natural laboratory with the concept of ecotourism to learning geography in Senior High School in the Olaya village, Parigi Moutong Regency. The method used in this paper is review of literature studies to support the theories and concepts. The object of research is specified on mangroves plant in the Olaya village of Parigi Moutong Regency.

Results and Discussions

Description Mangrove in the Olaya Village

Mangroves plant often called mangroves or brackish. Called the mangroves forests due to most of the vegetation are dominated by mangroves species and called brackish due to forest grow on land that is inundated by brackish water (Mulyadi, 2009). Mangroves located in the district of Parigi included in the Olaya village there are 7 types. The type of which are *Soneratia alba* Smith, *Rhizophora mucronata* Lmk, *Avicennia marina* (Forsk) Vierh, *Avicennia alba* Blume, *Acrostichum aureum* L, *Nypa fruticans* Wurmb, dan

Acanthus alicifolius L (Puspayanti *et al.*, 2013). From the 7 types of mangroves most are the kind *Avicennia marina* (Forsk). From diversity of mangroves plant in the Olaya village made unique that are not owned by another village. Benefits of mangroves can be seen from the ecological and economic functions. The ecological benefits among others breakwater, retaining water, control flood, filter pollutants and retaining seawater intrusion, whereas the economic benefits of mangroves forest among others such as forest products and fisheries (Masruroh, 2016). Both ecologically and economically should be maintained by the communities in order to maintained continue of mangroves ecosystems.

Research that has been done in the district of Parigi by (Puspayanti, 2013) about the physical chemistry that the environmental conditions are very supports to the growth of mangroves such as temperature 30,4° C, and pH soil and water in the range between 7 and 8. From the research results it, the author will develop a natural laboratory with the main discussion object is the mangroves. Mangroves can be used as a source of learning that come from the environment. A source of learning that come from the environment is not limited, so we need to design meaningful learning is very recommended that the success of student in the learning process can be achieved. Mangroves species found in the village Olaya current existence are still good enough. The exist of a good mangroves are in addition supported by natural living conditions as well as the role of local communities in maintaining mangroves. Local wisdom the Olaya Village of communities in support of the mangroves plant to keep sustainable can be developed further is the concept of ecotourism. The concept of ecotourism in addition to providing increased value to the communities also made that the environment is maintained so that communities get high profit (Suriani, 2011).

The development of this natural laboratory based on the existence and potential of mangroves in the Olaya village of Parigi Moutong Regency. Diversity of mangroves is still preserved by the local communities. Communities the Olaya village are also very concerned about the existence of mangroves due to they understand that mangroves can prevent sea water abrasion. They think if mangroves ecosystem is damaged then it will lead to disaster. Furthermore, local communities care about this then make a mangroves area to be cultivated and developed in order to keep sustainable mangroves ecosystem.

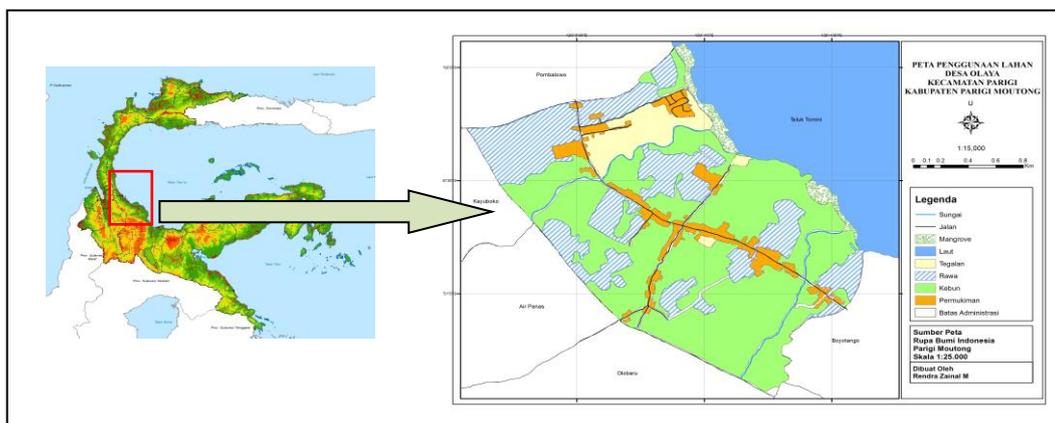


Figure 1. Location of Study Area

Development Laboratory with Ecotourism Concept

Conceptually ecotourism can be defined as a concept of sustainable tourism development which aims to support the efforts of environmental preservation (natural and cultural), and increase communities participation in the management, so giving economic benefits to local communities (Satria, 2009). One of the concepts of ecotourism is empowerment of local communities to empower the existing travel in their region. Empowerment of travel can be done with the potential of natural and artificial and preserving the social and



cultural conditions. Therefore, in the development of this ecotourism is expected role of the communities can support for the development of the natural laboratory.

