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Worksheet Development for Natural Laboratory in Strengthening Student 4C's

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Abstract **This research aims to produce a natural laboratory worksheet to strengthen 4C's students as a supplement in social science learning. Method used in this research is research and development with ADDIE (Analyze-Design-Development-Implementation-Evaluation). The feasibility of the worksheet are validated by the material expert and the instructional media. The result of the material validation test obtained a percentage of 66% in the initial validation, and by 85% in the second validation. While the results of validation test media obtained percentage of 69% in the initial validation, and by 87.5% in the second validation. Based on these results, it can be concluded that the natural laboratory worksheet developed has been valid and feasible.**

Keywords-worksheet, natural laboratory, 4C's

I. INTRODUCTION

Universitas Negeri Malang (UM) as *the learning university* has two tasks: 1) as a *learning organization*, the organization advancing the aspirations, concerns, and capabilities, and 2) as a *learning resource*, namely as a place, media, resources and referrals of learning for academics. Through the help of IDB *(Islamic Development Bank)*, now UM is also set as a center of excellence in learning innovation *(learning innovation)* to strengthen the nation's competitiveness. Therefore UM will later be used as a national reference. As one form of study innovation, UM is committed to develop life-based learning. This was conveyed by the Rector on the 62nd anniversary of UM. This commitment gives an opportunity to the entire academic of UM work harder and smarter to make it happen.

Faculty of Social Sciences has a natural laboratory that is in the form of an open space or natural environmental in southern slope of mount Kelud Blitar. General understanding often means laboratory as a space or building that limited by walls and roofs in which there are a number of practicum tools and materials. Different to this, natural laboratory is a place to study people's lives in relation to their environment, by this natural laboratory social studies student can be in an open space without being restricted by walls and roofs, this natural laboratory or field laboratory.

Southern slope of Mount Kelud Blitar Regency is a rich area and has many things to use to study social science. Therefore this area is suitable to be developed as a social science laboratory. The preliminary study of the establishment of a natural laboratory on the southern slope of Mount Kelud has been carried out since 2014 by taking the boundary in three regions, namely Nglegok, Gandusari, and Garum Districts.

There have been many studies conducted by the lecturers of the Faculty of Social Sciences related to the establishment of the natural laboratory. The research from 2014-2016 is: 1) inventory of natural and socio-cultural potentials [1]–[3], 2) relevance of courses in curriculum majors and study programs at FIS by mapping the distribution of objects natural laboratory [4], and 3) The development of natural laboratory guidebook for students [5], [6].

In contrast to previous studies that focused on mapping and inventory of natural and cultural potential, this research be focus on the existence of Junior High schools (SMP) at around the southern slopes of Mount Kelud. The schools that had been implementing 2013 Curriculum which requires teachers perform contextual learning, constructivist, and through a scientific approach (*scientific approach*). In this case, the learning in these schools requires the support of natural laboratory. Through this research, I want to formulate a series of guidelines for the work of natural laboratories on the Southern Slope of Mount Kelud. Guidelines formulated in the form of worksheet to strengthen junior high school students 4C's.

This study also is one effort to UM as a leading center of learning innovation through life based learning. The choice of a natural laboratory for life-based learning is because it can provide real experiences to students related to the life surround them, so that learning will be more meaningful.

Further hope, through this natural laboratory, can strengthen the four skills of student, namely *creativity, critical thinking, communication,* and *collaboration*. These four skills are needed by students when they are involved in real social life. So the purpose of this study is to produce a natural laboratory worksheet to strengthen 4 students' skills, namely creativity, critical thinking, communication, and collaboration (4C's).

II. METHODOLOGY

This research result is a product that is natural laboratory worksheets to strengthen the students 4C's. The product can be used as a supplement to Social Studies learning for Class VII semester 1 Junior High School. The method of research used in this study is the research and development with ADDIE (*Analyze-Design-Development-Implementation-Evaluation*) models. This 5 stages model of development have been selected because are simple and easy to learn [7].

III. RESULTS AND DISCUSSION

This study aims to produce a natural laboratory *worksheet* or known as the Lembar Kerja (LK), or Lembar Kerja Siswa (LKS). Darmodjo and Kaligis revealed that LKS is a learning tool that can be used by teachers in increasing the involvement or activity of students in the teaching and learning process [8]. Another opinion was expressed by Surachman in Sumarni which states that LKS is a type of *hand out* to help students carry out various activities in a directed manner [9].

To improve the ability or the students 4C's, LKS or Worksheet is designed with scientific approaches, constructivist, and contextual accordance with the curriculum of 2013. Through this worksheet is expected that students have a very big role in the effort to understand the concepts, developing procedures, discovered the principle, even generalize and applying to solve the problem. Meanwhile, the role of the teacher is more as a facilitator and mediator who directed the students during the learning process.

The worksheet is consists of the initial part and the core part. The initial section consists of introductory words, table of contents, an explanation of the natural laboratory handbook, main competency in accordance with the theme, and a concept map. The core section presents 2 learning activities namely: learning one which is presented in 7 learning activities that is; 1) let's observe, 2) let's read, 3) let's ask, 4) let's discuss, 5) let's reason, 6) let's meditate, and 7) test competence. While in learning Two is presented in 5 learning activities namely learning activities 1), let's ask questions 2), let's discuss 3), let's reason) 4, let's meditate and 5), competency test.

In let's ask activity, students are expected to be able to practice communication skills because this activity emphasizes students doing interview directly to the teacher, community, or peers. Through the let's discuss activity, students trained to think critically to solve problems discussed in group through collaboration. Let's reason and let's reflect intended to train student's creativity and critical thinking skills because in this activity, students are invited to reflect and find the solutions to the problems around them. Through all the above, students 4C's skills (creativity, communication, collaboration, and critical thinking) can be improved.

Feasibility of *worksheets is* validated by material and learning media experts. Material validation test results obtained a percentage of 66% at the initial stage validation, and 85% at the second validation. While the results of the learning media validation test obtained a percentage of 69% at the initial stage of validation, and 87.5% at the second validation. Based on these results, it can be concluded that the natural laboratory *worksheet* has been valid and feasible.

Research on the worksheets development has been carried out, such as [10], [11], [12] and [13] research. Nevertheless this worksheets are different because more to focus on organize series of events or activities doing by students outside of the classroom, that is in natural laboratory. Natural laboratory for social science is unique because laboratories for natural sciences (IPA) usually built indoor, a natural laboratory for social sciences use natural social environment as a media understand society socio-cultural life.

Therefore the supporting facilities and infrastructure are needed to teach about the relationship between humans and their environment. In addition to students being taught inside classroom (indoor), students also requires direct learning in the natural environment *(outdoor)* through work in a natural laboratory. Natural laboratory worksheets contain guidelines for students to carry out systematic and programmed activities in open space learning in the natural laboratory on the southern slope of Mount Kelud.

The difference between ordinary worksheets and natural laboratory worksheets is 1) if regular worksheets are only used in classroom learning, laboratory worksheets are used as instructions for conducting student activities in an open space (field) whose object of study is people's lives. 2) If the contents of regular worksheets are only in the form of summaries of material and questions that students must work on [10], the natural laboratory worksheet contains a series of activities to explore the surrounding life through interaction with teachers, parents, community and fellow friends to make students get real and meaningful learning experiences.

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