Integration of environmental education in elementary schools

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Abstract. This study aims to determine the opinions and knowledge of teachers regarding the integration of environmental education in the learning process in the classroom for elementary school students. This research uses survey method. The instrument used was a questionnaire consisting of fifteen questions and four additional statements relating to environmental education in the learning process. The results showed that the majority of teachers agreed that it was important to integrate environmental education in the learning process for students, especially elementary school students. However, this integration still has constraints, such as insufficient time. Based on the results of the analysis shows that for elementary school level, science learning is the most likely learning to be integrated with environmental education in the learning process.

1. Introduction

Based on data from world bank shows that human population has increased in the 20th century. This has caused one environmental problem throughout the world [1]. Environmental problems are threats that have become the main focus of all living things and the balance of nature [2]. The world has long struggled to overcome this problem, but it is only effective on one side and environmental problems emerge on the other [3]. Rapid population growth, regulating industrialization, increasing demand and globalization, technological development and science should be part of the solution rather than the problem factor[4][5]. Loss of biodiversity, deforestation, nutritional problems, air pollution, global climate change and similar problems directly or indirectly related to the environment are growing exponentially[3]. Overcoming these problems is important, because environmental problems cause negative effects on living things, such as health and environmental problems [6][7]. Therefore, humans must hasten to find solutions to current environmental problems [2].

As an individual, humans have the responsibility to solve environmental problems [8]. One solution that can be done to overcome environmental problems is to be in the right knowledge of all environmental factors in order to protect the environment [2]. The most effective effort to achieve this goal is an adequate environmental education system, mapped and aimed at providing awareness, conscience and information about environmental problems to students of all levels [2]. Increased awareness about the environment can be obtained through the education process. Education is a key element in the prevention and resolution of environmental problems [9][10].

Solving environmental problems will only be possible through effective environmental education [8]. Learning about the environment will have a positive effect on their knowledge, values and attitudes in relation to the environment [1]. Environmental education can be considered a key area
because it encourages individuals to protect the environment against existing and potential local and global environmental challenges [11]. Educational activities with content to increase environmental awareness of students can be carried out at all ages [3]. The system refers to the process of insertion, integration and relationships in the environment and must include content that will last a lifetime of pre-school education and extend to all fields of formal and non-formal education [2][12]. To do this, people must be encouraged to protect the environment and the common good [13].

Environmental education is the field of education that arises when environmental distortions resulting from humanity's efforts to dominate nature can only be corrected by human efforts again [3]. This is the process of clarifying thoughts and values to develop attitudes and skills important for people to appreciate the relationship between culture and the bio-physical environment [14]. Environmental education focuses on environmental and social issues, and is considered fundamental if the community wants to instill future citizens with a sense of environmental responsibility, environmental ethics, and ecological awareness [15].

The aim of environmental education, since the 1960s, is to produce citizens who are more knowledgeable, motivated, and active [16]. The goal of environmental education can be identified as a positive transformation of an individual's environmental ethics, environmental knowledge, environmental awareness, environmental attitudes and behavior [1]. Community environmental knowledge, interests and attitudes towards the environment are effective in their behavior towards the environment [17]. Whereas, the important role of environmental education is to develop individuals who have scientific knowledge about environmental issues and high environmental awareness [18][19]. Furthermore, it has the potential to help future generations manage life and build a prosperous future [19]. Through environmental education, it enables people to understand the ecological balance and their own place in this balance, acquire the skills needed for effective and responsible participation and be able to live in harmony with the planet [8].

Environmental education must be seen as a perfect foundation as part of the education process and new lifestyles that can develop according to the environment, and must be able to adapt to various socio-economic structures, cultures and living conditions in different age groups and consider regional differences and national [8]. Components of environmental education, such as attitudes, knowledge, and awareness, play an important role in student behavior throughout their lives inside and outside the classroom [2]. Before designing an effective environmental education program, it is necessary to investigate the variables that are important in the development of environmental literacy [20]. Several environmental education programs exist throughout the world, with more or less effectiveness in promoting environmental literacy [21]. Most approach young people and children in the context of their education in schools [22][23].

One important factor for realizing effective environmental education is teachers who have knowledge of environmental education [2]. Teachers play an important role in raising ecological citizens who advocate for a new social order [13]. The environmental teacher's approach to successfully practicing student-centered learning, harnessing student strengths, demonstrating experiential teaching orientation, using collaborative techniques, involving external experts and continually pondering and planning lessons [19]. Teachers who have strong environmental literacy knowledge, have support in their schools, positive environmental attitudes, environmental sensitivity, and receive environmental education [24]. These teachers are people who will try and instill environmental education [12].

Teachers are the most influential in educating children and adolescents to become future leaders in environmental advocacy [25]. Knowledge and skills in choosing teaching methods and teaching aids significantly influence the quality of learning [26][27][28]. In addition, teacher actions and attitudes related to the environment will be very important because they are the role models of their students in the future, because student behavior is influenced by teacher behavior [29]. Therefore, environmental education seems to be one of the important positions in teacher education [30]. In addition, teachers can be leaders in environmental education, because they can influence peers, principals, and other school community members to improve teaching and learning practices with the aim of improving
student learning and achievement [31]. Based on these explanations, this study aims to find out the opinions and knowledge of teachers about the integration of environmental education in the learning process in the classroom for elementary school students.

2. Method
This research uses survey method. The instrument had used a questionnaire consisting of fifteen statements relating to the opinions and knowledge of teachers, regarding the integration of environmental education in the learning process at the elementary school level. The respondents of this study were elementary school teachers, West Sumatra. The questionnaires were written in file format on google form. Data collection was done by distributing questionnaires through various sites or social media elementary school teacher community. Based on the questionnaire that had been distributed as many as 128 respondents responded to fill out the questionnaire. The data analysis of this study had used descriptive statistical calculations.

