EXAMINING THE LOCAL PRACTICE IN MARITIME ENVIRONMENT AND HOW TO LINK IT WITH LEARNING PROCESS: CASE STUDY IN SMALL FISHING COMMUNITY IN SPERMONDE ARCHIPELAGO

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Abstract

The Spermonde archipelago is one of the most spreading areas of coral reefs in South Sulawesi. The problem now is that the potential is much damaged by the uncontrolled utilization by humans around it. Damage of this marine environment from the coast to the seabed leads to an imbalance between environment and life activities. Whereas, the government of Indonesia has announced that maritime environment as the focus to work on. For that reason, the authority needs to make sure the availability of the marine resources is not overexploited by all parties including the local community. Unfortunately, many small fishing communities are still operating unsustainable ways of fishing method. This paper is a case study which attempt to examine the local practice of fisherman community around Spermonde Archipelago in gathering the marine resources and why it can be endangered the sustainable living of the environment. An effort is needed to minimize the damage from environmentally unfriendly activities so as the reef and marine resources can be cultivated sustainably. Based on this review, it needs an understanding on the environment by the surrounding communities as the main actors to maintain and preserve their marine environment. This paper also links this practice to educational process and promotes students and teachers more sustainable ways of living and practicing their local practice. Using the notion of place-based education and pedagogies of place, the aim is to demonstrate how the infusion of local knowledge of a society into learning process can contribute to new insight in studying education for sustainability.

Keywords: local practice, marine environment, pedagogy of place, place-based education, education for sustainability

1. INTRODUCTION

In the process of achieving the necessities of life, humans exploit natural resources. As human needs increase their welfare, the need for natural resources also increases, while the availability of natural resources is limited. This causes excessive exploitation of natural resources and adversely affects the providing capacity of the environment. The government of Indonesia has announced that maritime environment as the focus to work on. For that reason, the authority needs to make sure the availability of the marine resources is not overexploited by all parties including the local community. Unfortunately, many small fishing communities are still operating unsustainable ways of fishing method.

The Spermonde archipelago is one of the most spreading areas of coral reefs in South Sulawesi. The problem now is that the potential is much damaged by the uncontrolled utilisation by humans around it.

Damage of this marine environment from the coast to the seabed leads to an imbalance between environment and life activities. Abrasion eroding the coastal side, rising sea water, and resources such as coral reefs and fish become extinct are the impact of the deteriorating environment. It has adverse impacts on life that is the number of disasters that threaten human life. Therefore, an effort is needed to minimize the damage from environmentally unfriendly activities so as the reef and marine resources can be cultivated sustainably. Based on this review, it needs an understanding on the environment by the surrounding communities as the main actors to maintain and preserve their marine environment.

This paper is a case study that attempt to examine the local practice of fisherman community around Spermonde archipelago in gathering the marine resources and why it can be endangered the sustainable living of the environment. This paper also links this practice to educational process and promote students and teachers more sustainable ways of living and practicing their local knowledge. Using the notion of place-based education and pedagogies of place, the aim is to demonstrate how the infusion of locality of society into learning process can contribute to new insight in studying education for sustainability (EfS).

2. THE CONTEXT OVERVIEW AND KEY CONCEPT

The context of this case study is based on the local practice in the fishing community on the archipelago located in Makassar strait called Spermonde. Mostly, their main occupation is fishing and trading because of the massive amount of marine resources. The citizen earns lots of income from these activities. For that reason, they heavily rely on ocean resources for their living (Ferse, Glaser, Neil, & Mánez, 2014; Pet-Soede & Erdmann, 1998). A lot of them are still using traditional fishing tools in gathering the fish (Pelras, 1998). Unfortunately, some of them keep maintaining unsustainable method. Therefore, it is important to persuade them to develop more sustainable way of fishing.

Based on my experience as a teacher in this area, I have ascertained crucial problems for these community regarding to sustainable living. There are massive environmental issues because of overpopulation and destructive fishing method. Rapid population growth and fishery activities immensely impact to ocean physical environment. The massive growth of inhabitants demands a lot of properties that affects the trees and coral as building materials. It also insists the dwellers to be more productive in gaining the daily needs (Zaelany, 2007). Consequently, it leads them to develop destructive fishery enterprise. As stated by (Wahid, 2015) that more than 70% of coral reef in this area has been wrecked by coral mining and destructive fishing activities (p. 89). This business highly impacts the coral reef where the fish breed. The sea around the island is used to full of fish, sea cucumbers and other marine resources.

Another obstacle they still encounter is the physical condition of some islands that is likely threatened by abrasion. The future of the people on these islands will be difficult to have a residential land (Asnaeni, 2014). As a result, environmental degradation can be more severe, for example coastal reclamation that will become more widespread and marine resources will decrease drastically. Likewise, the quality of the coral reef getting damaged by the waste and sedimentation in some islands. This condition, compounded by the mining of corals as building materials, causing coral reefs as a place of life and foraging various types of marine biota more and more damaged and reduced. Spermonde coral reefs from year to year increasingly eroded (Ferse et al., 2014).

