

The Potential of Coastal Areas Community Life as a Source of Contextual Learning of Temperature and Heat Materials

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ABSTRACT

This descriptive study aims to describe the potential of coastal community life as a source of contextual learning for the 7th grade of junior high school students in temperature and heat. The area studied was Celagen Village in South Bangka. The data collected by observation and documentation. The observational data reviewed for their compliance with the 2013 curriculum. The results showed the potential of coastal community life as a learning resource, including the process of making boats, building bridges and ship anchors, the right time in the process of making salted fish, making smoked fish, fishing activities into the sea, salt making, selecting roofing materials, and choosing clothes colors for daily activities. The potential of coastal areas can be a learning resource for temperature and heat matter.

Keywords: Contextual learning, Coastal areas, Temperature and heat, Learning resources.

1. INTRODUCTION

The learning process of natural sciences is a learning process that explains concepts related to nature and related to human life [1]. Associating learning materials with the facts and symptoms of nature that have been experienced directly by students causes students to more easily understand the learning materials presented. Combining aspects of attitude, knowledge, and skills are the meaning of the integrity of science learning [2].

Teachers must understand the objectives and content of the curriculum and all its devices in an integrated way to design and realize the optimal learning process. The learning process must take into account the right concepts for students, can strengthen confidence, and improve the relationship between context and learning. This integration is on view in the learning plan that will achieve amid others made up of the use of methods, media, teaching materials, and learning resources.

Learning resources are everything that is applied to provide ease in one's learning process. The learning process that utilizes the environment as a learning resource and is contextual, so that students can interact and observe straight what is around it. Exploiting the environment excellent will provide a real, direct, and

engaging experience that can stimulate students to think actively [3].

Contextual learning is a learning concept that helps teachers associate learning materials with students' real-world situations, and encourages students to make a connection between knowledge and application in everyday life. It associates matter with the real life of the surrounding natural phenomena, where they differ in each region. One example of this area is the coastal area.

Coastal areas are transitional areas between land and sea ecosystems affected by changes in land and sea. "The learning process with the contextual approach of coastal areas emphasizes the process of student engagement to understand the materials taught by utilizing resources in coastal areas such as mangrove forests, reefs, seaweed, fish, shrimp, crabs, squid, shellfish, fish patches and other marine fishery resources. [4]" This means that the learning process is oriented to the process of experience that students gain in daily life as a community in coastal areas. The concept, the expected learning outcomes are more meaningful for students.

Based on the explanation above, it is needed a study to determine factual and conceptual learning based on local wisdom, with the aim that learners can have a direct picture of the explanation of science materials taught and

if the material taught is close to the environment of the learner is expected to help learners to understand the material more easily. The materials selected in the study are temperature and heat studied in grade VII semester 1. Based on the curriculum 2013 science subjects of temperature and heat materials have a basic competency of knowledge namely 3.4 analyzing the concept of temperature, breeding, heat, heat displacement, and its application in daily life including mechanisms to maintain body temperature stability in humans and animals. Primary competency skills 4.4 conduct experiments to investigate the effect of heat on temperature and shape of objects as well as heat displacement [5].

The area that will be used as a research object is Celagen Village, South Bangka Regency, Bangka Belitung Province. Celagen village is one of the small islands in Bangka Selatan, which is a coastal area. The majority of people from Celagen Island are fishermen. Fish products become the mainstay marine resources, both catch fish, and maritime fish that are deliberately cultivated by fishermen. Community activities in managing fisheries and natural phenomena that occur in coastal areas can be used as a learning resource in science learning, especially temperature and heat matter. Therefore, we chose this village to be used as an observation place from our research, because it is considered to meet the criteria in determining the local wisdom of community activities that can be used as a learning resource for temperature and heat material.

2. METHOD

Descriptive research method with non-test data retrieval technique is observation and documentation, with a type of exploratory research that includes cruising activities, identification of natural phenomena, and community activities in coastal areas related to temperature and heat matter in class VII junior high school. This research aims to obtain primary data for further research related to the development of teaching materials and learning media. The data analysis in this study is descriptive. The results of identification and observation are expressed by the suitability of the materials and syllabus in the 2013 curriculum.

3. RESULT AND DISCUSSION

The following are various social activities in coastal areas that can be a source of continuous learning on temperature and heat materials in grade VII of junior high school.

3.1 The process of making salted fish

Abundant fishing catches make the process of preserving cast an activity that widely begins in coastal communities. Preserving and drying fish is the oldest way to conserve fish. Salted fish is made by the association using a combination of dry and wet salting, then dried. Fish-fishing prose is done traditionally in the sun with a length of 5-7 hours of a clothesline that takes 2 to 4 days [6]. The speed of drying of fish is influenced by factors such as airflow speed, temperature, the intensity of the sun, and the size of the preserved fish. The correct preservation process, making preserved fish safe will be consumed for months.

The process of drying fish by drying in the sun is related to the sub concept of temperature and the process of radiation transfer of heat. In this activity, examples of activities that students can do include investigating how the intensity of the sun affects the drying speed of fish, investigative differences in the results of drying fish dried over metal materials and non-metallic materials. In this activity, teachers can give assignments in the form of projects to students.

