The First International Conference on Neuroscience and Learning Technology (ICONSATIN 2021)

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We would like to express our gratitude to all participant who were joining "The First International Conference on Neuroscience and Learning Technology 2021 (ICONSATIN)". It is the first International conference held by the Department of Education, FKIP-University of Jember on 18-19 September 2021. The conference is held to welcome participants from many countries, with broad and diverse research interests on physics, science, technology, engineering, mathematics, neuroscience and learning technology. The mission is to become an annual international forum in the future, where, civil society organization and representative, research students, academics and researchers, scholars, scientist, teachers and practitioners from all over the world could meet in and exchange an idea to share and to discuss theoretical and practical knowledge on those topics. The aim of the first international conference is to present and discuss the latest research that contributes to the sharing of new theoretical, methodological and empirical knowledge and a better understanding in the area of physics, science, technology, engineering, mathematics, neuroscience and learning technology.

The participants of ICONSATIN 2021 were 126 participants consisting research students, academics and researchers, scholars, scientist, teachers and practitioners from many countries. The selected papers to be published on AIP Conference Proceedings are 86 papers.

On behalf of the organizing committee, finally we gratefully acknowledge the support from the University of Jember of this conference. We would also like to extend our thanks to all lovely participants who have been joining this unforgettable and valuable event.

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Location: Jember, Indonesia
ISBN: 978-0-7354-4300-6
Editors: Arika Indah Kristiana and Ridho Alfarisi
Volume number: 2679
Published: Jan 4, 2023

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Indigenous Learning in Coastal Community Empowerment at Jember Regency

Muhammad Irfan Hilmi[1,a)], Deditiani Tri Indrianti[1, b)], Lutfi Ariefianto[1, c)], Linda Fajarwati[1,d)], Frimha Purnamawati[1,d)], Rizka Amilia[1,f)]

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Abstract. The principle of the community empowerment program includes three things, namely from, for and by the community. Coastal communities have noble values that are held and inherited in the form of traditional learning. Community empowerment activities require a kind of redesign with an indigenous learning approach to better ensure community participation with accompanying local wisdom. The research activity was carried out with the aim of describing the community's indigenous learning patterns which included participation in planning, implementing and evaluating empowerment program activities as an effort to adapt to climate change in the Coastal Region of Jember. This study uses a qualitative approach with descriptive methods to examine objects that describe how the indigenous learning of coastal communities in dealing with climate change in the Coastal area. The results showed that the indigenous learning of coastal communities was carried out through learning stages based on the experiences of coastal communities which were then reflected so that it became a conception of climate change adaptation activities carried out in a participatory manner on vegetation and waste management in the Payangan Coastal Area.

INTRODUCTION

Coastal communities are identical to the fishing profession. The characteristics of fishermen on the coast of East Java are dominated by small fishermen. Small fishing groups are very dependent on the season and the availability of fish resources in coastal areas. The level of vulnerability of fishermen to climate change in East Java is still quite high. This number is quite large from the number of small fishermen who reach 85% of the total fishermen in East Java (BPS). In addition, the education level of fishermen is still low and the availability of alternative employment opportunities is still inadequate. Most fishermen in East Java only graduated from Elementary School (SD) and Junior High School (SMP) and many even continued to elementary school [1]

The phenomenon of climate change has an impact on people's lives, including coastal communities, because it can affect various aspects of human life. One of the facts of climate change is experienced by coastal communities in Jember Regency, namely the Payangan Coastal area. Based on the results of research [2] climate change greatly affects the economy of the Payangan coastal community including: for fishermen fishing activities depend on the weather on that day, 2) for farmers, a prolonged dry season causes losses to the agricultural sector, 3) for traders, waves which has the potential to cause catastrophic damage to their place of business, 4) The community has difficulty in managing the waste carried by the waves to the beach because it is wet.