The existence of mangroves in the Olaya village is very interesting to develop as a natural laboratory. This natural laboratory is as a learning resource for student. Using of the environment as a learning resource must demonstrate functions in three areas that is, for learning, for student, and for teachers (Ningrum, 2015). Functions for learning activities are to help fluency the process of learning, functions for student provides motivation and experience and function for teachers in explaining the learning materials. The natural environment is designed to be a class will be different to the classroom environment in general. The differences are in learning objects which can not be represented when learning occurs in the classroom. (Ningrum, 2015) the reason why the class was brought into the real environment, due to the existence of the environment can not be represented through modeling and the importance of the real environment as a learning resource. The use of the environment is as a learning resource allowing the learning process more meaningful due to student given the actual situation. Utilization of the environment as a learning resource provides a variety of alternatives in approach in teaching student. Student will also be interested when learning experience is real, compared with imitation models presented in the classroom.

Table 1. Forms and Services Laboratory Development of Mangrove Nature With based Ecotourism

No.	Landscape Elements	Potencies
1.	Olaya Village	The village has the potential to support Olaya if developed a natural laboratory
2.	Topography	Topography in the village Olaya with a slope that is 0 – 2% percent. Elevation between 0 – 10 above sea level
3.	Land	Soil conditions mostly not fully utilized by the communities
4.	Hydrology	Conditions Olaya Village area through which the river flows Korontua that can be used as a source of irrigation
5.	Vegetasi	The vegetation is predominantly mangrove plants in the area of the estuary
6.	Society	Support and role in maintaining and conserving the mangroves are very high

Sources: Analysis primer and secondary data

Basic Concepts of Ecotourism Development

Development of natural laboratory in the village Olaya through the concept of ecotourism, which still maintain condition and preservation of mangroves forest are as an object lesson for student. Learning objects focused on mangroves ecosystems due to it has a special environmental characteristic that can live on land and water. The development of natural laboratory is expected to be an alternative source of learning which can be used by teachers in the learning process. Management and development of mangroves forest as ecotourism should be able to support communities care to preserve the forest resources through the use of natural potentials (Nugraha *et al*, 2015). Strengthening the concept of ecotourism in the Olaya village do is to support communities in maintaining and preserving the mangroves. The concept of ecotourism is design by looking at the potential that exist in the natural, artificial, and local culture. By looking at the potential that exist, it will be known towards development that suitable for their area. Development is offered to the communities with a natural laboratory-based ecotourism namely: (1) communities get knowledge about how to manage ecotourism so that it can play a role in helping develop the potential of their area, (2) communities get the experience in the management of their local potential, (3) communities contribute in advancing their area, dan (4) Olaya village would be typical of a village which there is a natural laboratory-based ecotourism.



Planning a Natural Laboratory-based Ecotourism

Planning a region in advancing the region can be done in many ways one of them to see the potential that exists. Potential area with one another definitely has a difference in physical form and artificial. By looking at the potential of the area can be planned a development that aim to enable communities to enjoy the development. Development is meant keep continuous, so it takes some careful planning.

The application of this ecotourism is intended to be in the development of a laboratory still refers to the local wisdom, so mangrove environment is maintained of damage. Tourism concept that was developed with the concept of ecotourism is expected to be continuous with the elements of education. If the elements of education and ecotourism can be combined, would make a natural laboratory that maintain the quality of the environment while empowering local communities as stakeholders.

Conclusions

Planning in the development of this natural laboratory will provide benefits both for student in the context of learning and to communities in developing the potential of the region. The development of this natural laboratory combines two elements namely education and tourism. How an education can be packed interesting in order to be a tourist attraction in a region so as to bring benefits to the local communities. Ecotourism concept used is as a complementary in the development of a natural laboratory. Therefore, the concept of ecotourism will be developed always oriented to the local wisdom, so mangrove environment is maintained continuity. The development of natural laboratory aims to can accommodate teachers in the learning process which requires the environment as a learning resource. Environment as a learning resource has a broad meaning, namely not limited by space and the school wall, so student will get a different experience.

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