



Environmental Literacy of Prospective Science Teacher in Lombok Indonesia

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Abstract. This report describes the Skills literacy environment of student candidate teacher chemical in Faculty MIPA at University Hamzanwadi. Skills consist of competence environment, knowledge environment, and attitude to the environment. Data were collected by surveying semester 4 and 6 students. From the results, the survey found that student candidate teacher IPA has literacy environment on category currently for aspect competence environment and knowledge environment. In contrast, attitude to the environment is in the high category. These findings indicate the need for innovation in lectures so that environmental competence and environmental knowledge students could be better again. Based on the draft literacy environment, particularly in environmental competence and environmental knowledge, it is strongly suspected that eye studying Basic Natural Sciences is media potential for supplying these skills to students.

Keywords: Environmental Literacy · Teacher Students · Science

1 Introduction

Guard balanced environment is not quite enough to answer all people. Environmental balance can be disrupted due to natural events and human activity. Disturbances due to natural events cannot be avoided. However, disturbance consequence activity man still possible for controlled. Because it's only natural that everyone has a good insight into the environment.

Moreover, again, for candidate teacher will supply an outlook to his students. With thereby, very urgent to know the description outlook environment student candidate teacher. This description can be input in the development of design lectures.

Description of the literacy environment students could obtain by using various assessment instruments. The instrument can be in the form of question tests [1], questionnaires [2, 3], interviews [4], as well as sheet observation and assessment Kiner [5]. Type instrument is chosen following draft literacy environment which carried and subject characteristics study.

Draft literacy environment developed from draft literacy science. Based on the literature review, it is known that environmental literacy has three components based outlook environment. The third component is environmental competence, knowledge, and attitudes toward the environment [6, 7]. These three aspects are closely interrelated [8]. Assessment of the third aspect could describe one's environmental literacy ability. So with this, it will be illustrated in more detail about environmental insight from a prospective teacher as well ability use knowledge and attitude to the problem-problem environment.

To map environmental literacy abilities, prospective chemistry teachers can do with method survey [2]. The method makes it possible to get information from as many subjects as a possible study which could reach. With the implemented method, this is very suitable if using the instrument in the form of a questionnaire. This instrument very reliably records student attitudes toward the environment [3]. Instrument this possible just for users to identify knowledge environment students, but will obtain results which not accurate enough. Therefore, an instrument for assessing environmental knowledge and competence environment assessed with the type of instrument used differently.

In this study, the instrument in the form of essay questions was used to assess the competitive environment, about choice double to assess the knowledge environment, and an attitude scale to assess attitudes towards the environment. Third, this type of instrument has been developed in previous studies. Instrument The assessment has been declared feasible for use in photographing skills for student environmental literacy. The results of this study are expected to be a reference for further research and/or consideration for lecturer/student FMIPA University Hamzanwadi in developing a lecture plan, specifically in a subject-based environment.

2 Method

Study this involves student candidate teacher IPA/Physics/Biology in University Hamzanwadi. Forty-seven volunteers are willing to be research subjects. Volunteer is a mixture of students in semester 4 and semester 6. The ratio total from the second subject study is almost the same. Information about students' environmental literacy was collected through the method survey. Students who became the subject of the study were collected in one class and then requested their willingness to fill in the instrument which has provided.

The instrument is an assessment literacy environment. Assessment literacy the environment consists of 16 multiple choice questions, 12 essay questions, and 15 attitude scales. The time to complete this assessment is around 90 min. There is no extra time for students to fill in the assessments. The circumstances moment charging assessment is made comfortable possible and conditioned so that student work assessment independently.

Assessment literacy environment analyzed with a method which same. The third assessment that was collected then calculated each student's score and tabulated. The multiple-choice assessment scores 1 for each question item answered correctly. As for the essay assessment, the score's weight for each question is different, and the scoring follows the answer key rubric that has been provided and prepared. However, for the attitude

scale, the score per statement item is 1–5. Each student has a total score of each. The total score is then converted into a scale of 100 and, based on these numbers, calculated average grades for students each semester. Then, the average value of environmental literacy of semester 4 students compared to students from semester 6. To see the significance of the difference between the two averages, different tests on average using the SPSS program 18.

