Preliminary analysis of integrated science teaching based on edupark of Anai Land

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Abstract. Utilizing environment-based media in learning can better understand the natural phenomena that occur in everyday life, the environment provides a variety of things students can learn, and the use of the environment allows for a more meaningful learning process. One of them is utilizing natural tourism objects which lately are very popular with tourists. Tourism is not just a place to enjoy the natural charm and games provided. Attractions as integrated learning resources (edupark) have not been fully utilized, one of which is Anai Land attractions. To support Anai Land as the Edupark Science School, plu to study Integrated Science learning material that can be learned through Anai Land tourist destinations. Based on this, analyze the integrated science learning material used in schools with potential learning resources in Anai Land tourist attractions. This type of research is a preliminary analysis. The data taken in this study was obtained by interviews with educators as well as a description of the potential direct learning of natural sciences with the Anai Land tourism method. Based on the results of the research conducted, it is evident that there is a need to develop edupark based teaching materials on natural science learning.

1. Introduction

Attraction not only functions as a place visited in the context of recreation, business or other matters, but also is a place of social, cultural and economic interaction and attractions can also be useful as learning resources that can be used in the learning process. In Permendiknas No.22 of 2006 it is known that the utilization of regional potential can be done by optimizing the surrounding environment, including attractions as a source of learning [1].

Tourism is not just a place to enjoy the charm of nature and the games provided. Utilization of tourism objects as a source of learning rests on thinking about the four pillars of learning that UNESCO faces, namely: Learning to know, Learning to do, Learning to live together Learning to be [2]. Based on one component of the four pillars, namely learning to do to enrich the learning experience, increase student interaction with the environment so that students build understanding and knowledge of the world around them, teachers can utilize attractions as learning resources. Utilizing environmental-based media in learning can better understand the natural phenomena that occur in daily life, foster awareness from the beginning to love nature, students can treat nature as a whole and comprehensive entity, the environment provides a variety of things that students can learn, and the use of the environment allows a more meaningful learning process (meaningful learning) [3].

Students' understanding / memory will be better if the students can see, feel, and do the learning experience themselves. Learning experiences can be obtained by learning in nature [4]. One of the
subjects is science. The learning process of Natural Sciences can be carried out in nature around because Natural Sciences is the study of natural phenomena through observation and analyzing empirical evidence so that they are able to describe, predict, and understand these natural phenomena [5]. Through science learning, students are expected to be able to apply the concepts of science to everyday life scientifically explaining natural phenomena that occur in the environment. Natural attractions are very appropriate as an alternative choice of the environment or a fun learning resource. Anai Land is a natural tourist attraction dominated by natural beauty, available Tirta Alami bathing place, Golf Course, Wahana Outbound [6]. Anai Land as one of the natural tourism destinations can be used as a learning resource called as edupark [7] [8]. The concept of edupark integrates the concept of learning with nature through travel and environmental care attitudes [9] [10].

The results of the analysis of Basic Competence of natural science material are directly applied during the learning process. Research on Anai Land As Science Education’s Edupark has never been done. This research has the potential to develop learning materials, learning models, evaluations, and edupark-based science learning tools to explore every destination in Indonesia as Sians Education’s Edupark.

Anai Land covering an area of 400 ha is a tourist attraction that has a natural bathing place, golf course, and outbound rides including sky bikes, flying rugs, water balls, inflatable boats, and flying fox with various types of games that become a special attraction for students. Anai Land's position is very strategic and easy to reach because it is on the Padang - Bukittinggi highway in the middle of West Sumatra Province, as shown in the map in Figure 1: The charm of the tour at Anai Land is shown in Figure 2.

![Figure 1. Map of West Sumatra Province, Indonesia.](image-url)
Figure 2. Wahana Anai Land in Padang Regency, West Sumatra Province Indonesia
a. Nature swimming pool Tirta Alam, b. Outbound Vehicle, c. Anai Peak Baths.

