Preliminary analysis based instructional materials edupark learning natural sciences method of travel work in Janjang Seribu and Merah Putih Mountain Sulit Air

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Abstract. The lack of integration of learning material with the surrounding natural environment is one cause not understood of the concepts of natural science. While around students there are many natural symptoms that are related to the concept of natural science, which is usually used for tourism purposes only. Therefore, it is necessary to develop learning resources such as natural conditions and events with the concept of natural science. Based on this, do an analysis of the learning materials of natural science used in schools with potential sources of learning in the Janjang Seribu tourist spots and Merah Putih Mountain Sulit Air. This type of research is a preliminary analysis. The data taken in this study were obtained by interviews with educators as well as the description of the direct potential of edupark learning of natural science with the method of tourism found in Janjang Seribu and Merah Putih Mountain Sulit Air. Based on the results of research conducted, it was proven that there was a need to develop edupark-based teaching materials on learning natural sciences.

1. Introduction

There are several factors that affect the morale and motivation of learners, such as there are encouragement and needs in learning, interest in learning activities [1]. Positive encouragement and motivation of educators, this will easily be created in learning. For example, held an activity of interest in learning, this can be done by connecting directly with the subject matter and the state of the real events around the learner. Circumstances and events that often they meet and do in life, but they do not know the circumstances and events that have a relationship with their subject matter. Learning science, for example, Science is the study of the events that occur in nature by making observations in accordance with the procedures established so as to obtain a conclusion [2,3]. Examples of the material sound reflection, one type of sound reflection that echoes that mean after the original sound reflected sound [4]. This is often done by students when they are on top of the mountain and shout, they can hear the echoes them back and know it is an echo. However, they did not know it was one of the study material contained in the discussion of their science lessons, and many other science materials are often natural learners, but they are not aware of anything to do with the subject matter natural sciences.

Methods of study tours can also be used in the process of learning science. Methods that lead directly to the object learners outside the classroom or school-related subject matter [5,6]. Raise the awareness of students about the potential subject matter that surround their lives is one way to develop
learning materials based on the character of the students and the potential of the local area, in accordance with the demands of the curriculum in 2013 [7,8]. The advantages of this method are: 1) a real environment utilizing the teaching of the principles of modern teaching, 2) the lessons learned are more relevant to the realities and needs of the community, 3) stimulate the creativity of learners, 4) materials and actual broader lesson. The drawback of this method is 1) requires vasculitis and cost, 2) must be prepared carefully, 3) the effectiveness of time to study less, because higher priority elements of recreation, 4) difficult to manage learners because of there is from outside the classroom and or school [9]. In this study, these deficiencies can be minimized, 1) will not require the facility and the cost is too great because the sights that made the object is not too far from school, 2), the participants will be more focused on learning because these places have frequented by students.

Edupark is an educational garden that creates value for the target learning education (learners). Utilization methods of work tours and methods of local tour effective models used in study Social Sciences [10,11]. Use of the method of work of these tours is not applied in science learning. If the learning natural sciences are not connected studied directly with nature, imperfect science lessons. So the researchers analyzed the process of learning science in MTs Sulit Air and potential edupark natural sciences subject matter contained in the tourist attractions Janjang Seribu and Merah Putih Mountain Sulit Air.

2. Research Methods
The research method used is Research and Development, with the Plomp development model. This development model directs research to work systematically so that it can solve the problem under study. This research is only at the Preliminary Investigation stage, which is the stage of collecting and analyzing information, defining the problem and the continuation of the project [12]The study was conducted in Sulit Air District of X Koto Diatas Solok regency of West Sumatra. The study was conducted all MTs in the Sulit Air MTs namely PSA and MTs Muhammadiyah Sulit Air [13], and one of the sights in Sulit Air is tourist Janjang Seribu and Merah Putih Mountain. These attractions are in between the Siaru ellipse and the ellipse Kunik Bolai.

