Ecological literacy values in Indonesian language textbook for senior high school students published by Ministry of Education and Culture

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Abstract. The environmental degradation that occurred in the past and continues nowadays is a failure of our society and education system in providing the understanding and skills needed by students. Schools and teachers have the responsibility to develop students' literacy skills, especially ecological literacy. Therefore, to achieve that purpose, the availability of teaching materials with ecological literacy is needed. This research aims at explaining the ecological literacy values in four Indonesian language textbooks for senior high school students based on 2013 curriculum. To examine the ecological literacy values both descriptive and distributive, content analysis is used as the main method. The study used a mixed approach to analyze both qualitative and quantitative data in a single study. Based on the analysis result, the ecological literacy values include (1) ecological knowledge (general knowledge, socio-political systems, and environmental issues), (2) affective tendency (factors within the individual), (3) behaviour (assumption of personal responsibility and self-control), and (4) cognitive skills (related to environmental issues). However, the content of ecological literacy value is more dominant on materials dealing with ecological knowledge and has not emphasized on all other components. Furthermore, the analysis of the passage about knowledge component contains the most comprehensive information of all.

1. Introduction
This Environmental problems have become an important part of the world problems. Human rarely thought that the issue of saving the environment would be an issue of equal importance to other major world issues, such as the problem of poverty and efforts to realize the world peace [1]. In addition, economic development in several decades ago was believed to be an important effort to reduce poverty problem. However, most people forget that economic development surpassing the limits causes environmental problems which are very complex.

Natural resources of the earth are provided for human’s living. However, high population growth and uncontrolled economic growth have caused damage to natural resources and increased environmental pollution. The environment becomes collapsed and turns into a global crisis so that
policies are needed to support human life in a sustainable manner [2]. Conservation and sustainable development are important policies for efforts to save the use of natural resources and improve the environment [1].

Environmental problems are now faced by many countries, as well as Indonesia. Indonesia has experienced a number of disasters recently causing enormous losses to the community, both substantially as well as spiritually. The contributing factors to this incident include the low level of public environmental awareness. For this reason, the efforts to educate people and students are necessary. Environmental education is an important factor to minimize environmental damage.

The increase of awareness about environmental conservation can be prepared through language learning because it can communicate and internalize knowledge and values. The most important thing in learning language is to use that language [3]. Language use skills can be divided into two i.e. receptive and productive skills [4].

Books as a medium of ecological literacy have a strategic role. The textbook should be seen as a source in achieving the learning objectives that have been set. Textbooks have five roles in language learning and can function as (1) sources for oral or written presentation material; (2) sources of activity for students’ communicative practices and interactions; (3) reference sources for students regarding linguistic aspects; (4) sources of stimuli and ideas for classroom language activities; (5) syllabus [5].

Books are also seen as important as a medium for ecological literacy for students to realize a sustainable society. A sustainable society builds and arranges their life together by relying on awareness on the importance of living environment. This awareness is recognized as ecoliteracy [6]. Ecoliteracy is a term to describe humans who have reached a high level of awareness about the importance of the environment.

The environmental literacy is basically the capacity to perceive and interpret the relative health of environmental systems and take proper actions, restore, or improve the health of those systems [7]. Ecological literacy is divided into four components, namely (1) knowledge which includes ecological knowledge, social-politic knowledge, and knowledge of environmental issue; (2) affective tendency; (3) behavior which includes additional determinants of environmentally responsible behavior, environmentally responsible behavior, and (4) cognitive skills [7]. In another context, there are the same four groups of environmental literacy components as follow: cognitive dimensions (knowledge and skill), affective dimensions, additional determinants of environmentally responsible behavior, and personal and/or group involvement in environmentally responsible behavior [8].

This study aims to study the value of ecological literacy values comprehensively, contained in Indonesian textbooks for high schools in order to implement 2013 curriculum and provide suggestions for improvement of the textbook. Research problems include: (1) What are the ecological literacy values contained in the textbook? (2) What is the distribution of these values? (3) What are the advantages and disadvantages of the textbook, especially related to the values of ecological literacy.