In addition, the above fact is supported by the low level of public awareness of the importance of education. Education is not a primary need for this society. Most of their children just finish their studies up to lower secondary level (Asnaeni, 2014). After that, they prefer to help parents earn money by trading or fishing activities. Working at an early age is common in this region. In addition, the parent train children to help them fulfil the needs of life, this practice takes place because of the insistence of economic needs, so people are more allowing their children to go out to sea than to go to school. People in this island area generally have a relatively low quality of education when compared to those in city's counterpart.

Based on above fact, schools should not only teach how to be good fishermen, but how marine resources can be managed fully and provide an understanding of the importance of preserving the environment in which they earn their living. For that reason, schools should carry out their best to improve the quality of education around the community where it is established (Bauch, 2001). This is closely related to the program that will be conducted by the educational institutions, especially on this small island, for example environmental preservation. If education does not support it then forever the program will not take root well and prosperity remains like a goal that will never be achieved. For residents in coastal areas that almost all work as fishermen will produce education in the form of local wisdom based on the sea. Therefore, everything in the field of education should be focused on more sustainable marine exploration.

2.1 The Notion of Local Practice

Traditional or local practice is established from a process of interaction of human minds and heart in managing nature and the environment as the primary sources of their life. In the process, the interaction takes a lifelong learning, perpetuated with institutionalized rules, resilient to the conditions of the surrounding environment for the purpose of their survival, and inherited to the next generation (Avery, 2013; Taylor & de Loë, 2012). As a result, the form and practice of local knowledge is usually very closely related to the physical condition of nature, the level of human civilization including the rules and the social condition (Waldrip, Timothy, & Wilikai, 2007). The traditional knowledge of the fisherman community in Spermonde archipelago that is laden with their relationship to the sea and marine resources.

From the environmental discourse, the existence of traditional knowledge is beneficial because it is indirectly very helpful in maintaining the environment and preventing the occurrence of environmental damage. However, because of the pressures of large-scale economic needs as well as supported by weak supervision policies, then it encourages the change of human behaviour (Glaser et al., 2015). Consequently, the traditional knowledge is much abandoned and replaced by a life-style that takes into account the economic aspect only without considering sustainability of the environment. Therefore, traditional wisdom needs to be maintained and practiced in daily life because of its importance role in conserving natural resources and the environment for a better future life (Taylor & de Loë, 2012). One effort to maintain this local knowledge is to incorporate its aspects into the learning and teaching process.

However, since traditional wisdom is locality, it is necessary to conduct a preliminary step such as gathering data and information to know more about local practice before it is incorporated into the education process (Kraipeerapun & Thongthew, 2007). Education is always closely related to space and time where the relationship between humans and the natural environment takes place (Kincheloe, Slattery, & Steinberg, 2000). Through this frame of mind, EfS is needed to sharpen ecological sensibilities and the constant awareness of the existence of the environment as part of an ecosystem that affects local community life. In conducting EfS the students are led to the habitualisation of an ecological life mentality that is always aware of their existence with others non-human world.

2.2 The Local Community Fishing Practice

In this part of this paper, I will analyze the local unsustainable way of fishing method in this region. The territorial waters of the Spermonde archipelago are the main economic source of the coastal community. Fish supply for Makassar city and neighboring areas is mostly from this region (Ferse et al., 2014). Due to the increasing demands of production, various ways of exploitation of marine resources are operated by the fishermen. The practice is rampant in an environmentally unfriendly way. The use of destructive fishing method, such as fish bombs and poison (*pang'es*), and trawling nets (*jala*) caused the potential of fisheries in this region from year to year to decline.

The use of large-scale bombs in addition to killing large-scale fish inflicts great damage to coral reefs. Fishermen mostly assemble fish bombs by themselves (Pet-Soede & Erdmann, 1998). How to make it is simple and does not require any special skills. Initially the container bombs used small plastic bottles, but it evolved into large sizes using jerry cans, to get a stronger explosive power. Another way of fishing method uses cyanide poison (Meereboer, 1998). This cyanide is anesthetized until the fish will be easily captured (Wahid, 2015). In certain doses the use of cyanide can kill fish and destroy coral reefs on a large scale.

Other activities that are not less harmful, the use of trawling nets or trawls. These types of nets can damage coral reefs and ecological stability. The size of the net is getting smaller allow it to catch both small and big fish. Even marine biota is often protected such as turtles, sharks, and manta rays are caught. This causes the decline of fish populations in this region decreases drastically.