![Figure 1. Map of information Nagari Sulit Air the tourist sites Janjang Seribu and Merah Putih Mountain](image-url)

Tourist locations Janjang Seribu and Merah Putih Mountain very close to population centers. A mountain that has a cave on it. In order to reach the cave hikers can take the stairs, amounting to ± 1000 steps, or be reached by using a motor vehicle passes a dirt road access to the newly created by the government and local communities, with a road width of ± 4 meters. After passing through the stairs and or access to a dirt road to get to the cave, then take the climbers to trail about 1 ½ kilometer.
During the journey to the cave along the eye can see there is a beautiful view, which overlays settlements, an expanse of rice fields, the expanse of palm trees, and the green environment and the view of other mountains are beautiful.

![A Thousand Level Gate](image1)
![Part of the Thousand Level](image2)

![Road to the cave using level](image3)
![Road to cave using the vehicle](image4)

![View from the bottom of the mountain](image5)
![View from the top of the mountain](image6)

**Figure 2.** Natural scenery of the Janjang Seribu and Merah Putih tourist attractions where edupark will be developed (a) a thousand level gate, (b) part of the thousand level, (c) road to the cave using level, (d) road, to carve using the vehicle, (e) view from the bottom of the mountain, (f) view from the top of the mountain.

Data were collected through interviews, analysis of materials, observation, and analysis of the material. Observation of the systematic recording state, events and objects that were observed on the object of research [14]. Interviews were conducted with educators, natural sciences contained in the secondary schools. Aiming to get an overview of the learning procedure for educators procedures...
explaining learning to students and an overview of the motivation and enthusiasm of students in following the learning. Analysis of teaching materials is carried out by analyzing teaching materials used by educators and students in the learning process. Observations were made directly to the field (Merah Putih mountain and Janjang Seribu). Analyzing objects related to concepts, in science learning material (physics, chemistry, and biology). The material analysis is done by analyzing the basic competencies of science subjects. Analyze the demands of each basic competency and choose basic competencies that can be directly related to the natural conditions that exist around the Janjang Seribu and Merah Putih mountain. Based on the results of interviews used to determine the problems faced by educators in learning, and the results of the analysis of teaching materials used to determine the effectiveness of teaching materials used in learning. The results of observation and analysis of this material are used to determine the potential of nature (tourist attractions Janjang Seribu and Merah Putih mountain) connected with the learning material of Natural Science.

3. Results and Discussion

3.1. Interviews conducted with educators Natural Science and Instructional Materials Analysis

Interviews with educators MTs PSA conducted on June 23, 2018, with educators MTs Muhammadiyah on June 25, 2018. Based on the analysis of the interviews that have been conducted problem situation natural and educators in teaching about the same, as shown in Table 1.

| No | Topics                                                                 | Discussions                                                                 |
|----|----------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1  | Obstacles encountered in implementing the 2013 curriculum in science teaching | a. Lack hour lesson, b. The scoring system is the ever-changing and confusing. |
| 2  | The use of models and a variety of learning methods in teaching       | Less varied, a method often used is lectures, educators explain lessons learned immediately. Learners listen and record the explanation described educator. Sometimes using the method of discussion. |
| 3  | Learning resources used                                               | Textbooks are published by the government. LKS in a message from a publisher that is delivered directly to the school. |
| 4  | Learning resources are used in accordance with the demands of the curriculum 2013 revision | Still less appropriate, be used as a textbook learning resource is combined with KTSP books. |
| 5  | The subject matter is connected directly to the circumstances and nature event learner Learners’ enthusiasm in following the science lessons | There is some material, some even observe directly. But that is only done in the school district. Less enthusiastically, most learners think science teaching difficult subjects. |

Based on Table 1, the demands of the curriculum graduation standards in 2013 towards an integrated learning, a difficult thing in learning science [15,16]. Three subjects in merge into one coherent with the number of lessons 5 hours in a week. Revisions are often made to the curriculum in 2013 make educators apply the difficulties and confusion in the learning process. How to give an assessment of the competence of learners often choppy and confusing, so expect a lot of demand assessment is not reached and there are no fixed guidelines that can be used educator assessment process.