Some studies have been developed as the impact of Eco-Schools Program on the development of student's environmental literacy. A study compared environmental literacy between Eco-Schools and Ordinary Schools of Slovenia and concluded that the only component that showed a statistical significant improvement is the knowledge component [9]. In Iceland, a comparison of environmental knowledge, attitude and actions between students from Green-Flag schools and traditional schools showing that Eco-School students were more aware of environmental issues but did not have a significant better environmental knowledge or attitude. However, this study showed that, despite the Eco-Schools Program having little effect on students' environmental knowledge and attitude, it could encourage, through situational factors, directly linked to facilities available in the school, namely recycling containers [8]. In Flanders (Belgium), it is found that, in fact, students' environmental knowledge was influenced by Eco-Schools Program, but there were no positive effects on environmental attitude and behavior [9]. Another research on private schools of Turkey, it is found a significant increase not just in knowledge but also in environmental attitude in students from eco-schools [10].
2. Research method
This study applied document analysis method as one of the qualitative studies to study the content of ecological literacy in textbooks, both descriptive and distributive. The source of this research data are four Indonesian textbooks used for students of senior high school in Central Java in the academic year of 2017/2018 implementing 2013 curriculum.

In this study, content analysis was used to interpret data obtained through document review. Content analysis can be either quantitative or qualitative, or both [11]. The research design used in this study is a mixed approach to analyze both qualitative and quantitative data in a single study with "the purpose of gaining insight and extensive and profound proof" [12]. In this study, the authors chose parallel triangulation designs. In this design, quantitative and qualitative data are collected and analyzed at the same time, and integration usually occurs at the data interpretation stage. This design is useful for confirming, validating, and corroborating research findings [13]. The main activity carried out in content analysis is to collect similar data within the framework of specific ideas and themes and interpret them by well organizing so that the reader can understand them. In this study, ecological literacy is defined as the main category. Meanwhile, subcategories include components (1) knowledge that includes ecological knowledge, social-politic knowledge, and knowledge of environmental issues; (2) affective tendency, (3) behavior that includes additional determinants of environmentally responsible behavior and environmentally responsible behavior; and (4) cognitive skills that shape ecological literacy and are supported by literature.

The elements studied from the textbook comprise introduction to chapters, texts, assignments, exercises, questions, and summaries. The unit of analysis of this study is sentence or paragraph. To ensure the reliability of this study, all texts are read by two different researchers separately and then compared to determine the suitability. If there is an inconsistency, it needs the opinion of an expert.

3. Result and discussion
Environmental education main goal is to improve environmental literacy. It is in line with some researchers who have defined environmental literacy as one of the main goals of environmental education [14]. The content of ecological literacy in all four Indonesian textbooks can be seen in Table 1. It can be seen that the ecological literacy contained in book 1, 2, 3, and 4 includes four components, namely (1) knowledge, (2) affective tendency, (3) behavior, and (4) cognitive skills. Knowledge is the most dominant component compared to the other three components. Of the 282 ecological literacy data contained in all books, 120 data (42.7%) were in the form of knowledge. Meanwhile, the other components were affective tendency (18.08%); behavior (20.05%), and cognitive skills (18.79%).

Table 1. Frequency distribution and percentage of ecological literacy on Indonesian textbooks for senior high school.

