Study Of Myrtaceae Plant In Eden Park 100 Tobasa For Development Of Learning Tools In Biology Education Study Program

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Abstract: This research aims to: (1) to get data on myrtaceae plants in Eden Park 100; (2) compile college student worksheets as the development of learning tools from the taxonomy of tall plants family Myrtaceae family; (3) to find out how to classify Myrtaceae plants. This type of research is the development research that uses descriptive exploratory methods, namely research conducted to explore a relatively new data to make careful observations and detailed documentation of the interesting phenomena. The final product of this development research is the College Student Worksheet. The population in this study were all Myrtaceae plants in Eden Park 100. The research technique used in this study was purposive sampling technique, which is a sampling technique based on specific objectives. The results of this study indicate that the use of descriptive exploratory methods makes it easy for college students to determine the taxonomy of their plants.

Index Terms: Myrtaceae, Development, Learning Tools, Biology Education Program

1. INTRODUCTION

Learning is the process of student interaction with educators and learning resources in a learning environment. Learning is an assistance given by educators so that the process of acquiring knowledge and knowledge, mastery of skills and character, and the formation of attitudes and beliefs in students. In other words, learning is a process to help students to be able to learn well. In its implementation, the learning model must require teaching materials as a reference. Learning tools in question are all tools or equipment used to carry out processes that enable educators and students to carry out learning activities. In developing the learning tool, it can be sourced from Herbarium Resin which will be a product of the Myrtaceae family. One of the non-formal institutions used as a place to study is forest, which is a place where flora and fauna are included for the learning of students under the supervision of a teacher or lecturer. As natural resources, students directly interact to observe and preserve so as to enhance scientific thinking using scientific methods and being scientific. This is what is called the science process skill. Forest is an ecosystem that consists of various types of plants and animals. Plant communities in a forest ecosystem have a close relationship with each other with their environment. Forests in the Lake Toba region are a potential biodiversity. In accordance with the diversity of biological and cultural components found in the area of biodiversity sites found in the Toba Caldera Geopark include Samosir Botanical Gardens, Rafflesia meijeri, Botanical Gardens of Eden Park, Monkey Forest Sibagandung. Forests can be used as a learning resource in the development of teaching materials, such as the Eden Park 100 as one of the tourist attraction forests that has potential and requires planning that can provide an overview of matters relating to its management going forward, for this reason it is necessary to study and assess the potential existing potential. Eden Park 100 is a forest that has a diversity of both plants and animals. One proof of the natural wealth of Toba Samosir Regency is the presence of Eden Park 100, which is more focused on environmental conservation and tourism. The Garden of Eden 100 is located above an altitude of 1,100 s.d. 1,750 meters above sea level. This park is located in the hills of North Sionggang Village, Lumban Julu District, Toba Samosir Regency, North Sumatra. Eden Garden 100 has beautiful natural charm, such as waterfalls, bat caves, spoiled hills (lake toba view), orchid orchards, nature, and can also be used for tracking, and camping ground, forest conditions in this park still look natural, rich in flora and fauna, such as the Sumatran Tiger and bat. Humans as caliphs on earth were given the task in order to preserve nature because humans in life are very dependent on the state of nature. The benefits of nature or forests that will be preserved in the science education of scientists or students, will learn a lot about flora in nature and in the forest to identify plants that exist in nature. In identifying, living things are grouped into a large group then this large group is divided into small groups so that eventually the smallest groups consisting of one type of living things are formed. The stages are called taxa, taxonomy. The higher the level of the taxon: the more members there are, the smaller the level of similarity the more detailed the grouping becomes, the more different the differences are because the demand for similarity has less and less similarity. Conversely the level of taxon is lower in nature the opposite of those mentioned above. Taxon level: world / kingdom, division for animals or phyla for plants, class, order, tribe, genus / species / type, after studying taxonomy we will know the classification of plants. Generally, the classification used by researchers is a natural classification, which is a classification based on the morphological structure of the plant itself. The classification of this system starts from: Kingdom, division, subdivision, phylum, subfilum, class, subclass, order, family, genus, and species. Divisions in plants are divided into 5 types namely diviso Schizophyta (split plants), diviso Pteridophyta (fern plants), division Spermatophyta (seed plants), division Briophyta (mosses) which will be identified are plants or Myrtaceae in the garden of Eden 100. The guava tribe or Myrtaceae is a tree or shrub, a single leaf, crossed face to face, on horizontal branches as it is arranged in 2 rows on 1 plane, mostly without supporting leaves. Flowers are mostly effeminate, because of the abortion sometimes polygam, actinomorph. The petals and crown each consist of 4-5 petal leaves and a number of the same petal leaves which are sometimes attached or there are not many stamens, sometimes in groups facing the petals, have stems with bright colors, which sometimes -some of the most interesting parts of interest.
A. **Problem Formulation**
In accordance with the background of the problem identification problem, and the problem boundary, then the problem can be formulated as follows: "How is the diversity of the Genus and Species of the Family Myrtaceae used as learning tools in the form of LKM and Herbarium Resin products from Eden 100 Lumban Julu Tobasa Forest Park".

