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Gap Analysis and The Potential of Local Wisdom Jambi as Science Learning Resources

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Abstract

This study aims to analyze the gaps and potential of Jambi local wisdom as a basis for the development of science textbooks. This research was a qualitative descriptive study. The research subjects were students of class VIIIE and VIIIF at SMPN 1 Muaro Jambi, which totaled 43 people and science teachers. This study uses the instruments to observations sheet and questionnaires for students and teachers. Data were analyzed descriptively. The results show that; (1) the science textbooks available at SMPN 1 Muaro Jambi not yet have integrated into Jambi local wisdom and there are no questions about scientific literacy; (2) the results of observations indicate that the supporting facilities in science learning such as laboratories are still lacking, but other facilities such as classrooms and library are quite good; (3) material that can be integrated with Jambi local wisdom including substance pressure, vibrations, waves, sound and optical.

Keywords: gap analysis, Jambi local wisdom, science learning resources

INTRODUCTION

Scientific literacy is the ability to understand problems and use scientific knowledge to solve problems in everyday life and draw conclusions based on scientific evidence. Science literacy is very important for students to be able to analyze and solve problems that are encountered in everyday life. However, the scientific literacy of students in Indonesia is still relatively low. This can be seen from the results of the PISA survey in 2015, scientific literacy of students in Indonesia is ranked 62 out of 70 countries (OECD 2015). The results of the Indonesian National Assessment Program (INAP) showed 71% of students' scientific literacy was in the very low category (Kemendikbud 2015).

Scientific literacy aspects are context, content (knowledge), competence, and attitudes toward science (OECD, 2015). Science is the body of knowledge obtained through investigation (scientific process) to explain natural phenomena so that it fosters attitudes and creativity (Carin, Sund 1989; Bundu 2006; Kemendiknas 2011; Chiappetta, Koballa 2010). Science learning in schools is expected to be able to develop students' ability to conduct investigations so as to foster scientific attitudes and creativity in understanding natural phenomena (Ridho, Aminah, & Supriyanto 2018). Science learning will be more meaningful if it is associated with the environment and daily life as well as local wisdom that is around students.

Local wisdom-oriented learning can realize contextual and real-life learning because it is very close to the lives of students so that students are easier to understand the material being studied (Bakhtiar 2016; Basuki et al. 2019). Local wisdom-based science learning can encourage students to build and make connections between knowledge and reality in the environment (Setiawan, et al. 2017). Science

learning based on local excellence can improve scientific literacy, creativity, learning outcomes and environmental awareness of students (Sya'ban, Wilujeng 2016; Saputra 2016; Pamungkas et al. 2017; Purwitasari et al. 2016). Jufrida et al. (2018) state that the local wisdom of people in an area that has scientific values can be used as a learning resource for science.

Some factors that influence scientific literacy are the selection of teaching materials, learning models, assessment instruments. Teaching materials such as textbooks, worksheets, and media that contain aspects of scientific literacy can develop students' scientific literacy (Rusilowati, Astuti, & Rahman 2019). The selection of contextual textbooks and integrating local wisdom can be used as an alternative to improve scientific literacy. Based on the results of observations at SMPN 1, SMPN 7 and SMP 30 Muaro Jambi, learning of science has not yet integrated local wisdom. This is due to the unavailability of local wisdom-based textbooks. This study aims to analyze the gaps and potential of Jambi local wisdom as a basis for the development of textbooks in SMPN1 Muaro Jambi. The gab analysis is carried out to find out the problems in science learning, the cause of not yet applying local wisdom based science learning, and supporting available facilities.Gab analysis is also conducted to determine the availability of science textbooks in schools (Desnita,Fadilah, & Budi 2016). Analysis of the potential of local wisdom is carried out to map basic competencies/teaching materials that can be associated with Jambi local wisdom. The results can be used as a basis for the development of science teaching materials based on local wisdom as science learning resource (Sumarni et al. 2016).

METHODS

The focus of this study analyzes the gaps and potential of Jambi local wisdom as a basis for the development of science textbooks for grade VIII semester 2. This research is qualitative descriptive study. The research subjects were 43 grade VIII students and science teachers in class VIII in SMP N 1 Muaro Jambi. This research was conducted in October 2018/2019 academic year. Data collection techniques using non-tests. The instruments were used observation sheets and students' and teacher's questionnaires. The data analysis technique was carried out descriptively.

RESULTS AND DISCUSSIONS

The research result carried out 3 main research points which are used as the basis for developing textbook that based on Jambi local wisdom, namely; (1) analysis of teachers and students' need (2) analysis of learning support suggestions; and (3) analysis of learning material that is integrated with Jambi local wisdom.