| Indonesian Language Textbook | Ecological Literacy Component | Comparison |
|-----------------------------|-------------------------------|------------|
|                             | Knowledge | Affective Tendency | Behavior | Cognitive Skills |            |
| *Bahasa Indonesia Kelas X*  | f         | 27             | 15   | 11   | 4   | 57  |
| *(Book 1)*                  | %         | 47             | 26   | 19   | 7   | 20.21 |
| *Bahasa Indonesia Kelas XI* | f         | 39             | 20   | 23   | 6   | 88  |
| *(Book 2)*                  | %         | 44             | 23   | 26   | 7   | 31.21 |
| *Bahasa Indonesia Ekspresi| f         | 25             | 13   | 17   | 27  | 82  |
| *Diri dan Akademik Kelas XI*| *(Book 3)*| %               | 30   | 16   | 21  | 33  | 29.08 |
| *Semester 1*                |           |                |       |      |     |     |
| *Bahasa Indonesia Ekspresi| f         | 29             | 3    | 7    | 16  | 55  |
| *Diri dan Akademik Kelas XI*| *(Book 4)*| %               | 53   | 5    | 13  | 29  | 19.5 |
| *Semester 2*                |           |                |       |      |     |     |
| Total                       | f         | 120            | 51   | 58   | 53  | 282 |
|                            | %         | 42.5           | 18.08| 20.56| 18.79| 100 |
3.1. **Knowledge component of ecological literacy**

It can be analyzed further that the elements of knowledge are included in all books. It consists of (1) ecological knowledge, namely general knowledge about environmental concepts and knowledge and understanding of how the natural systems work and the relationship of natural systems with social systems; (2) social-politic knowledge, which is an understanding of a belief, political system, and ecological values of various cultures and an understanding of human cultural activities that influence the environment; and (3) knowledge of environmental issue, namely an understanding of environmental problems derived from the interaction between humans and knowledge. From the data in Table 1, it can be seen that the ecological literacy contained in book 1, 2, 3, and 4 dealing with knowledge has the most value of all. Of the 57 ecological literacy data contained in book 1, 27 data were in the form of knowledge. Meanwhile in book 2, there were 39 data in the form of knowledge of the 88 ecological literacy data contained in the book. Further data in book 3, it shows that of the 82 ecological literacy data contained, 25 data were in the form of knowledge. Then in book 4, it is found that 39 data were in the form of knowledge of the 55 ecological literacy data.

In addition, from the data shown in Table 1, it is evident that the component of knowledge is the most component (42.5%). The literacy component is mostly found in the text; and there are a few content of exercise, assignments, or questions. Compared with a similar study, it is found that the inclusion levels of knowledge component of environmental literacy, cognitive skill component, affective tendency component, and behavior are 88.09%, 2.13%, 4.36%, and 5.42% respectively [10]. It is in line with this research finding that knowledge component of environmental literacy is the most dominant of all.

Furthermore, this study analyzed the data taken from four books which include the passage translated into English in the following statements consisting of data from Book 1 and 2. Waste is leftover goods that have no economic value. It is divided into two types, namely organic and inorganic waste. River is a river that flows from downstream to upstream which is generally used as a number of activities that help humans [15]. Flood is a natural phenomenon that usually occurs in an area which is flowed by rivers [16].

3.2. **Affective tendency component of ecological literacy**

The affective tendency component means the individual factors that allow them to reflect on interpersonal environmental issues, the ability to understand themselves and act according to that understanding in assessing environmental issues and being able to guarantee their own actions. The data given in Table 1 indicate that the affective tendency component contained in book 1, 2, 3, and 4 is 15, 20, 13, and 3 respectively. In detail, of the 57 ecological literacy data contained in book 1, 15 data (26%) were in the form of affective tendency. Meanwhile in book 2, there were 20 data (23%) in the form of affective tendency of the 88 ecological literacy data contained in the book. Furthermore, the data in book 3 show that of the 82 ecological literacy data contained, 13 data (16%) were in the form of affective tendency. Then in book 4, it is found that only 3 data (5%) were in the form of affective tendency of the 55 ecological literacy data. The relevant study also shows that the inclusion level of affective tendency towards environment component of environmental literacy is the least percentage [10].

To support the data analysis above, the following data were gathered from Book 2 and 3. Avoid criticizing your manager or coworkers because it shows an unprofessional attitude [16]. After that, please analyze all the information obtained, including his work, his service to the community, his achievements and devotion to God, his attitude to life, and the results of his work [17].

