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# Required environmental education in junior high school for pro-environmental behavior in Indonesia: a perspective on parents' household sanitation situations and teachers' awareness of environmental education

Ruka Saito\*, Rumiko Kimura\*\*, Akiko Tsuda\*\*\*, Syahrul\*\*\*\*, Tantut Susanto\*\*\*\*\*, Agrina\*\*\*\*\*

## Abstract

Indonesia faces pressing environmental issues, many of which are related to citizens' lifestyles. Therefore, community-based environmental education is needed to encourage pro-environmental behavior. We examined parents' perspectives on their household sanitation situations and teachers' awareness of environmental education in junior high school in Indonesia to consider what types of environmental education are needed to promote pro-environmental behavior. We conducted a cross-sectional study among 350 parents and 17 junior high school teachers in Makassar City, Indonesia. We administered a questionnaire on household sanitation situations to the parents and conducted semi-structured interviews with the teachers. The analysis indicated that 95.9% of the parents were interested in environmental issues, and 90.2% were aware of water pollution. Although 35.3% sorted their garbage regularly, they did so in a diverse range of ways. Moreover, the number of parents with a low level of education that answered "no specific reason" as their reason for sorting their garbage was higher than among those with higher levels of education. In addition, only 42.1% of parents performed adequate oil disposal. Two categories were extracted based on Mayring's content analysis: 1) necessity of symbiosis within the community; and 2) education as people concerned with the environment. A small percentage of parents exhibited pro-environmental behavior, and teachers mentioned some problems regarding environmental education. Therefore, it was considered that the household sanitation and environmental education of junior high school students were not adequate. Teachers of subjects unrelated to environmental education also teach environmental education in their lessons. To promote pro-environmental behaviors in junior high school students, it is necessary to provide environmental education for students and their parents, and environmental education materials that all teachers can use to teach environmental education.

## KEY WORDS

pro-environmental behavior, environmental education, household sanitation, junior high school, parent and teacher

## Introduction

Economic development was one of the facets emphasized in the development assistance provided to developing

countries in the 1980s; however, the various types of assistance offered were insufficient to drive growth and reduce poverty in these developing countries. Thus, eight

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## Methods

### 1. Study design

This was a cross-sectional study. The examination of parents' perspective on their household sanitation situation was conducted quantitatively, whereas measuring teachers' awareness of environmental education was qualitative to consider what type of environmental education is needed to promote pro-environmental behaviors by children.

### 2. Participants

#### 1) Parents

A total of 745 parents of the students in a public junior high school in Makassar City that had achieved Adiwiyata mandiri level were surveyed. We used a purposive sampling method to recruit parents for the study. Makassar City has experienced rapid economic development, including an economic growth rate of 9.88% in 2014<sup>17)</sup>. Those who were not parents of any junior high school students were excluded from the study.

#### 2) Teachers

A total of 17 teachers in three public junior high schools in South Sulawesi that have achieved Adiwiyata mandiri or nasional level participated in semi-structured interviews. We used a purposive sampling method to recruit teachers for the study. The teaching staff of Hasanuddin University selected the first school from among those that achieved Adiwiyata accreditation in 2013, while the second and third schools were introduced by the administrator of first school. Those who had to teach classes during the interview period of this study were excluded.

### 3. Data collection and procedures

#### 1) Parents

This study used a questionnaire that was administered from September 2–5, 2013. The data collection tool was a structured questionnaire based on the literature review<sup>10)</sup>; three independent experts reviewed it, two of whom were experts in children's living environments. This questionnaire included nine questions on parents' demographic characteristics and household sanitation situations. Questions on demographic characteristics included the parents' age, relationship to their children (i.e., mother or father), and educational background. This questionnaire asked the parents about their household sanitation situations, their interest in environmental issues, their knowledge of water pollution, and their practices regarding sorting garbage, disposing of oil, and washing

clothing. The time required to complete the questionnaire was about 15 minutes. This questionnaire was verified by experts in environmental education in Indonesia to ascertain its validity and to ensure that the questions were clear and understandable.

The researchers informed the administrators and teachers of the selected schools of the study's aims and provided them with essential explanations needed to complete the questionnaires. This junior high school achieved Adiwiyata mandiri level in 2013. The teachers then distributed the questionnaires along with letters addressed to the parents, explaining the study to the children and asking them to deliver all of the materials to their parents. The explanation letter asked the parents to complete the questionnaires, enclose them in the envelopes provided, and return them to the teachers via their children within two days.