The high level of vulnerability in the Coastal area due to the impact of climate change, coupled with the human resource factor seen from the level of education and the availability of low employment opportunities requires active

and participatory efforts to be adaptive in dealing with climate change that occurs. Adaptation of Coastal Communities to climate change certainly needs to involve local wisdom based on the real experience of the community. Based on real experience, humans carry out a process of reflection and conceptualization of what happened to find solutions to problems that occur. This activity is one form of indigenous learning in the community that needs to be developed and preserved as an effort to adapt society to climate change. Customary learning itself is an indigenous learning about traditional culture and values, which is sought to increase awareness or appreciation of the life experiences of indigenous peoples with the aim of creating an environment where they live so that it becomes understanding and trust among all citizens [2].

Learning needs should at least be strengthened in coastal communities. As through various experiences experienced, coastal communities can see and experience an event from the phenomenon of climate change, and make them learn from the experience so as to create knowledge to be able to overcome the problems that occur. Local wisdom is born from an experience-based learning process that becomes a source of innovation and skills that can be developed by coastal communities for their welfare. Such a learning process can be understood by using the theory of "experiential learning" [3] which in this theory explains a learning that arises from several experiences experienced. Especially experienced by coastal communities about climate change.

As for the facts of the indigenous learning of coastal communities, one of which is in the form of adaptation, adaptation is how the community copes with the pressures of the surrounding environment. Climate change adaptation activities have several components, including carrying out vegetation activities and waste management. As explained in the program that has been organized by the Ministry of Environment and Forestry (KLHK) [4] by initiating the National Movement for the Climate Village Program, because the climate village program is a "showcase" of climate change control activities that can carry out adaptation and mitigation programs simultaneously. in one community. In this climate village program, in addition to strengthening the community to face the impacts of climate change, it is also to minimize the impact of natural disasters that can befall coastal communities around Payangan Beach.

Thus, the indigenous learning possessed by the coastal community of Payangan Beach is one of the efforts to build local wisdom that is adaptive to climate change. In coastal communities, education grows in line with their demands and needs through an indigenous learning system that comes from the cultural roots of the community and continues to develop or change naturally. A learning that exists in the Pesisir Payangan area can change or develop depending on the community itself, how they respond to learning in the surrounding environment.

METHOD

This study uses a qualitative approach, with descriptive research. In determining the place of research using the purposive area method, namely Payangan Beach, Sumberejo Village, Ambulu District. Determination of informants in this study using purposive sampling method. The selection of data sources with certain considerations [5] includes fishermen, farmers, and traders, while in extracting data, informants use snowball sampling.

Data collection is done by using; 1) direct non-participant observation to get a clearer picture of the focus of the research at Payangan Beach; 2) interviews to obtain data from key informants and supporters related to Indigenous Learning of Coastal Communities in Adapting to Climate Change in Payangan Beach. Triangulation is done to increase the validity of the data. Data analysis uses the Miles and Huberman model, namely data reduction, data presentation and data verification.

RESULTS AND DISCUSSION

In the life of the people on the coast of Payangan, there is an indigenous learning that becomes their culture in an effort to survive. The coastal communities in Payangan Beach have developed their own adat/traditional education through indigenous learning systems in the process of transactions and adaptations between themselves, their environment and to their world. Such a learning process can be understood using the theory of "experiential learning" [3]
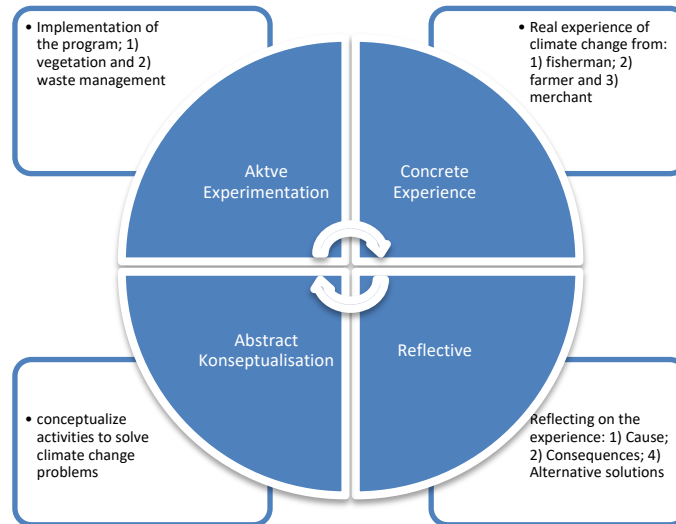
- Implementation of the program; 1) vegetation and 2) waste management
- Real experience of climate change from: 1) fisherman; 2) farmer and 3) merchant
- conceptualize activities to solve climate change problems
- Reflecting on the experience: 1) Cause; 2) Consequences; 4) Alternative solutions