Students can study scientific concepts in the Anai Land area scientifically, thus raising awareness that the science concepts written in the book are derived from phenomena in the natural environment. Understanding the concept more real, in the context of students learning through interesting and interesting content. The results of observations in SMP 2 Padang Panjang from the data analysis of students for aspects of science subjects are categorized as sufficient, it shows that the lack of self-potential development of students in science learning so that learning achievement is less than optimal. The results of observation in the field also indicate a lack of motivation in learning and learning resources that are used by students only through teachers and textbooks available in the library, and have never implemented science learning into the surrounding environment with edupark-based science manuals, especially Anai Land eduparks. Based on this background, it is necessary to develop teaching books edupark physics to support science learning. in order to use Anai Land as an Edupark for science learning.

2. Research Methods
The type of research used is Research and Development, with the Plomp model [11]. This development model directs research to work systematically so that it can solve the problem under study. This research is only at the Preliminary Research stage, which consists of student analysis, curriculum analysis, material analysis and regional potential analysis. This research was conducted at SMPN 2 Padang Panjang, Padang Panjang City, West Sumatra, Indonesia.

The data used in this study were developed based on learning process parameters, learning tools, student characteristics and environmental characteristics, as well as a description of the potential of Anai Land edupark, especially those that support science subject matter.

Collecting data on these parameters was carried out a literature study and observation of educators and students in SMP N 2 Padang Panjang by interview and questionnaire. It aims to get a general picture of the learning process, learning tools, student characteristics and environmental characteristics. Observations were also made directly to Anai Land to see the potential of the tourist attraction. Then, analyzing the objects related to the concept, in science learning materials, especially the concept of physics.

Material analysis is done by analyzing the basic competencies of natural science subjects. Analyze the demands of each basic competency and choose the basic competencies that can be directly related
to the rides and natural conditions that exist around the Anai Land edupark, Padang Panjang City, West Sumatra, Indonesia. The observations and analysis of this material are used to determine Anai Land's natural potential associated with science learning materials.

Questionnaires distributed to educators consist of students' performance and development, while questionnaires distributed to students consist of aspects of knowledge, skills, initial abilities, learning styles, and motivation. Every aspect of the questionnaire was translated into several indicators. Questionnaires were distributed to educators for aspects of performance using alternative answers to "yes or no" while weighting questionnaires for aspects of student development and questionnaires for students using Likert scales. The Likert Scale, developed by Likert Rensis, is a series of items. Respondents only gave their approval or disapproval of the items [12].

| Statement                | Weight Statement |
|--------------------------|------------------|
| Always                   | 4                |
| Often                    | 3                |
| Sometimes                | 2                |
| Never                    | 1                |

The data analysis technique used is quantitative and qualitative descriptive statistical analysis. Quantitative descriptive technique by calculating the percentage of the number of suspension answers to score each answer from the respondent using 2.1 formulas: [14]

\[ V = \frac{X}{Y} \times 100\% \]  

Information:
V = Final value
X = Score obtained
Y = Maximum score

The percentages obtained quantitatively are then categorized qualitatively as in Table 2.

| Percentage (%) | Category       |
|----------------|----------------|
| 76-100         | Good           |
| 51-75          | Enough         |
| 26-50          | Not Good       |
| 0-25           | Not Good       |

3. Results and Discussion

Preliminary analysis conducted in this study consisted of student analysis, curriculum analysis, material analysis and analysis of regional potentials obtained based on learning process parameters, learning tools, student characteristics and environmental characteristics, as well as a description of the potential of Anai Land edupark, especially those supporting material science.

| No  | Aspect                              | (%) Result   |
|-----|-------------------------------------|--------------|
|     |                                     | Yes | No  |
| 1.  | Learning devices                    | 100 | 0   |
| 2.  | Learning steps                      | 93.05| 57.6|
| 3.  | Utilization of printed teaching materials | 93.33| 35.33|
| 4.  | Manufacture of printed teaching materials | 55.5 | 83.39|
| 5.  | Supporting facilities and completeness | 100 | 0   |

Analysis of the questionnaire to educators consisted of performance analysis and analysis of the learning process. Performance analysis includes 5 aspects including learning tools, steps in learning,
use of printed teaching materials, manufacturing of printed teaching materials, and supporting facilities and equipment as shown in Table 3.

Based on Table 3, it is found that all educators use learning tools, 93% of educators have applied the learning steps according to the RPP, 93% of educators use printed books as teaching material. But 83% of educators have not been able to make their own teaching materials because they use books that are already available in the library. While the supporting facilities and equipment in the school are already owned and can be used fully. From the data above it appears that it is necessary to make teaching materials other than textbooks available in the library, which are in accordance with the potential of the region and the achievement of students' learning goals, which allows students to learn [16].