#### 2) Teachers

This study conducted semi-structured interviews from August 30–September 2, 2014. The researchers formulated an interview guide from previous study<sup>10)</sup> and used it with junior high school teachers who had agreed to participate. Junior high schools which achieved Adiwiyata mandiri or nasional level in 2013 were selected. The teachers were asked about their "perception of environmental education," their perceptions of the "relationship between environmental issues and health," and what "behaviors were needed to improve environmental issues." Interviews were conducted by three researchers who had a good understanding of this study, and one teacher was interviewed by a researcher with interpreter who was proficient in Indonesian and English. After every interview, the researchers confirmed with the interpreter whether the translation from Indonesian to English was accurate.

The interview sites were private rooms in the junior high schools, guaranteeing an environment with the privacy to speak freely, a low level of sound, good lighting, and a comfortable room temperature. Consent was obtained from the teachers. The interviews were recorded using a digital voice recorder, and the recorded interviews were later transcribed for data analysis.

### 3. Analysis

With respect to the survey questionnaire, all statistical analyses were performed using IBM SPSS for Windows version 24.0 (IBM Corp, Armonk, NY, USA). Indonesia has three standards for school education; basic (elementary



Table 1. Characteristic of teachers

ID	Age	Gender	Years of experience	Educational background	Subjects
A	49	Female	29	Undergraduate	Mathematics
B	53	Female	31	Undergraduate	Social Study
C	37	Female	14	Undergraduate	Science
D	55	Female	28	Undergraduate	Indonesian
E	44	Female	23	Undergraduate	English
F	43	Female	17	Undergraduate	Science
G	36	Male	10	Undergraduate	Science
H	43	Female	22	Undergraduate	Indonesian
I	55	Male	14	Undergraduate	Health and Physical Education
J	44	Female	21	Undergraduate	Science
K	42	Female	19	Postgraduate	Health and Physical Education
L	35	Female	9	Unknown	Social Study
M	43	Female	19	Postgraduate	Art and Craft
N	40	Female	15	Postgraduate	Religion
O	52	Male	30	Postgraduate	Science
P	24	Female	5	Undergraduate	Computer Science
Q	52	Female	26	Undergraduate	Indonesian

### 3. Awareness of environmental education among teachers

#### 1) Categories overview

Mayring's content analysis was performed according to "type of education necessary to promote pro-environmental behavior in children"; 130 contexts were extracted with 16 codes, two categories, and five subcategories. The categories and subcategories were extracted by summarizing the content analysis. Codes were extracted through an explicative content analysis. Categories are expressed using [ ]; subcategories, < >; codes, { }; and speech, " ".

#### 2) Explanation of categories

##### (1) [Necessity of symbiosis within the community]

Forty-seven contexts were classified under the category of [Necessity of symbiosis within the community]. This category consists of two subcategories: <necessity for cooperative system for home and community on environmental education> and <necessity for environmental education system in schools>. Teachers feel that {parental participation in environmental education

is necessary}; "since children spend more time at home than at school, parents need to continue educating their children as in school," and "I also hope parents would take time every day to control their children in keeping a clean environment." Teachers also feel that {there is a shortage of materials for environmental education in school}; "Preparing some supporting materials for environmental education, more trashcans, and more plants."

##### (2) [Education as people concerned with the environment]

Forty-seven contexts were classified under the category [Education as people concerned with the environment]. This category featured two subcategories: <education to improve familiar environment> and <education to recognize issues of living environment as one's own problem>. Some of the responses {recommend planting a large number of plants: "Plants are the lungs of the world. The more plants, the greater benefits we get," and "Plants planted by the students can reduce dust." A number of teachers were encouraging the students to {consider global warming as one's own problem}; "The school provides environmental education to the students with regard to



Table 3. Awareness of environmental education for junior high school students among teachers