Aktve Experimentation

Concrete Experience

Abstract Konseptualisation

Reflective

FIGURE 1. Kolb Learning Style on Indigenous Learning of Coastal Communities

The theory of experiential learning can be interpreted as the process of how knowledge of coastal communities is created through changes in the form of experience that they experience in real terms when climate change occurs. Knowledge is caused by a combination of understanding and transforming experience, how coastal communities understand what they are experiencing from a real experience of the impacts of climate change that they feel.

The existence of the phenomenon of climate change has an impact on coastal communities, such as the experience felt, one of which is the low economic sector for fishermen, farmers and traders, because their work is very dependent on climate change that occurs. Coastal communities can cope with the impacts of climate change through a phase of experiential learning, commonly known as Indigenous learning. Customary learning is formed from a stage of experience that is actually experienced by every coastal community, so that coastal communities can process and interpret by reflecting on these experiences.

Armed with reflections made by coastal communities, the community learns from an experience which then becomes a new understanding in conceptualizing a decision and acting in a better direction. As stated by Hoover [6] defines experiential learning as a learning process, a process of change that uses the real experience of coastal communities as a medium of learning or learning. The existence of traditional learning carried out by coastal communities makes them feel that the events they experience can be faced by applying the learning.

In the Experiential learning theory [3], that there are several stages of the indigenous learning process including real experience, where a collection of events or events that have been experienced by coastal communities during climate change. Due to climate change, it impacts on most of the livelihoods of coastal communities, especially for their jobs which depend on long term average weather. Fishermen, farmers and traders are some of the coastal communities who feel the impact of climate change. Through the experience they feel, which is the beginning of the process of local wisdom that can be used as a provision for coastal communities in dealing with climate change. Where local wisdom owned by the community is combined with the understanding of the coastal community itself which is then used as learning material. Learning is a process of how knowledge possessed by coastal communities, both fishermen, farmers and traders is created through changes in the form of experiences they experience in real time when climate change occurs [3]

In the context of learning, experiential learning can be described as a learning process that reflects the experience of coastal communities during climate change in depth, and from this emerges a new understanding or learning process [7]. In the learning process after the incident through real experiences experienced by the community, the next stage of the learning process is reflection. Reflection is an activity of coastal communities when observing environmental events when the phenomenon of climate change occurs before making decisions, with different perspectives. These observations were made by coastal communities, both fishermen, farmers and traders from the real experiences they experienced during climate change, by feeling how the impacts of climate change occur. That way, it will bring up feedback or thoughts from coastal communities to interpret and analyze how they can overcome the impacts of climate change.

This is in line with Fathurrohman's statement [7] Experience-based learning utilizes new experiences from coastal communities and learning reactions to these experiences. In order to build understanding and transfer of knowledge, new skills, and new attitudes or even new ways of thinking by coastal communities to solve problems related to the impacts of climate change. Experience-based learning is centered on learning and oriented to personal reflection activities carried out by coastal communities, about the experiences they experienced firsthand and formulating plans to apply what is gained from these personal experiences. so it can be concluded that from real experiences in the field experienced by fishermen, farmers and traders will create local wisdom how they can cope with the things they experience during climate change.