Analysis of students and teachers needs

Based on the questionnaire results given to 43 students in class VIII, it showed that 100% of students had to have 1 textbook that was lent by the school and 80% had read it. In a day the average student reads and uses a science textbook for 1 hour. Students' perceptions of science textbooks are shown in FIGURE 1.

In the chart above, it can be concluded that the students' opinions about available textbooks are 75% quite interesting. It means that the aspects contained in a textbook such as pictures, experiments, and materials need to be improved in order to become more attractive. According to students' opinions, the available textbooks are easy to understand and quite helpful for students in understanding the material. Based on the results of the questionnaire, 90% of students stated there was no question of scientific literacy in the science book. Besides, 85% of students stated that they needed additional textbooks to add existing references.

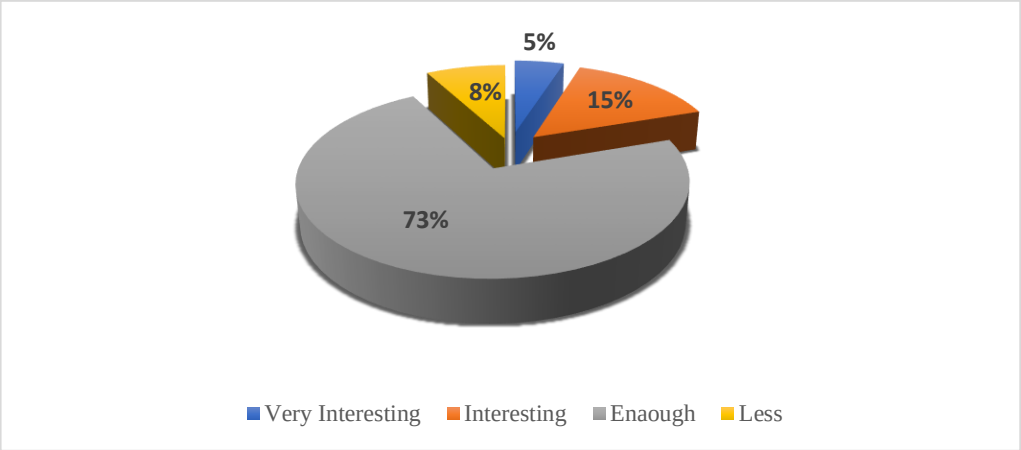

FIGURE 1. Students' perceptions of science textbooks

From the results of the teacher questionnaire, information was obtained that the teaching materials used by the teacher were in the form of textbooks and student worksheets sourced from the Ministry of Education and Culture and several publishers. However, the textbook has not yet integrated material with Jambi local wisdom. Science learning has not been contextual. This can be seen from the examples found in textbooks that students rarely find in everyday life. The learning model used is less varied. Science learning has not yet integrated Jambi's local wisdom. This is because teachers are still having difficulty in identifying the potential of Jambi local wisdom which can be used as a source of learning science. According to the science teacher at SMP 1 Muaro Jambi, textbooks are still needed as a reference in science learning. The students' expected textbook in order to add to existing textbook can be seen in FIGURE 2.

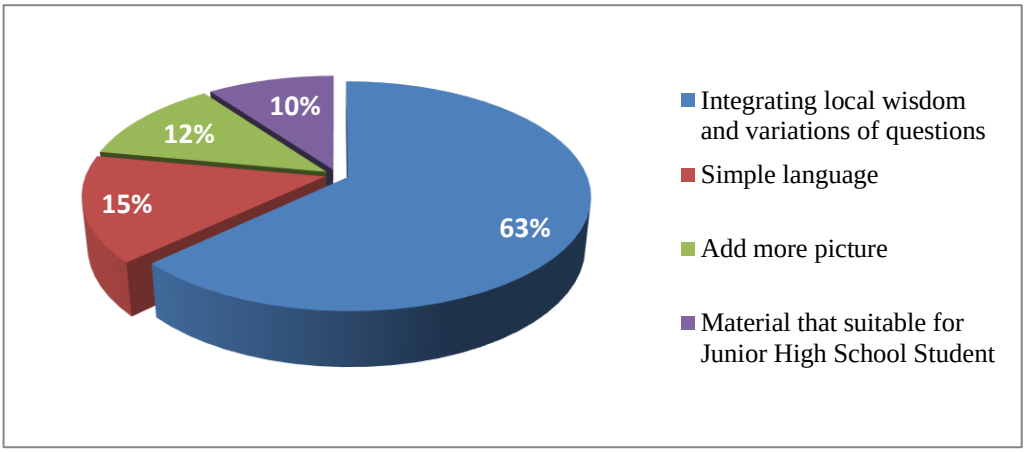

FIGURE 2. The students' expected textbook

Analysis of learning support facilities

The results of observations at SMPN 1 Muaro Jambi showed that supporting facilities such as school buildings, study rooms, laboratory rooms, library rooms, and sports fields were quite good. The availability of integrated science teaching books in the school is adequate. However, the science laboratory materials and equipment that support science learning are lacking.