Graduation Standards curriculum to meet the 2013 educator should be more creative and updates related to the development and implementation of the curriculum in 2013, because the 2013 curriculum has been developed and designed according to the needs and educational development. In addition, educators must also provide a general overview regarding the implementation of the
curriculum in 2013 in learning to learners. The rate on curriculum development in 2013 serves to
determine the competence of learners in the warmth of each assessment instrument [17]. So it can be
evaluated and improvements related to the assessment results obtained by the students. So to
overcome the difficulties faced by educators in implementing the 2013 curriculum in teaching,
especially in the assessment, the educators need to better understand the curriculum in 2013.

The lack of learning resources owned by learners, learners make less eager to learn and difficult to
understand the subject matter. Utilization of a variety of learning resources in the learning process is
influenced by two factors, namely internal and external. Internal factors come from schools and
educators, the influencing factor is the willingness, ability, interest, excitement, awareness, and
comfort of the user himself. External factors that affect is 1) the availability of learning resources
varies. 2) Ease of use of learning resources. 3) The continuity of the learning process using learning
resources. 4) Human resources. 5) The system being applicable school or educational institution. So,
learning resources are utilized in the learning process is not just using the textbook only. In addition to
seeing the factors that affect the availability of learning resources, in the selection of learning
resources must also consider the criteria for selecting learning resources, namely 1) Compliance with
the learning objectives. 2) The availability of local learning resources, if the learning resources are not
available in the sources of existing resources, so educators can create or take advantage of the
circumstances and the potential that exists around to be made as a learning resource. 3) The learning
method used. 4) The effectiveness of time, cost, and flexibility of use [18].

The learning system is still centered on educators and monotonous, making less enthusiastic
learners and independent in learning. This is contrary to the purpose-designed education on curriculum
2013, which is the purpose of secondary education is to improve the intelligence, knowledge,
personality, character, and skills to live independently. Educators need to be more involved learners
learning. This can be done by adjusting the learning process by using appropriate learning model to
the learning objectives to be achieved and the use of teaching materials or learning resources
accordingly.

The lesson to be connected directly to the circumstances and nature of events makes the students
excited about learning to follow and easy to understand what was the subject matter. In accordance
with the proposed Uno, one that affects the motivation of learners is something interesting. But the
time to do so is limited. This has resulted in learners less enthusiastic in participating in learning
natural science. To respond to these educators can use natural-based teaching materials in accordance
with the demands of the curriculum and the surrounding natural potential that can be linked to the
subject matter [19].

3.2. The results of material analysis and field observations

Distance to school with tourist sites ranged from 2 to 3.5 km. This tourist spot frequented by most
learners. Materials science lessons that can be associated directly with the state of the Janjang Seribu
and Merah Putih are:

| No. | Subject Matter Analysis | Natural conditions |
|-----|-------------------------|--------------------|
| 1   | Objects IPA and observations "standard unit and non-standard" | Number of stairs which can be used to measure the height of the base of the mountain to the top. |
| 2   | Living beings and inanimate objects a. The characteristics of living things b. Classification of living things | Many living beings and inanimate objects that can be observed along the way to and in the tourist areas Janjang Seribu and Merah Putih mountain |
| 3   | Temperature and heat a. Temperature | a. The temperature difference at the foot of the mountain with temperatures on the mountain |
Based on Table 2, seen a lot of the subject matter that can be directly linked to the subject matter natural science. It can be more aware of learners that many circumstances and events surrounding them related to the lessons they learned in school, especially in science. Based on observations and analysis of these materials, it is known that there is a lot of science subject matter that can connect directly with the objects contained in tourist attractions Janjang Seribu and Merah Putih mountain. It can be used as a learning resource and used as an object to develop naturally-based teaching materials and sites.

4. Conclusion

Learning science in Madrasah Tsanwiyah all Sulit Air is still far from the standards and demands of the curriculum, 2013. Learning is still centered on the educator. The learning method used in the study is less varied. The lack of integration of learners with the environment related to the subject matter learned. Less varied learning resources. The amount of science subject matter that can be connected directly to the circumstances and the events contained in the Janjang Seribu and Merah Putih mountain. Addressing the issues contained in the results of the interview analysis, analysis of teaching materials, analysis of the material and natural conditions in Janjan Seribu and Gunung Merah Putih requires an edupark-based teaching material designed in accordance with the 2013 curriculum and integrated with the method of tourism in the Janjang Seribu and Merah Putih mountain.
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