Through the process of indigenous learning stages proposed in the experiential learning theory according to Kolb [3] where an activity in dealing with climate change is equipped with experiences that are actually experienced by coastal communities. So that the experience is used as learning material by coastal communities to stimulate them to form new knowledge. The new knowledge is then implemented by fishermen, farmers, and traders with various actions or solutions taken during climate change. So that in the end fishermen, farmers, and traders have plans as stated in the theory of people who like to learn, where from the stages of the community experience-based learning process they become planners who are able to explore and seek information related to dealing with climate change. So that the results of the planning are used as a concept in tackling the impacts of climate change. Conceptualization of climate change has an important role to be applied, one of which is by identifying and explaining concepts, which determine what is meant by using certain terms. As well as several concepts that have been applied by the coastal community of Payangan in the face of uncertain climate change, and this is done by most of the coastal communities in order to maintain their survival.

The concept is applied by people from various fields of work, both for fishermen, farmers and traders. They have been carrying out this activity for a long time, as time goes on they demand to find ways to deal with the impacts of climate change. As is the case when climate change occurs, it can disrupt their work and require them to continue to earn an income, namely by looking for another job, having a side job or other activities. Starting from the actual experience experienced by coastal communities, especially fishermen, farmers and traders who greatly affect their daily economy, because their work is very dependent on the climate directly. After experiencing these events and events, coastal communities think and continue to learn in order to be able to innovate in responding to the phenomenon of climate change. Through reflection, creating reciprocity such as looking for several alternatives and other initiatives in overcoming the waste problem. So that there is the ability to make plans from their independent attitude who continues to explore and seek information related to climate change, which is then used as a concept by coastal communities by managing waste, looking for other jobs, and conserving vegetation. It is namely waste and vegetation management is one form of adaptation to climate change.

The form of climate change adaptation as explained by the Minister of Environment and Forestry by forming the National Movement for the Climate Village Program, includes 6 adaptation components in the climate village program, namely low emissions, new energy, forest and land. fires (smoke disasters caused by forest and land fires). other activities, vegetation and solid and liquid waste management, of the six components mentioned, only two components will be discussed, namely vegetation and waste management. So in this adaptation activity the role of coastal communities is very necessary, because coastal communities are the main actors who can support the success of an adaptation activity to climate change. Adaptation activities are carried out by building cooperation between the community and the government in formulating adaptation measures. Therefore, the community is an important element in increasing the resilience of other communities in reducing the impact of disasters as stated by Koem [8] so that they can revive traditions that exist in the community. As has been implemented by several coastal communities in the form of adaptation activities, namely preserving mangrove forests with fishing groups, planting pandanus plants around the coast. Likewise with waste management activities, although not all communities have implemented them, there are some of them who have awareness of the importance of waste management. [9].

In the action of climate change adaptation activities as explained by the Minister of Environment and Forestry by forming the National Movement for Climate Village Program, that one of the actions that can be applied to support the success of a business is in the form of adaptation to the impacts of climate change. There are 6 components of adaptation in the climate village program, namely, low emissions, new energy, forest and land fires, other activities, vegetation and waste management. There are several considerations and facts that occurred at Payangan Beach Jember, the adaptation components applied were vegetation/greening and waste management.

Vegetation is one form of activity that can be carried out to minimize impacts that can harm the community around the coast. Climate change can cause natural disasters such as rising sea levels, the impact of large ocean waves. As stated by the Head of (P2O LIPI) [10] that the use of vegetation on the coast is a significant step because climate change has now become a global problem experienced by all countries, including Indonesia. For this reason,

the cooperation of all relevant parties is needed to be able to carry out these uses. Vegetation or the process of growing plants such as mangroves and thorny pandanus is one of the activities that are beneficial for the process of adapting to climate change.

