Preliminary study of edupark energy in geopark Harau Lima Puluh Kota Regency

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Abstract. Geopark Harau is one tourist attraction that is often visited by students in Payakumbuh. Lack of understanding of students about the concept of natural science that is in nature only makes Geopark Harau only a place of recreation and spend time only when there are many objects that apply the concept of energy. Based on this, developed an Energy edupark module in Geopark Harau, Kabupaten 50 Kota, Payakumbuh. The type of research used in this research is Research and Development (R & D), using the development model of Plomp at the preliminary research stage. At this stage the data obtained from the questionnaire given to pesera educators and educators and obtained from direct description of energy edupark potential contained in Geopark Harau, Kabupaten 50 Kota, Payakumbuh. Data analysis techniques used descriptive percentage.

1. Introduction
Science and technology continue to grow rapidly. Its influence extends to various fields of life including the field of education as it can influence students to learn independently and can improve student achievement. The new curriculum provides autonomy to educator units to develop curricula in accordance with the needs and potential of their respective regions.

Teachers can use existing natural resources, specific areas/schools in accordance with the potential of students. This must pay attention to the achievement of competencies in attitudes, knowledge and skills of students. In addition the teacher is expected to be able to link with the environment, natural resources, and the surrounding energy and global context, so that students can maintain and utilize their environment as a learning resource [1]. Considering that an important element of a geopark is not only in the economic but also educational and conventional fields [2].

Harau Valley Geopark is one of the natural tourist attractions located in Kabupaten Limapuluh Kota, West Sumatra. Harau Valley is surrounded by rice fields and high cliffs in the form of steep granite rocks with a height of 30 meters to 80 meters. Based on an evaluation conducted by the Department of Culture, Tourism, Youth and Sports of the Lima Puluh Kota Regency, the number of Geopark visitors increased from 2010 to the present, with the highest number being students. Students come for recreation, selfie and spend time with family and friends [3].

Learning media can help teachers or instructors in carrying out teaching and learning activities in class [4]. Learning media are all materials (both information, tools and texts) that are arranged systematically, which displays the complete figure of the competencies that students will master and use in the learning process with the aim of planning and reviewing learning implementation [5]. One
of the learning media studied is a module that suits the environmental conditions of students so that learning is effective and efficient. The potential of natural geopark which has its own unique ecology can be appointed as a new learning resource for students[6] The many science concepts contained in Geopark Harau can make this Geopark a learning media (Edupark). This paper focuses on the Preliminary Analysis of the Edupark Energy IPA Module at Geopark Harau Lima Puluh Kota, Payakumbuh.

2. Methods
This study is a research aimed at analyzing the edupark energy science module in Geopark Harau Lima Puluh Kota, Payakumbuh. In developing this media using the Plomp model [7]. Plomp (2013: 19) stated the stages of development research in the Plomp model, namely: preliminary research, prototyping phase, and assessment phase. However, the research was only carried out at the preliminary research stage. Plomp (2013:19) “preliminary research: needs and context analysis, review of literature, development of a conceptual or theoretical framework for the study.

2.1 User analysis (student analysis)
This research was conducted with interview techniques and used questionnaires were conducted at SMP IT Madani Islamic. In this study the use samples were taken randomly. The sample in this study amounted to 32 students, the questionnaires which contained several questions related to the availability and users of teaching materials in schools. Data collection techniques are descriptive and analysis percentage.

Figure 1. Science studies the environment, technology and other fields

2.2 Needs Analysis
Needs for analysis to determine teacher and school needs in solving problems in the learning process. In addition, analysis needs are used to see curriculum achievements by teachers and schools. Needs analysis also looks at students’ needs to solve problems in the learning process. this study focuses on the use of learning media used in science learning class VII. Data collection is done by observation and interview techniques. The research was conducted at Madani Islamic Junior High School with sample of four science teachers and two representatives of the curriculum.

2.3. Context analysis
Context Analysis is intended to see the situation in Geopark Harau. The study was conducted with interview techniques with Departements tourism and sports Limapuluh Kota and owner Geopark Harau. In addition, a field survey was also conducted to see some of the tourism objects that had the science concept in it. Relatively low level of knowledge and awareness of students about geopark, The success of Geopark development depends on two factors, namely community awareness, participation and appreciation; and public education program designed for various stakeholders [8]. preferably officials, tourism agencies and the community are involved in geopark tourism conservation, education and marketing activities [9].
Figure 2. Map of Geopark Harau in Lima Puluh Kota Regency

3. Results and discussion
Analysis of students conducted on 32 students in SMP IT Madani Islamic School. The questionnaire used in this analysis has 13 questions. The analysis results of students can be seen in Figure 3.

Based on figure, it can be concluded that most students think that science lessons are difficult (Q8), especially physics in the theme of energy in the living system (Q9). Existing teaching materials have languages that are difficult to understand, do not have clear instructions, and have not been interesting to use so that students lack interest in learning. Only a small percentage of students are actively involved in learning (Q11), some students like group learning, students better understand the lesson by using modules that can be applied in daily life.