3.2 Process of Making Smoked Fish

Smoked fish is a traditional method of fish preservation. The drying process has an essential function in the care of smoked fish. The speed of drying depends on the number of smokes that occurs, the temperature and water content of the smoked fish. The high efficiency of the drying process is influenced by the humidity of the surrounding air, when the cold air that enters the smoking unit is heated, then the weight will be lighter than the air outside, and this air will enter or rise quickly to the smoking unit and cross the fish inside.

The volume of moisture absorbed by the air depends on the temperature. So, at the smoking stage, the speed of water evaporation depends on the capacity of the air dryer and the smoke as well as the speed of the smoke flow. In the second stage, where the surface of the fish is already somewhat dry the temperature of the fish will approach the air temperature. The speed of drying will be slow because the water must seep first from the inner layer of fish meat when drying is initially done at too high a temperature and too fast, then the surface of the fish will become hard and will inhibit the subsequent evaporation of water from the inner layer, so that it is likely that the meat of the inner fish does not experience drying effect.

In hot smoking, the temperature of smoke reaches 1200°C or more, and the heat on the meat of the inner fish can scope 600°C. The resulting water content of smoked fish is still relatively high, so its durability is lower than that produced using cold smoking. Hot smoking is usually composed of smoked fish that have good taste [7]. According to the results of experiments conducted at

the Fisheries Technology Research Institute, fish smoked by a combination of hot and cold smoking when stored at room temperature, last up to 7 days, while when stored at low temperatures (+30°C), can last more than 150 days.

The process of making smoked fish is related to the sub concept of temperature, heat, heat displacement process in conduction, convection, and radiation. In this activity, examples of activities that students can do, among others, can investigate in any activity the transfer of heat conduction, what materials are conductors, how the effect of the length of smoking on the quality of smoked fish, how the direction of smoke is composed.

3.3 The process of making salt

The process of forming salt crystals is the evaporation process on salt ponds caused by the heat rays of the sun. Much of solar radiation causes the temperature or temperature of the air to be high. The heat received from solar radiation has a profound effect on the growth of salt crystals. The speed of evaporation of seawater into salt crystals is also determined by the coming angle of sunlight, the length of time the sun is bright, the amount of cloud, wind speed, the humidity of the air.

The processes of making this salt are related to the sub concept of temperature, heat, and heat transfer process in conduction and radiation. In this activity, students can conduct experiments independently with the help of worksheets that have been prepared by teachers. Examples of activities that students can do include being able to investigate how solar radiation affects the growth of salt crystals, areas with conditions that how the salt formation process will be faster, whether any seawater taken in various places along the coast can produce good salt crystals.

3.4 Onshore wind and sea breeze

The onshore wind and sea breeze are examples of heat transfer. At night the land is colder than the sea. As a result, the hot air above the sea moves up and the place is replaced by colder air from the mainland, resulting in a land wind blowing from land to ocean. During the day, the land temperature is faster than the heat. As a result, the air above the acreage will move up, and the colder air above the sea moves to land because the above sea level air pressure is greater than the pressure above the area. It leads to sea breezes blowing from sea level to acreage. Onshore wind is usually used by fishermen to go in search of fish into the sea, and the sea breeze is used by fishermen to return home from the sea.

3.5 Boat Making Process

The hull of a boat or ship is an essential part of providing space for buoyancy that prevents the dispatch from sinking. The design of the hull is important in making the ship because it will affect the stability of the ship, the speed of movement of the ship, the fuel consumption, the depth of the flow of the waters by the ship. The shape of the hull of the boat is made curved. The wood pressing process is a process of softening the wood periodically using hot air flow and water flow then the wood can be formed into curves, streamline through the process of high pressure with hydraulic consoles on the print mall, and then dried to get a permanent pusher due to the physical properties of the wood particles that have been altered. A process of heating against wood using a heater through a special steam heat serves to soften the wood fiber until it is easy to bend. The bending process usually uses a strap or band-aid.

3.6 Nipah leaves as roof and walls of the house

The old Nipah leaves extensively used traditionally to make roofs whose durability reaches 3-5 years. The ceiling of Nipah leaves can absorb the heat of the sun well so that the house feels chilly and environmentally friendly. Nipah leaves that are young alike coconut leaves, can be weaned to make the walls of the house called Kajang.

3.7 Some other activities

Fish grilling activities, using umbrellas or caping hats when walking on the beach, wearing bright/white clothes, sunbathing for those who like to bask in the sun, drying clothes are some of the daily activities that people around the beach can use as a learning resource for students.

The learning process becomes meaningful because it gives students the opportunity directly to interact with what they learn. According to Irawan & Susilo (2014), the environment can be a learning resource that can provide ease for a person in the learning process if utilized optimally.

In addition to strengthening students' knowledge of the material, they are also directly involved in investigating using the scientific method stage. Students can build knowledge independently and develop the understanding they gain straight in the field. This corresponds to the fact that the process of research can be assisted by teachers by providing worksheets.

Based on the above description of the use of potential people's lives can be utilized optimally as a learning resource for students. Learning resources close to the lives of students make the learning process more enjoyable and make it easier for students to understand the material if it can be handled optimally. Each region has different characteristics and people's lives, so

teachers must design and exploit the potential of the environment in an area as a learning resource.

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4. CONCLUSION

The community activities and natural phenomena found in coastal areas can be a learning resource for students, especially for temperature and heat materials. Material that is contextual and following the phenomena that occur in the environment around students can provide firsthand experience, increased interest, and students feel close to the material they are studying. Thus, physics materials exclusively, temperature and heat become learners.

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