Analysis of learning material that can be integrated into Jambi local wisdom

Analysis of science learning materials and basic competency mapping that can be integrated with Jambi local wisdom is carried out in the second-semester 8th grade. The results are three basic competencies that can be integrated into Jambi local wisdom, namely the basic competencies 3.8, 3.11

and 3.12. The results of basic competency mapping, learning materials, and Jambi local wisdom are shown in TABLE 1.

TABLE 1. Mapping basic competencies, learning materials, and Jambi local wisdom

Basic competencies	Learning material	Jambi Local wisdom
3.8 Describes substance pressure and its application in daily life, including blood pressure, osmosis, and capillary transport network in plants.	Substance pressure	Muaro Jambi Temple Brick Making Kaco Lake, Kerinci Release of Lanterns *Lansium Domesticum* Tree
3.11 Analyze the concepts of vibration, wave, and sound in daily life.	Vibration, waves, and sound in daily life	Jambi Malay Drum Gong Bamboo Jambi Traditional House Sea Waves at Tanjung Jabung Barat
3.12 Analyzing the properties of light and shading in flat and curved fields, and its application to explain the process of human vision, insect eyes, and the working principle of optical devices	Light and optics devices.	Kaco Lake, Kerinci Gentala Arasi Bridge Jambi Traditional House.

The mapping results above show that there are several local pearls of wisdom that can be integrated into science learning. This is in line with the research of Basuki et al. (2019) explained that the local wisdom of the Senamat Ulu Village as an independent electricity village can be integrated into science learning on environmental conservation materials, environmentally friendly technologies, changes in energy and electricity sources. Jufrida et al. (2018) that traditional fishing gear (*Tangkul Ikan*) can be used as a source of learning science in simple aircraft material. Nginang culture can strengthen teeth because in betel nut contains essential oils and phenylpropanoid tannin compounds. Mixing betel leaves with some chemicals contains the concept of mixed chemistry, acid-base reactions, and changes in substances (Sudarmin et al. 2018). Sumarni et al. (2016) describe the production process of palm sugar which is a legacy of ancestral knowledge, there are many public sciences that can be reconstructed into scientific knowledge that can be a source of science learning for students. Nuroso (2018) identified original science in the process of making bricks through ethnoscience studies. The process of making bricks can be integrated into Environmental Physics.

The results of this study indicate that science learning has not yet integrated local wisdom. This is because not yet available science textbooks that are integrated with local wisdom. The textbooks used don't have scientific literacy questions. Jambi local wisdom has the potential to be used as a source of learning science. Therefore, further research can develop science textbooks based on Jambi local wisdom. Science teachers are expected to be able to apply contextual learning by linking local wisdom and daily life. Local wisdom-based learning can improve science process skills (Ibe, Nwosu 2017), student achievement and interest (Okwara, Upu 2017), improve learning outcomes, entrepreneurial character (Sudarmin et al. 2017), increase science literacy (Nisa et al. 2015), critical thinking skills (Fitriani, Setiawan 2017), students' cognitive abilities (Rosyida et al. 2013) and effective for instilling conservation souls (Rahayu, Sudarmin 2015).

CONCLUSIONS

The results of the analysis that have been carried out show that the learning of science applied at SMPN 1 Muaro Jambi has not yet integrated local wisdom. The science textbooks used have also not yet integrated the material with local wisdom. The teacher and students are expecting that there will be additional references in the form of science textbook that integrate the learning material with Jambi local wisdom and local potential. In addition, the textbook is expected to have a variety of questions that are as varied as the problem of scientific literacy so students get used to solving literacy questions. Students need science learning that integrates into Jambi local wisdom, this is evidenced by the average student's interest if learning material integrated into Jambi local wisdom. Based on the observation

results toward facilities and infrastructure that support science learning such as laboratories are still very lacking, but other infrastructure facilities such as school buildings, sports fields, study rooms are quite good. There are several materials that can be integrated with Jambi local wisdom, including; substance pressure, vibrations, waves and sound as well as light and optical instruments material. Future studies are expected to develop science textbooks that integrate local wisdom. Science teachers are expected to be able to apply contextual learning by linking local wisdom and daily life.

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