3 Results and Discussion

Literacy environment student candidate teacher chemical is at on category currently. The same category was found for the environmental literacy component of environmental competence and environmental knowledge. But different from the attitude towards the environment, the student candidate chemistry teacher has a very good attitude toward the environment. Based on the findings, these components are in a high category.

The findings above have the same trend as reports from Özgürler & Cansaran [9] regarding the environmental literacy of prospective teacher students in Turkey. Both found that these students had the same attitude and were very positive about the environment, but the knowledge environment among students was not that high. These findings may be similar because a positive relationship exists between students' environmental knowledge and student attitudes toward the environment [8, 10]. So, if students' environmental knowledge is good, their attitude towards the environment will be good.

The environmental literacy of 4th-semester chemistry teacher candidates is in the medium category. The same category is also found for competency aspects environment and knowledge environment. However, the aspect of attitude to the environment, student this is in the high category. Results study found for literacy environment student candidate teacher chemical semester 6. This category is based on the average student score in each aspect of the literacy environment.

The knowledge environment student consists of five indicators formulated by OECD and NAAEE. Score average every indicator from the knowledge environment in a manner details are presented in Fig. 1.

The majority of these two groups of students belong to the same category on every indicator. Only on indicator system physical and ecology, 4th-semester students have a higher category than college students in semester 6. Besides that, two indicators need Becomes attention moment develop planned lectures in eye studying based environment.

The results of the study found that indicators of social, cultural, and political related environment and indicators about participation and action strategies to overcome environmental problems are in the low category for both groups of students. However, experience study students in semesters 4 and 6 have good knowledge about environmental issues and how to solve environmental problems. Overall, the assessment of the fifth indicator knowledge environment shows that Chemistry teacher candidate students in semester 4 have higher abilities than students of chemistry teacher candidates in semester 6. These findings are demonstrated by the average difference between the two groups having a t-value of 2.60 and a p-value of 0.01. These statistical results confirm that semester 4 students have a knowledge environment that is more significant than semester 6 students. Study retention is longer; it should make 6th-semester students superior to 4th-semester

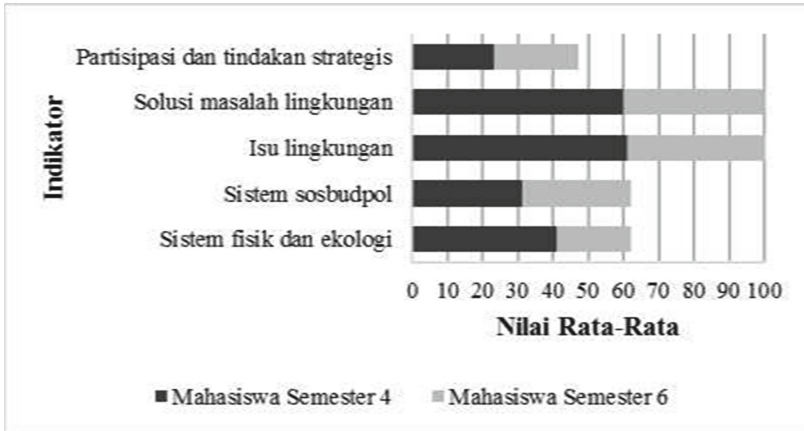


Fig. 1. Difference Mark Average Every Indicator Knowledge Environment Student Pre-service teacher IPA Semester 4 with 6th semester

students [11]. However, the subject study found results that were different—required study more carry on related factor reason from findings.

Environmental competence has four indicators formulated by the OECD and NAAEE. Student achievement in semesters 4 and 6 for all environmental competency indicators are in the same category. The average score of each indicator competence environment is illustrated in Fig. 2. The second group of students of this can identify, analyze, and use proof, as well as evaluate and make decisions on environmental issues. These findings are supported by a report from Altun-Yalçın et al. [12], who suggested that grade-level students do not have a significant impact on the results literacy environment.