The Head of (P2O LIPI) [10], said that the increase in the earth's surface temperature, the intensity of extreme weather and the frequency of floods and droughts are clear evidence of climate change. To minimize the causes of climate change, appropriate and global-scale efforts are needed, one of which is by carrying out reforestation activities in the Payangan coastal area. As is known, coastal communities have mangrove and pandanus forest assets that need to be preserved in order to remain strong in facing the impacts of climate change. As well as other uses that can be enjoyed by the coastal community itself.

The activity of utilizing coastal vegetation is an important step, as seen from the environment around Payangan Beach there are mangrove forest plants that have the ability to absorb and store carbon. So that the community can redevelop the potential that already exists on Payangan Beach by adding more plants to the mangrove forest to make it denser and stronger when it withstands big waves. In addition, it can be a habitat for marine biota such as shrimp and so on. Coastal vegetation is a very important activity for carbon control, because it has the ability to absorb up to 77% more than vegetation on land such as forests. The ability to absorb is also owned by mangrove plants that grow in coastal areas. According to Wahyudi [11] The ability to apply vegetation on land and sea must be maintained, not just one vegetation applied by coastal communities, so that it can absorb as much carbon as possible. One example of vegetation on Payangan Beach is to preserve mangroves (mangroves), pandanus to preserve coral reefs as was done by one of the fishing groups.

Mangroves and other ecosystems provide important ecological functions for coastal communities and coastal communities. Such as vegetation activities that have been carried out by KUB dolphins since 2014, namely by scheduling mangrove planting activities, so that they are sustainable and strong enough to withstand big waves, beach abrasion, and become ecotourism [12]. With the process of planting mangroves which is quite easy, this activity has often been carried out together with various communities. In addition to vegetation, waste management also includes a form of adaptation activity because of the large amount of waste found on the Payangan coast which is generated from the waste of every household around, as said by Azkha [13] the existence of waste is the impact of human activities, the size of the waste problem grows along with growth resident. The more people there are, the more piles of garbage are produced, so waste management is needed to reduce the volume of waste. The amount of waste produced by each household is very large and it is impossible if the waste from many coastal communities is left without further processing. Because waste management is one way to reduce the amount of waste in large quantities, so that garbage does not only accumulate in one place so that it can have a negative impact on the environment, causing marine pollution to cause the population of marine life to decrease. As happened in the coastal area of Payangan, where waste is a complex problem, where people have the habit of throwing all household waste on the coast. The existence of this will have an impact that can harm the community, other living things and the surrounding environment. Therefore, as stated by Irwan [14], it is hoped that people can think that they are part of the ecosystem and not separate from the ecosystem, so that humans must have moral responsibilities that are also in harmony with human strength. to influence changes in natural resource management. So that coastal communities are aware of the benefits of waste management activities, to the impact that will be felt, which can result in various things that can harm themselves later.

In fact, although many coastal communities do not realize the importance of waste management, there are some of them who have their own understanding of the importance of waste management. Because, according to Akhtar and Soetjipto [15], the knowledge, attitudes and skills of residents in managing household waste for recycling are also important in waste management. Waste management activities that can be carried out such as burning, recycling, or other very useful uses such as those carried out by one of the traders on the coast, namely waste is used as material for making embankments in front of stalls with the aim of holding back large waves so that they do not cause damage. at the place of business

CONCLUSION

In coastal communities, education grows in line with their demands and needs through an indigenous learning system that comes from the cultural roots of the community and continues to develop or change naturally. Coastal communities have the potential where the learning process starts from experiencing something real from the impacts of climate change, reflecting on what happened which then makes people think conceptually, and try things that can be applied in dealing with the impacts of climate change. Indigenous learning is obtained through a learning stage

based on the experience of coastal communities which is then reflected so that it becomes a conception of activities in adaptation to climate change which is implemented in the vegetation and waste management program in the Payangan Coastal Area. A learning that exists in the Pesisir Payangan area can change or develop depending on the community itself, how they respond to a learning in the surrounding environment.

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