Although archipelagic communities generally recognize the importance of preserving these natural resources (Pet-Soede & Erdmann, 1998), they are not yet fully able to resolve the various obstacles. One of the most common obstacles is the weak law enforcement of fishermen using illicit materials such as bombs and anesthesia. This not only causes the community to become apathetic, but the condition of coral reefs in the region is also increasingly damaged. In addition to addressing these issues, there must be a great deal of strategic effort to help them in the development of alternative livelihoods and or to develop the various types of businesses they have done so far.

The great dependence of coastal and small islands communities on environmental quality and the availability of natural resources requires environmental conservation be an integral part of its management and development planning. The large potential of ecosystem biodiversity in coastal areas, seas, and small

islands needs to take into action serious attention from the government and stakeholders as well as the society (Ferse, Knittweis, Krause, Maddusila, & Glaser, 2012). People who live in coastal areas and small islands are not left behind. They live surrounded by abundant natural resources. But it takes an awareness to manage these resources in order to avoid overexploit. Because of coral reef ecosystems are coastal resources that are highly vulnerable to damage, its utilization must be managed in extra careful way.

The use of various ways of fishing is cannot be separated from the support of local boss or *Punggawa* (Meereboer, 1998; Pelras, 2000). Most of the time, the way is more damage the environment. The term *Punggawa* itself refers to the patron-client relationship that generally develops in the village or community of fishermen in South Sulawesi, commonly known as *Punggawa-Sawi* (Pelras, 2000). This relationship is believed to have existed for hundreds of years. *Punggawa* are the owners of capital and *Sawi* borrowers or workers or laborers or small fishermen (Meereboer, 1998). The owner of the capital is entitled to buy the *Sawi* catch. *Sawi* is obliged to sell the catch to *Punggawa*.

3. MAKING 'PLACE' AS AN EFS FOUNDATION

Environmental issues have become a major problem since the early 19th century. It has impact not only on a local and regional space but also on the global earth. In general, the main purpose of education for sustainability is to prepare learners towards maturity and independence for the continuity of their lives towards a better humanizing civilization. EfS examines environmental issues, especially climate change, issues and management of pollution, environmental degradation and conservation (Littledyke, 2009). Some catastrophic disasters are caused by the deterioration of the quality of the environment, making us think backward and link the phenomenon with the what education process have applied in last couple of years (Orr, 2011).

It forces us to think what efforts need to be undertaken in order for the community to reinforce their care for the environment. We all really want a sustainable environment, an environmental condition that can continuously guarantee the welfare of human life as well as other living creatures. In order to preserve this environment every management must be done wisely. Wise management demands a sufficient knowledge of the environment and the consequences that can result from human disturbance. The environmental management also demands awareness of human responsibility for the sustainability of future generations (Glaser et al., 2015). This knowledge and awareness of environmental management can be obtained through education for sustainability.

EfS is one of the educational approach that emphasize on the process of relationship between human and natural environment. On the basis of the same foundation with environmental education, it aims to help social groups of people and individuals to develop an awareness, sensitivity, behaviour, and a skill in mapping and developing solutions for environmental issues. In developing environmental education programs, the local school must try to develop various concepts of environmental education in accordance with local character and needs (Reyes-García et al., 2010). By focusing on their local place, an understanding of humans and the environment around can be internalised and these students have a strong foundation in developing balanced thinking and behaviour of their surroundings. The experience of teachers in interacting with local practices to become familiar with this practice is an important part of the education for sustainability (Green & Somerville, 2015).

As one of the foundation of EfS, place pedagogy not only teach the connection between social and natural environment, but also preparing children to engage with the latest environmental issues, the roots of the issues, and strategies for responding to issues, both individually and collectively. Pedagogy of place guides students to the awareness of their relation to the environment, both social and natural (Duhn, 2012). The reason why sense of place is important in creating context for pedagogy is its influence on the way student observe and interpret natural phenomena (Gosselin, Burian, Lutz, & Maxson, 2016). The method of teaching can take places outside of classrooms such as on the beach, on the vessel, on the coral reef, oceans, including experiences and perspectives on animals and other ecological diversities around the archipelago. It also equips children with collaborative skills in adapting classroom tasks, writing exercises, group work, community engagements to transform their knowledge into social action, environmental justice, prosperity, and sustainability.

In teaching the EfS, should emphasis on the interconnectedness of sustainable beings. Through education undertaken in each local school, environmental programs can be implemented in the school curriculum. It is expected to create changes, both changes in attitude and knowledge and able to shape the personality of learners to become better understand the concept of marine environment. One efforts by schools to enhance students' awareness of the environment is the school seeks to incorporate environmental programs into the

curriculum. Derek Owen (2001) argue that the idea of incorporating local knowledge into the classroom is very compelling because this knowledge is highly relevant for environmental sustainability (as cited in Hayes, 2017). How this practice has been conducted by society and how to overcome it becomes a specific feature of EfS.