3.3. **Behavior component of ecological literacy**

The behavior component contained in book 1, 2, 3, and 4 refers to additional determinants that are used as a measure in terms of additional determinants of environmentally responsible behavior and has not yet reached environmentally responsible behavior in solving environmental problems. The data provided in Table 1 show that the behavior component contained in book 1, 2, 3, and 4 is 11, 23, 17,
and 7 respectively. In detail, of the 57 ecological literacy data contained in book 1, 11 data (19%) were in the form of behavior component. Meanwhile in book 2, there were 23 data (26%) of behavior component of the 88 ecological literacy data contained in the book. Furthermore, the data in book 3 show that of the 82 ecological literacy data contained, 17 data (21%) were in the form of behavior component. Then in book 4, it is found that only 7 data (13%) were in the form of affective tendency of the 55 ecological literacy data.

In addition to the data analysis above, the following statements consist of data from Book 1 and 4. Narcotics really endangers the fate of this nation in the future. The effect of this drug damage is not only about someone, but also the people around him. Economically, a lot of money will be wasted on buying these illicit goods, then giving them a remedy, financing various hazard prevention efforts [15]. With the ability to think critically, you must have the courage to reveal the truth even though it is not easy in its implementation. For this reason, you must have high awareness and social sensitivity [18].

3.4. Cognitive skills component of ecological literacy
Cognitive skills refer to analyzing skills, synthesizing, evaluating environmental issues based on evidence and personal values. This category includes the capabilities needed in terms of choosing the right action strategy, evaluating, and implementing planning. Table 1 reported that the cognitive skills component contained in book 1, 2, 3, and 4 is 4, 6, 27, and 16 data respectively. The result is that of the 57 ecological literacy data contained in book 1, there were only 4 data (7%) were in the form of cognitive skills. Furthermore, in book 2, there were only 6 data (7%) of cognitive skills of the 88 ecological literacy data contained in the book. Hence, the data in book 3 report that of the 82 ecological literacy data contained, 27 data (33%) were in the form of cognitive skills component. In addition, it is found in book 4 that 16 data (29%) were in the form of cognitive skills of the 55 ecological literacy data.

The researchers analyzed the data above based on the gathered data which were taken from four books. The following data display were taken from Book 1 and 3. Indonesian is able to interact between languages because it has many vocabulary variations. Foreign language vocabulary is only used and understood by certain groups. However, Indonesian is understood and used in almost all people [15]. Do you still remember how the linguistic characteristics contained in a biographical story text? Try to mention it! [17].

3.5. Discussion
From the analysis of the data given in the four sections above, it can be analyzed that there is a few inclusion level of ecological literacy component in Indonesian language textbooks that are compiled based on the 2013 Curriculum for Senior High School. It can be seen that the inclusion level of knowledge component (40.10%) is still dominant in four textbooks analyzed in this study. The analysis of each passage on four sections above also shows that the data gathered about component of knowledge is the most detail in its content. However, knowledge is not enough for the protection and the improvement of the environment as well as to improve environmental literacy. In environmental education, not only cognitive processes but also affective and psychomotor processes should be included [10]. Consequently, it is essential to add activities related to ecological literacy in the textbooks because it is suggested on a study that environmental courses should also be adapted and suited to the various kinds of students [14]. The books should also include a wide spectrum of environmental values and attitudes, in order to raise personal awareness, commitment, care and responsibility for sustainable environment. In addition, it is thought that it will be useful to create an environmental knowledge content that have all the components of environmental literacy [10].

4. Conclusion
There is a few inclusion level of ecological literacy component in Indonesian language textbooks in this study. The content of ecological literacy value is more dominant on materials dealing with
ecological knowledge and has not emphasized on all other components. Furthermore, the analysis of the passage about knowledge component contains the most comprehensive information. Although the inclusion level of knowledge component is still dominant, however, knowledge is not enough for the protection and the improvement of environmental literacy. Therefore, it is necessary for the government to include all the components of environmental literacy in the textbook.

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