3. Result and Discussion
In this study, explaining the opinions of respondents, elementary school teachers, regarding the integration of environmental education in the learning process. The results of the survey can be seen in table 1.

| No. | Statement                                                                 | Strongly agree | Agree | Disagree | Strongly disagree |
|-----|---------------------------------------------------------------------------|----------------|-------|----------|------------------|
| 1.  | It's important to educate students about the environment since elementary school. | 78.9%          | 18.0% | 0.0%     | 3.1%             |
| 2.  | Using environmental themes in the learning process is important for students.       | 60.2%          | 38.3% | 0.0%     | 1.5%             |
| 3.  | I prepare accurate teaching materials about the environment for the students I will teach. | 34.4%          | 65.6% | 0.0%     | 0.0%             |
| 4.  | I can make an important contribution in introducing environmental knowledge through classroom teaching | 44.5%          | 54.7% | 0.0%     | 0.8%             |
| 5.  | I feel that there is enough time in the curriculum to integrate environmental education (EE) in the learning process. | 1.6%           | 16.4% | 62.5%    | 19.5%            |
| 6.  | Integrating EE in the learning process can be done with a variety of learning methods. | 49.2%          | 50.0% | 0.0%     | 0.8%             |
| 7.  | I have enough ability to integrate EE in learning activities.                  | 16.4%          | 79.7% | 3.1%     | 0.8%             |
| 8.  | As a teacher, I want to take part in activities related to the environment in my school. | 36.7%          | 62.5% | 0.0%     | 0.8%             |
| 9.  | Teaching material about EE can be found in various media.                    | 45.2%          | 53.1% | 1.7%     | 0.0%             |
| 10. | Integrating EE in the learning process can provide solutions to solve environmental problems. | 30.5%          | 68.8% | 0.7%     | 0.0%             |
| 11. | Learning material about the environment is an interesting and diverse topic to be taught. | 37.8%          | 61.4% | 0.8%     | 0.0%             |
| 12. | Environmental education must be taught in special teaching and be taught by teachers who have knowledge in that field. | 19.7%          | 47.2% | 31.5%    | 1.6%             |
| 13. | Students who have knowledge about the                                         | 23.0%          | 74.6% | 2.4%     | 0.0%             |
environment can support their knowledge and skills in the field that I teach.

14. The official curriculum must be reorganized to include more about environmental education for various levels of education.

| Percentage | 25.8% | 61.7% | 12.5% | 0.0% |

15. Special training is needed for teachers to be able to integrate environmental education in the learning process.

| Percentage | 42.2% | 54.7% | 3.1% | 0.0% |

Based on the results of the research shown in table 1, the teacher believes that environmental education is important for elementary school students. However, there are still many teachers who think that it takes time to integrate environmental education in the learning process, because teachers have the responsibility to complete all the can integrate environmental education in accordance with student needs [3]. material contained in the curriculum. In accordance with Wahab (2004), out of 115 teachers teaching in four elementary schools, it was found that 53.6% of respondents had problems implementing environmental education due to time constraints and difficulties in accessing teaching aids [19]. Furthermore, some teachers also think that it is necessary to reorganize the curriculum to be able to integrate environmental education in the learning process. For example, in Malaysia, environmental education has been officially integrated throughout the national curriculum by integrating various aspects of the environment into all subjects taught in class [19]. For this to work, special training is needed so that teachers

Learning materials about environmental education to be integrated with elementary school student learning can be found in various kinds of media. Based on the analysis of data collected, teachers can find the material through books (93%), TV and radio (73.4%), newspapers and magazines (71.1%), documentaries (53.1%), articles scientific (56.3%), papers from the publication of the results of international, national or local seminars (45.1%), blogs (45.3%), media surveys (37.5%), and poplar articles (20.3 %). Furthermore, at the elementary school level, learning is carried out with an integrative thematic approach. This approach requires teachers to integrate various sub-branches of knowledge in a learning process. Environmental education can be used as one of the sciences that can be integrated with other sciences in primary school learning. Based on the analysis of data collected, teachers can integrate environmental education into language learning (85.2%), mathematics (62.5%), citizenship education (82%), natural science (93.3%), social science (87.5%), and physical education and health (75%).

Based on the results of these studies indicate that environmental education can be integrated in the learning process. The concept of the environment cannot be limited to one single discipline [32]. Science learning has the highest presentation for integrating environmental education into the learning process. Throughout its development, environmental literacy has become a key concept in science education [33]. Environmental education can be integrated in science subjects, because the framework is broad [16]. Science is one way to solve human problems with nature and information and awareness raising can be done through education [3]. So that learning natural science with environmental education is very possible to be integrated.

The topics on environmental education are very diverse. However, not all topics can be used to integrate environmental education in the learning process for elementary school students. Based on the results of the analysis of data collected, the teacher chooses these topics which can be integrated in the learning process for elementary school students, such as waste management (93%), marine and river conservation (68.8%), use of environmentally friendly goods (86, 7%), global warming (63.3%), forest preservation (73.4%), animal protection (82%), plant waste management (58.6%), pollution (75.8%) and energy savings (85.2%). Based on this percentage shows that themes that have a high presentation are themes that are close to the context of elementary school students. Taking material in accordance with the context of students will have an ease for students to understand the material [34].
4. Conclusions and Suggestions
The results of this study can be used as a basis for efforts that can be made so that environmental education can be integrated in the learning process, especially for teachers. It is recommended to design appropriate training for teachers in various fields of learning to realize effective education at various levels of education. In addition, the development of models, media, or learning materials can be carried out so that environmental education can be applied, especially in schools.

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