B. **Research Objectives**
1. To get the genus Family Myrtaceae data in the Garden of Eden 100
2. To get a description of the genus and type of Family Myrtaceae plants
3. Making LKM as a learning tool and making Herbarium Resin as a product of the Family Myrtacea Plant Taxonomy course

C. **Research Benefits**
1. Theoretically
   a) As a science and insight for biology education study program about Myrtaceae family plant data in Eden Park 100 Lumban Julu Tobasa.
   b) Adding scientific insights to readers relating to the type of family Myrtaceae in Eden Park 100 Lumban Julu Tobasa.
   c) In addition to the development of learning tools in high-level plant taxonomy courses at the FKIP UISU.
2. Practically
   a) To train students' skills in identifying plants, especially Family Myrtaceae
   b) Train students in compiling Family Myrtaceae plant descriptions
   c) For the development of scientific researchers in conducting research in the forest environment.

## 2 THEORETICAL STUDY AND CONCEPTUAL FRAMEWORK

### 2.1 The Nature of Learning
Detailed Learning is a process activity and is a very fundamental element in every level of education. In the whole education process, learning activities are the most basic and important activities in the whole education process. Various experts express opinions about learning in accordance with the flow of philosophy they profess.

### 2.2 The Nature of Biology Learning
Learning is the process of student interaction with teachers and learning resources in a learning environment. Learning is a deliberate, directed effort, and aims for others to gain meaningful experiences. Biology Learning is essentially a process to deliver students to their learning goals, and Biology itself acts as a tool to achieve these goals. Biology as a science can be identified through objects, natural objects, problems / symptoms exhibited by nature, and scientific processes in determining biological concepts. The Biology Learning Process is the creation of conducive situations and conditions so that interactions occur between students and their learning objects in the form of living things and all aspects of their lives. Through interactions between students and their learning objects can lead to the development of optimal mental and sensory motor processes in themselves.

## 3 RESEARCH METHODOLOGY

A. **Research Location and Time**

1. **Research Location**
   This research has been carried out in the Eden 100 Forest Park Tobasa Lumban Julu, North Sumatra. In the process of taking data samples of tall plant species obtained then species data are classified and grouped specifically into the family group Myrtaceae. Data collection of species samples is only focused on the family group Myrtaceae in the forest of eden 100 Tobasa Lumban Julu North Sumatra forest. Then the sample data of the species found is poured into the learning kit which will be developed in the form of Student Worksheets and Herbarium Resin products.

2. **Research Time**
   This research lasted for 3 months which was carried out from April to June 2019.

B. **Population and Samples**
1. **Research Population**
   The population in this study were all the Myrtaceae plants in the 100 Lumban Julu Garden of Eden.

2. **Myrtaceae Research Samples**
   The sample observed was the type of family Myrtaceae in the Garden of Eden 100. The technique used in this study was purposive sampling, which is a sample technique based on a specific purpose where the previous researcher had a discussion with the lecturer. Samples observed included individuals from the Myrtaceae plant in the 100 Lumban Julu Eden Garden.

C. **Design and Research Methods**
   This sampling technique uses descriptive exploratory methods that is, research conducted to explore a relatively new data to make careful observations and detailed documentation of interesting phenomena. This type of research design is purely descriptive, that is, research that truly describes what is present or that occurs in a field (region) and then the data collected is classified or grouped according to type, nature, or condition. While the type of data used in this study is qualitative data in the form of words, schemes, and images.

D. **Research Procedure**
   1. **Preparation Stage**
      The preparatory steps taken are:
      a) Request permission to conduct research.
      b) Make observations to the Garden of Eden to identify Myrtaceae plants.
      c) Look for references in relevant literature / literature books.
      d) Conduct consultations with thesis supervisors.
      e) Make a proposal.
      f) Following the proposal seminar.
   2. **Implementation Stage**
      The implementation phase is:
      a) Determine the location of sampling using the principle of purposive sampling, namely the determination of sampling with specific objectives or the sampling considered.
      b) Create a research path design
      c) Record the genus myrtaceae that will be examined
   3. **Completion Stage**
The completion stage includes:

a) Manage data from research results  
b) Conduct data analysis process from research results  
c) Draw conclusions from the results of the study  
d) Making resin herbarium and reports related to research  

4. Stage of making an MFI  
The stages of making an MFI include:  
a) Conduct curriculum analysis, competency standards, basic competencies, indicators, and learning materials  
b) Prepare a map of the needs of the MFI  
c) Determine the title of the MFI to be used  
d) Writing / creating MFIs  
e) Making assignments or questions  
f) Conduct an assessment cap.  