Category	Subcategory	Code	Context number	Teacher's ID	
Necessity of symbiosis within the community	Necessity for cooperative system for home and community on environmental education	Parental participation in environmental education is necessary.	13	A,B,C,D, H,L,M,N, O, P, Q	
		The government should disseminate information regarding environmental problems and education to the public.	9	A,B,D,H, K,M,N,O, Q	
		All schools should conduct environmental education.	5	A,G,M,O, P	
		Further developmental measures are necessary for cooperation within the community.	5	G,I,J,L,O	
	Necessity for environmental education system in schools	It is important that environmental education involves not just imparting knowledge, but also teaching behavioral measures.	8	D,K,L,M, N,P,Q	
		There is a shortage of materials for environmental education in school.	4	A,D,I,Q	
		Environmental education is handled as a single subject rather than being disjointedly introduced as a part of various classes.	3	C,D,H	
	Education as people concerned with the environment	Education to improve familiar environment	Guidance in the use of the appropriate garbage disposal	28	C,D,F,G,H, I,J,K,L,M, N,O,P,Q
			Recommend planting a large number of plants.	10	A,B,E,F,I, K,O,P
			Do not waste resources.	8	B,D,E,F,I, M,O
Education to recognize issues of living environment as one's own problem		Consider global warming as one's own problem.	1	I	
Difficulties with polluted living environment		There is a lot of garbage in the area.	16	C,D,G,H,I, J,K,L,M, N,O,P,Q	
	Atmospheric pollution causes respiratory problems.	9	C,G,H,J,K, L,N,O,Q		
	The water is contaminated and cannot be drunk.	9	D,E,G,H, L,M,Q		
	The soil is contaminated.	1	O		
	Unless the environment changes, it will cause illness.	1	A		

not separate garbage by type and 57.9% of them did not properly dispose of processed oils. Hence, the parents' did not adequately demonstrate pro-environmental behavior to their children, and we predict that unless both children and parents receive environmental education, pro-environmental behavior outside of school will not be promoted. Furthermore, science, social studies, and health and physical education teachers mentioned {further developmental measures are necessary for cooperation within the community} and it is inferred that taking initiative of environmental education by these subjects teacher carry out successful result in Indonesia.

Teachers felt the <necessity for environmental education system in schools>: {there is a shortage of materials for environmental education in school}, and {environmental education is handled as a single subject rather than being disjointedly introduced as a part of various classes}. Although the Indonesian government recommends integrating Education for Sustainable Development into university curricula, higher education in Indonesia does not include training in Education for Sustainable Development<sup>25)</sup>. Many teachers of subjects unrelated to environmental education mentioned <necessity for environmental education system in schools> and there is a possibility that lacking of environmental education and materials including textbooks made teachers feel difficult to teach junior high school students. Not only integrating environmental education into science and other subjects but also to introducing a curriculum and textbook is necessary for effective environmental education<sup>15, 16)</sup>. Thus, cooperation between schools and the government and preparation of materials about environmental education is needed.

<Education to improve familiar environments> and <education to recognize issues of living environment as one's own problem> were associated with [education as people concerned with the environment]. In pro-environmental behavior in students, this is related to being able to obtain outcomes of pro-environmental behavior as well as the existence of strict rules<sup>20, 26, 27)</sup>. The Adiwiyata program, which the Indonesian government started in 2006, encourages schools to adopt behaviors that are respectful toward the environment. It is assumed that this made teachers aware of the need to: {recommend planning a large number of plans}, {consider global warming as one's own problem}. As 18.7% of parents sort the garbage

without any particular reason, resulting in inconsistent garbage separation, it is necessary to objectively explain when and in what situations to promote pro-environmental behavior; in other words, {guidance in the use of the appropriate garbage disposal}. In Indonesia, approximately 120,000 people fall ill every year due to inadequate sanitation facilities, and about 50,000 people have died<sup>3)</sup> as a result. Therefore, as identified by teachers, <difficulties with polluted living environment> requires a prompt response. In order to reduce health damage caused by environmental problems, we suggest that not only teachers, but also public health centers should raise awareness of environmental issues and provide environmental education for children and parents in collaboration with schools.

#### **Limitations**

The parents included in this study were parents of students who attended public junior high school in Makassar City, comprising 1.6% of the total public junior high school population of the city. Surveys of parents and teachers were conducted in different periods, and the government position on environmental issues might have changed. Since surveys were not conducted among illiterate parents and the percentage of high educated parents was higher than the Indonesian average, expansion of the study area, an increased number of subjects, and verification of the results is required. Additionally, the current findings are limited in their generalizability, as the teachers surveyed in this study were selected from junior high schools that received Adiwiyata accreditation in 2013; therefore, the results cannot be applied to junior high school teachers in schools that did not receive Adiwiyata accreditation.

#### **Conclusion**

The aim of this study was to consider what type of environmental education was needed to promote pro-environmental behavior among parents and students by examining parents' perspectives on household sanitation situations and junior high school teachers' awareness of environmental education in Makassar City. The following has come to light as the result of our research:

1. A high percentage of parents were interested in environmental issues (95.9%) and had knowledge about water pollution (90.2%). However, only a few families



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