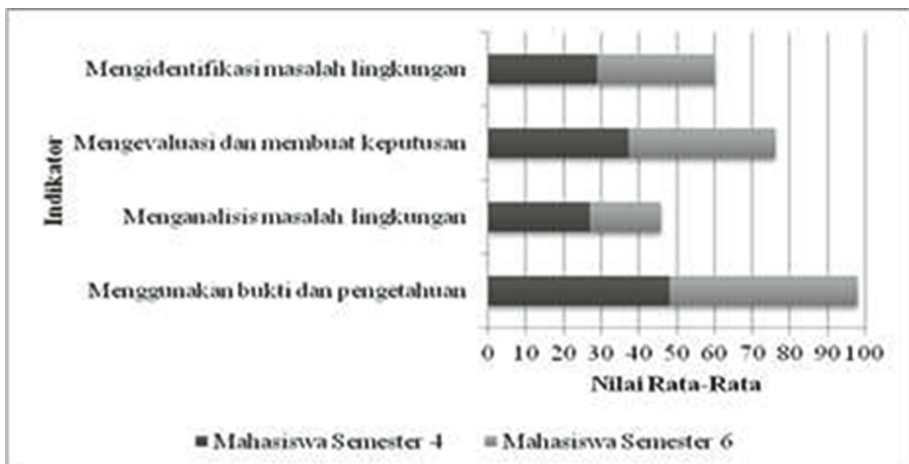


Fig. 2. Difference Mark Average Every Indicator Student Environmental Competence Pre-service teacher IPA Semester 4 with 6th semester

Table 1. Average Score of Each Attitude Indicator towards the Environment Student Candidate science teacher

Attitude to Environment	Semester 4	Semester 6
Interest in issuing environment	66	69
Concern to environment	68	71
Internals locus of control	78	82
Not quite enough answer guard environment	68	64
Intention for Act resolve problem environment	80	81

Two of the four environmental competency indicators are in the category currently. However, two indicators other is at in category low. Second, this indicator needs to be considered when developing a course plan oriented toward providing environmental literacy. The two indicators are the identification of environmental problems and problem analysis environment.

OECD and NAAEE share attitude to environment Becomes five indicator. The second group of students is tall for indicators of concern for the environment, internal locus of control, and intention to act to protect the environment. Both groups of students have categories different from the other two indicators. Semester 4 students have taste higher responsibility for protecting the environment than students in Semester 6. However, a student in semester 4 has an interest lower than student 6. Nonetheless, the second overall group has a very positive attitude toward the environment. In detail, the achievement score average for attitude to the environment from the second group is presented in Table 1.

In one part, the literacy environment is wrong, urgent from developing Skills in literacy [13]. So from that, the literacy environment includes primary education in the 21st century [14]. Based on this study's findings, several indicators of each aspect of environmental literacy are of concern to developing a study plan. Learning with a multidisciplinary approach has the potential to encourage students to use knowledge from theory to practice to produce solutions to environmental problems [15]. One approach is multidisciplinary, which potentially develops a literacy environment for students that is an approach to learning that integrates science, technology, engineering, and mathematics (STEM), including multidisciplinary approaches [16].

4 Conclusion

Student environmental literacy skills include an overview of environmental competence, environmental knowledge, and student attitudes toward the environment. Semester 4 and 6 students have almost average grades, the same for environmental competence and attitudes toward the environment. But for knowledge about the environment, semester 4 students have an average value higher than students 6th semester.

Overall, students' environmental literacy skills are in the medium category for aspects of environmental competence and environmental knowledge. At the same time, the attitude aspect is in the high category. To increase the literacy environment, students should do innovation in lectures. Implementing multidisciplinary learning approaches, such as the STEM approach, can be an alternative to improve environmental competence and knowledge environment student. Eye studying potentially develops Skills. The wrong only one is Basic Natural Sciences.

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