E. Research Instruments and Data Collection Techniques  
1. Research Instruments  
   a. Field work  
      1) Take a picture or photo of each Myrtaceae plant found by taking photos of all parts of the plant such as stems, leaves, seeds if they have seeds, flowers if they bloom.  
      2) Taking samples for identification in the laboratory, then made into a herbarium  
      3) Record the morphological characteristics of stems, leaves and flowers when flowering, fruit if fruiting, from each Myrtaceae plant.  
   b. Laboratory Work  
      1) Making Process of Herbarium Resin (a) making a container / mold from a plastic tableware, a good mold is flexible, the surface is smooth, resistant to resins (b) preparing tools and materials, which will be used for example in Myrtaceae plants (c) make resin preparations, place the plants in a container then mix the catalyst into the resin with a ratio of 1:10 then stir until evenly distributed then pour the resin that has been mixed with the catalyst into the container with the Myrtaceae plant, then wait for it to dry / freeze.  
   
F. Data Analysis Techniques  
Plant data that has been found and collected, then identified, described, and classified. This research uses descriptive data analysis technique, a technique to describe the data obtained so that it is clearer and can be distinguished from one another. The results of the identification will be tabulated in the form of data arranged in a grouping table based on scientific names, regional names and genus.  
The identification results will be tabulated in the form of data arranged in a grouping table based on scientific names, regional names and genus contained in the table below:  

<table>
<thead>
<tr>
<th>No.</th>
<th>Genus</th>
<th>Species Name</th>
<th>Regional Features</th>
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Etc.  

4 RESEARCH RESULT AND DISCUSSION  

A. Research Results  
This research was carried out in the 100 Lumban Julu Tobasa Park, North Sionggang Village, Kec. Lumban Julu, Kab. Toba  

Samosir with an area of 40 hectares and the area under study  
1 hectare. Data collection of species samples is only focused on the Myrtaceae plant group in the forest of Eden Park 100 Tobasa Lumban Julu, North Sumatra.  

Based on the results of research conducted in the Forest Park 100 Eden Agrotourism obtained 5 species of Myrtaceae plants consisting of genera Eugenia, Syzygium, Psidium, and Rhodomyrtus.  

A. Data on the Identification of Myrtaceae in Eden Garden 100  
No. Genus Species Names of Regions  
1. Eugenia Eugenia jambos (Guava Mawar)  
2. Syzygium Syzygium aqueum Guava Water  
3. Psidium Psidium guajava Guava  
4. Psidium Psidium cattleianum Guava Leci  
5. Rhodomyrtus Rhodomyrtus tomokansha Harimunung  

Table 3. Number of Genera and Myrtaceae plant species in the Garden of Eden 100 author.  

5 RESULT  

B. Description and Classification of Types of Myrtaceae Plants found in Eden Forest 100  
1. Eugenia jambos (Guava Mawar)  
   a. Description  
   This plant is a tree, which has a height of up to 10 m with a diameter of 50 cm trunk, often branching low and dense headline. The poles of poles, the bark of the hakus and are grooved and brown. The leaves are facing, oval, 9-26 cm long and 1.5-6 cm wide, the edges are pointed, the surface of the upper leaf is dark green and the surface of the leaf is light green. The young leaves are pink and shiny and will turn green as the leaves age.  
Large guava flowers, pale white or silver, and have a rather fragrant odor. The flower stalk is short and is located at the end of the branch which still has leaves. Guava fruit is rather round or oval with a wide base. Medium sized fruit with a diameter of 4-5 cm, smooth and hard skin of the fruit. The ripe fruit will be pale yellow or greenish. The seeds are brown and each fruit has one to two seeds.  
   b. Habitat  
   Guava roses can grow in areas with altitudes up to 1200 meters above sea level. The soil is fertile, loose, and has good drainage and that is one of the requirements that support the growth and development of guava.  
   c. Spread / distribution  
   Guava rose from the Southeast Asian Region and as the center of origin is Malaysia and then spread to other tropical regions.  
   d. Propagation  
   Propagation of guava plants is generally done with seeds, grafts, and budding.  
   e. Benefits of Plants  
   Guava leaves can be used as chickenpox medicine. In Cambodia, guava leaves and fruit can be used to reduce body heat. The seeds can be used for drugs of dysentery, diarrhea, and inflammation of the lining of the lenders in the nose or throat.  

6 CONCLUSION AND SUGGESTION  

6.1 Conclusion  
Based on the results of research and discussion conclusions can be obtained as follows:  
1. Products produced from the Development of Learning Tools
in this study are in the form of Worksheets.
2. The results of the data obtained are types of Myrtaceae Plants in the Garden of Eden 100 from various genera, namely: Eugenia, Syzygium, Psidium, and Rhodomyrtus.
3. Based on this research, researchers used a descriptive exploratory method, where the method is research conducted to explore a relatively new data to make careful observations and detailed documentation of interesting phenomena.
4. Based on this research, researchers used a purposive sampling technique, which is a sample technique based on specific objectives.

6.3 Suggestions
Based on the conclusions above, the researcher presents several suggestions, namely:
1. It is hoped that the management of the Eden 100 forest will be able to manage native plants from the forest to be replanted in the tourist destination and it is hoped that the Eden 100 forest will become a research forest.
2. It is expected that teachers who will utilize this research as an alternative learning resource in implementation can be carried out using a different environment.
3. It is expected that other researchers continue this research in order to get better results than expected and can be used as a comparison.

REFERENCES
[17] Sample