Another important pedagogy in EfS is the notion of Place-Based Education (PBE). Because of its characteristics using experiential learning methods and outside the classroom and focus on local issues (Israel, 2012) which is the reason why PBE is one of the excellent approaches to be applied to promote sustainable living in this society. It also places students as the social and ecological members of a society that participates in the continuity of the community and has equal responsibility for the wellbeing of the community (Israel, 2012). By linking place, pedagogy, and sustainability, it will have a real impact on the environmental problems facing the community (Glasson, Frykholm, Mhango, & Phiri, 2006), especially people in the region of developing countries such as Indonesia. Local communities have long been in direct contact with nature, and in order to survive, they are very dependent on the resources provided by nature. This ultimately makes them build knowledge and relationships with the natural surroundings (Glasson et al., 2006). Research conducted by Glasson et al learned that

> "a commitment to inquiry pedagogies within the framework of place-based education has the potential to promote community involvement, authentic learning, and ownership of the educational process" (p.678).

Gruenewald (2003) argue that pedagogy based on place tend to provoke children to care with their surrounding milieu which in turn stimulate the local environment and community sustainability.

EfS is fundamental aspect that students need to understand today. The earth is now through extremely worrying conditions, we realize the importance of EfS to be taught in schools. Beside of emphasising environmental awareness, it also teaches the principles of justice among human beings and non-human beings. One of the goals of the PBE is to encourage teachers and students to be more sustainable in dealing with environmental issues in their living standards (Israel, 2012), it is intended to stimulate a more sustainable Earth It plays an important role in preventing horizontal conflicts that are often triggered by improper natural resource management issues. Many developed and developing countries such as in Africa are ignited by conflict because of the use of natural resources. There are even studies that suggest social conflicts are also caused by the effects of drought and crop failure due to climate change (Barnett & Adger, 2007; Nordås & Gleditsch, 2007).

Therefore, by obtaining an EfS understanding, student will be taught how to use natural resources and manage it well. Thus, we can live on earth friendly and we can inherit the earth for our children and grandchildren. The notion of EfS should not only teaches the concept of climate change, but also prioritises the efforts of habituation in caring and managing the environment. In addition, EfS will be more effective if the school has a flexible teaching staff in embodying and addressing the material by adapting the local area where it is taught (Power & Green, 2014).

EfS is expected to create awareness of children in the early stage, so that they can grow and develop in a good environment, for further can changes their attitude and behaviour toward the environment (Duhn, 2012). Therefore, EfS should be provided for all levels and ages, either through formal or informal educational situation. EfS is an important factor to minimize environmental damage and is an important tool in producing human resources that can implement the principles of sustainable development.

EfS should be a process that runs continuously and throughout life, beginning in preschool, and progressing to formal and non-formal education. Therefore, in researching environmental issues should look at local, national, regional, and global perspectives, that students can receive insight regarding environmental conditions in other geographical areas (Israel, 2012). Emphasise the current environmental situation and potential environmental situation, by incorporating consideration of its historical perspective. EfS should promote the value and importance of local, national, and international cooperation to prevent and solve environmental problems.

Enables learners to have a role in planning their learning experiences, and allows them to make decisions and accept the consequences of the decisions. They need to develop sensitivity, knowledge, and skills to solve problems to the environment where they live (Wells & Zeece, 2007). Helping learners to discover the symptoms and causes of environmental problems. Putting pressure on the complexity of environmental problems, it is necessary to be able to think critically with skills to solve problems.

The reason for the popularity of this pedagogy is its ability to prepare the student and community with

experience of local conditions that can impact on the global situation (Hayes, 2017). It situates the school and curriculum with social and ecological surrounding in improving student learning and encouraging sustainability for the community. Utilising a wide variety of learning environments and approaches to learning about and from the environment with strong emphasis on practical activities and providing hands-on experience.

4. CONCLUSION

The condition of the environment in the coastal areas and the islands of Spermonde has been damaged. By studying EfS, the local students are expected to know how to stop the destructive forces of their life sources and environment locally and globally; how to act to transform and improve their communities today and tomorrow; how to organize management and politics over the marine environment and the future of the people and ensure the availability of natural resources for the needs of humans and non-human world. Student can participate, explore, and learn from local problem and practice as well as engage with ideas about the long-term sustainability of their place.

There is a mutual relationship between humans and the environment. This is because humans as the main actors indirectly affect the environment. Similarly, the environment will affect human life. Through this reciprocal relationship inhabitant in Spermonde archipelago and the environment cannot be separated. If the environment is damaged, then people in doing their activities will also be disturbed. A damaged environment can no longer perform its function in supporting human life. Now, it is our turn to improve the quality of life by treating the surrounding wisely.

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