Furthermore, the learning process questionnaire for educators consists of 4 aspects, namely students' interest in printed teaching materials, visits to edupark (educational park) in science learning, linkages of facts with science material, application of science learning to edupark (educational park) as shown on Table 4.

| Table 4. Educator Analysis on Aspects of the Learning Process |
|---------------------------------------------------------------|
| No | Aspect | (%) | Result | Category |
|----|--------|-----|--------|----------|
| 1. | Student interest in using teaching materials | 80 | Good |
| 2. | Relation of facts to the material IPA | 100 | Good |
| 3. | Visit to edupark (educational park) in the study of Natural Science | 50 | Poor |
| 4. | Application of science learning with edupark | 50 | Poor |

Based on Table 4 it is found that 80% of students are interested in the use of printed teaching materials in either category. Furthermore, in the aspect of the relationship of facts with the material science shows a value of 100% with a good category meaning that educators and students have linked science material with facts in the environment. Then only 50% of students make a visit and apply edupark in the science learning (education park) with a less good category. It can be concluded that educators and students in SMP N 2 Padang Panjang have never visited and applied science learning with edupark (educational parks), so that the use of edupark in science learning is needed. Edupark (educational park) which is utilized from the physical environment (nature) as a means to study natural phenomena or phenomena related to the concept of natural science both directly and indirectly utilized by the community in their activities [17].

Analysis of students includes 6 aspects, namely knowledge, skills, initial abilities, learning styles, learning resources, and motivation as shown in Table 5.

| Table 5. Student Analysis |
|----------------------------|
| No | Aspect   | (%) | Result | Category |
|----|----------|-----|--------|----------|
| 1. | Knowledge | 55.6 | Enough |
| 2. | Skill     | 73.55 | Good   |
| 3. | Initial ability | 66.43 | Enough |
| 4. | Learning style | 63.78 | Enough |
| 5. | Learning resources | 63.50 | Enough |
| 6. | Motivation | 65.75 | Enough |

Based on Table 5 it can be seen the percentage of knowledge attitudes of students 55.6% with enough categories. Based on observations, edupark Anai Land can be utilized to improve aspects of students' knowledge. This was also revealed from interviews with science educators [15]. In the aspect of students' skills with a score of 73.55% with a good category. The initial ability acquisition of students is 66.43%, with sufficient criteria. While the percentage of students learning styles with a value of 63.78% with the category enough. The percentage of new learning resources is at 63.50% with enough categories. This is because learning resources are still oriented towards teacher textbooks.
and learning tends to be teacher-centered. While the percentage of motivation is at a value of 65.75% with a sufficient category. This is because science is considered a difficult subject to understand because of the lack of use of the environment as a learning resource. To motivate students in learning, the science learning is made interesting and connects students' real life, so that it can make them enthusiastic in learning [18].

In addition, from observations made at the Anai Land edupark at SMP N 2 Padang Panjang, many natural science concepts can be applied in the Anai Land tourist area. Some scientific concepts that can be revealed from these destinations can be seen as in Table 6.

| No | Name Destination | Science Concept |
|----|------------------|-----------------|
| 1. | Edupark Anai Land | 1. Newton's Law Usaha dan Energi |
|    |                  | 2. Business and Energy |
|    |                  | 3. Simple Aircraft |
|    |                  | 4. Pressure |
|    |                  | 5. Vibrations and Waves |

Based on Table 6 it can be seen that there are many science concepts that can be utilized in the science learning process in schools. As demanded in graduate competency standards that cover aspects of attitudes, knowledge and skills, this edupark can be integrated in science learning.

4. Conclusions

Based on the results of preliminary analysis consisting of the analysis of educators and students conducted by interview and questionnaire as well as material analysis at Padang Panajang Middle School 2 and analysis of natural potential conducted in Anai Land district. Padang Pariaman can be concluded that it is necessary to develop Anai Land edupark learning resources at the school. Development of learning resources includes the development of textbooks so that they can carry out learning in accordance with the demands of the 2013 curriculum.

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