Based needs analysis to new curriculum and concept natural science in SMP use integrative science which combine Physics, Biology and Chemistry. Integrative learning use theme or topics so that students. In class VII one of concept integrative science is Energy in living system learn. The implementation of the new curriculum requires preparation of various components, one of which is the preparation of teachers and other education personnel as curriculum implementers in the field. The important thing that needs to be prepared from a teacher in implementing the curriculum in the classroom is to make learning designs in the classroom with reference to the applicable curriculum. Design of classroom learning or classroom learning tools, for example syllabi, RPP (Learning Implementation Plans) and LKPP (Student Worksheets). But in practice, there are still many teachers in junior high schools who are confused in making learning tools that refer to the 2013 curriculum,
based on interviews with teachers. The 2013 Curriculum Development Guidelines state that science learning at the junior high school level is carried out on an integrated basis.

Context analysis is examined based on field surveys based on objects that appear in the harau valley. Harau valley is located at coordinates 0.099855 ° LS 100,666157 ° East. Where in the Harau Valley there are 13 waterfalls, 4 of them are used as tourist attractions namely Aie Luluih, Bunta, Murai and Aie Angek. The height of each waterfall varies between 50-90 meters. The waterfall flows from above the cliff that runs along the Harau Valley. Entering the Harau Valley Tourism Park, like being in a fortress with a cliff. reddish with a height of between 150 and 200 meters. The cliff is erect and sturdy around the valley.

![Figure 4. Waterfall in Geopark Harau; (1) Sarasah Aia Luluih, (2) Sarasah Bunta, (3) Sarasah Murai.](image)

**Conclusion**

Based on preliminary analysis of this study is the learner considers the material energy in living systems is quite difficult. Learners do not know the application of the concept of energy in living systems that exist in the Harau Valley like the waterfall. Good teaching materials based on a preliminary study of this research is a medium that can foster interest, motivation of learners in understanding the application of science concepts in the environment/harau valley. One of the media that is able to foster motivation and close to the environmental conditions of students is a module that is integrated with the concept of Energy in living system in Geopark Harau.

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**References**

[1] KEMENTERIAN PENDIDIKAN DAN KEBUDAYAAN.2017. Silabus Mata Pelajaran Sekolah Menengah Pertama/Madrasah Tsanawiyah Ilmu Pengetahuan Alam (Science Subject syllabus of Junior High School). Jakarta

[2] Abida, Maghfira, Ayip.2015. Geo – Pintar (Geopark As Inegrated and Smart Tourism): Konsep Pariwisata Modern Gunung Sewu Sebagai Global Geopark Network Dalam Menyongsong Masyarakat Ekonomi Asean. 8th Earth National Seminar, 15-16 Oktober 2015. Graha Sabha Pramana

[3] Departement of Culture, Tourism, Youth, and Sports of the Lima Puluh Kota Regency .2008-2018. Pariwisata Kabupaten Lima Puluh Kota (Government tourism Kabupaten Lima Puluh Kota). Sarilamak: Dinas Pariwisata, Pemuda, dan Olahraga Kabupaten Lima Puluh Kota.

[4] Prastowo,Andi. 2011. Paduan Kreatif Membuat Bahan Ajar Inovatif (Creative User Guide to Compiling Teaching Materials). Yogyakarta: DIVA Press.
[5] Mentri Kebudayaan RI. 2014. Peraturan Men teri Pendidikan dan Kebudayaan Nomor 58 Ta hun 2014 tentang Kurikulum 2013 Sekolah Menengah Pertama/Madrasah Tsanawiyah (Regulation of the minister of education and culture number 58 2018 about Curriculum in Junior High School). Jakarta.

[6] Rina Vitdiawati, Rini Nusantari, Dewi Nilam Tyas. 2016. Pengembangan Petunjuk Praktikum Berbasis Geopark dengan Pendekatan Inquiry Learning untuk Mata Kuliah Ekologi (Development of Geopark Based Practicum Guidelines with Inquiry Learning Approach for Ecology Courses. ISSN 2528-5726.309

[7] Plomp, Tj. 1997. Educational Design: Introduction. From Tjeerd Plomp (eds).Educational & Training System Design: Introduction. Design of Education and Training (in Dutch).Utrecht (the Netherlands): Lemma. Netherland.Faculty of Educational Science and Technology, University of Twente.

[8] Norzaini Azman, Ibrahim Komoo.2010. Public Education in Heritage Conservation for Geopark Community. Procedia Social and Behavioral Sciences 7(C) (2010) 504–511

[9] Neda Torabi Farsani,dkk.2010. Geotourism and Geoparks as Novel Strategies for Socio economic Development in Rural Areas. INTERNATIONAL JOURNAL OF TOURISM RESEARCH Int. J. Tourism Res. (2010). DOI : 10.1002/jtr.800