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Pro-Environmental Health Behavior (PEHB): A Contextual Behavior of Elementary Students in Biology Learning

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ABSTRACT

Education plays a significant role to overcome the low Pro-Environmental Health Behavior (PEHB). By and large, PEHB can be defined as a behavior that supports the achievement of a healthy environment. The study aims to describe the PEHB profile of elementary school students in biology learning. The research method used is a descriptive method with a survey as the data collection technique. The number of items in the PEHB instruments employed in the research consists of 12 items, which are the explanation of 6 PEHB indicators. The indicators are (1) The utilization of energy that supports environmental health; (2) Environmental health-oriented transportation; (3) Waste management to sustain environmental health; (4) Environmental health concept-based consumption; (5) Recycle toward a healthy environment; and (6) Social participation to establish a healthy environment. The research results indicate that the average score of the elementary school students' PEHB is 67.85 (Moderate). The indicator with the lowest average score is those related to recycling. Moreover, the highest average score is in the first indicator that is related to the utilization of energy. The research concludes that the PEHB score of elementary school students is in a moderate category. A suggestion for future research is related to the development of biology learning media concerning environmental health.

Keywords: *Biology Learning, Contextual Behavior, Pro-Environmental Health Behavior*

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INTRODUCTION

Environmental problems occur in various areas. Environmental pollutions attributable to the entry of contaminants, such as industrial waste, into the rivers pollute many rivers and cause water unhealthy for consumption. Unhealthy river condition needs to be repaired so that the rivers can be healthy and suitable for use in daily life. Another relevant example besides water pollution is air pollution due to trash burning, motor vehicle emission, and the results of industrial exhaust (Olsson & Kjällstrand, 2006; Pramana et al., 2020). Polluted air is dangerous for health and has adverse impacts on the environment. Without efforts to reduce air pollution, communities exposed to polluted air will experience respiratory disorders.

Efforts to overcome various environmental problems must be continuously conducted. One of the efforts is through environmental education at elementary schools. It is necessary for elementary school students to receive a variety of learning related to environmental health concepts in schools. Students who have awareness of maintaining environmental health can be categorized as having Pro-Environmental Health Behavior (PEHB). The definition of PEHB is one's behavior to maintain environmental health (Jeong & Kim, 2020; Kim, 2011). People who have PEHB will try to avoid environmental pollutions that are likely to occur in their surroundings. It is imperative to develop PEHB in learning in elementary school, one of them is through biology learning. Many content related to environmental health at an elementary school level are summarized in thematic biology learning (Sukiniarti, 2016; Vieira & Tenreiro-Vieira, 2016).

PEHB will be very contextual to be developed since it is relevant to the needs of 21st-century learning. Contextual content in daily life will be beneficial to facilitate students in learning environmental health concepts (Derman & Gurbuz, 2018; Kabadayi & Altinsoy, 2019). Additionally, environmental health content are very contextual to thematic content learned in elementary schools. Students require a deepening related to concept understanding of environmental health relevant to those experienced by the students in daily life. Previous studies have been conducted regarding Pro-Environmental Behavior (PEB) in general. PEB has a wider range of behavior than PEHB. Different studies have been carried out in terms of PEB. The results of the studies indicate that PEB impacts environmental sustainability (Panno et al., 2017; Runhaar et al., 2019). Moreover, analysis and profile of students' PEB are required to determine policies in preparing a sustainable and environmental improvement-oriented program (Choudri et al., 2016; Derr, 2017).

Only a few studies link PEB to the health aspect; thus, research on the PEHB profile in biology learning at elementary schools is urgent. PEHB profile is needed to create a plan regarding biology learning to be conducted. Biology learning related to environmental health is often found in thematic learning. Further development is thus needed regarding the learning media used. Previous studies suggest that the use of learning media can improve students' learning quality (Boholano, 2017; Lee, 2016). Learning media need to be used to facilitate 21st century learning that is required by students to be able to adapt to modern technology.

The PEHB profile of elementary school students is necessary as guidance for teachers in conveying contextual content related to environmental health. Environmental health content that is integrated into learning at the elementary school level is part of biology learning. Therefore, numerous attempts in developing learning that is contextual to daily life are a necessity. Instruments employed to describe students' PEHB profile must be adjusted to the needs of biology learning development at the elementary school level. Based on the aforementioned, the research aims to describe the PEHB profile of elementary school students in biology learning

METHOD

The research method was a descriptive method with a survey as a data collection technique, data collected in April-May 2022. The instrument used in the research was a questionnaire related to Pro-Environmental Health Behavior (PEHB), which is a more specific Pro-Environmental Behavior (PEB). The instruments were prepared to specifically measure behavior aspects that had an impact on environmental health. Aspects related to and impacted environmental health included water pollution, soil

pollution, air pollution, waste management, the use of environmentally-friendly transportations, environmentally-friendly food processing, and many more. The developed instruments were based on Kaiser & Wilson (2004)and further explained in the form of PEHB instruments that consisted of 12 question items. The options for the questions comprised always, often, sometimes, seldom, and never. The grids of the research instruments are presented in Table 1.

Table 1. Developed PEHB Indicators

No	Indicators	Instrument item
1	The utilization of energy that supports environmental health	1,2
2	Environmental health-oriented transportation	3,4
3	Waste management to sustain environmental health	5,6
4	Environmental health concept-based consumption	7,8
5	Recycle towards a healthy environment	9,10
6	Social participation to establish a healthy environment	11,12

PEHB instruments have a little difference from PEB in terms of their functions. PEB has a function to measure an individual's behavior in general in maintaining the environment. PEHB, on the other hand, is a more specific form of PEB since it measures one's behavior in maintaining environmental health. The PEHB and PEB scores can be categorized according to Table 2.

Table 2. Categories of PEHB Score

Category	Interval score
Very high	$X > 81.28$
High	$70.64 < X \leq 81.28$
Moderate	$49.36 < X \leq 70.64$
Low	$38.72 < X \leq 49.36$
Very low	$X \leq 38.72$

RESULT AND DISCUSSION

The research results suggest that the average score of the elementary school students who filled out the questionnaire on environmental health awareness behavior was in a varied range. The instrument item with the highest average score was the first item, namely the item related to energy-saving activities in the context of unplugging a mobile phone charger. Whereas, the item with the lowest average score was the fourth item, which was the utilization of environmentally-friendly public transportation. The result was input for various role holders and stakeholders. The research results can be seen in Table 3.

Table 3. Average scores ofelementary school students' PEHB

No	Item	Average score
1	I unplug the mobile phone/laptop charger when the battery is full	4.31
2	I use power-saving mode on my mobile phone/laptop device	3.81
3	I prefer walking to the nearest places (500 meters in distance)	3.78
4	I prefer to use electric to oil-fueled public transportations	2.31
5	I use papers sparingly	4.13
6	I prefer studying using e-books (digital books) to printed books	2.48
7	I shop using cloth bags to prevent an increase in plastic waste	4.11
8	I avoid buying Chlorofluorocarbon (CFC)-containinginsect repellent	3.17
9	I recycle used paper for reuse	2.68
10	I reuse used cans for plant pots	3.37
11	I participate in a global warming prevention campaign	2.43
12	I set an example to my peers to protect the environment	4.13
	Total	67.85
	Category	Moderate

The research results suggest that based on the average PEHB scores according to various categories, indicator with the lowest score was the fifth indicator that related to recycling. Whereas, the indicator with the highest score was the first indicator regarding the utilization of environmentally friendly energy. All in all, the average scores of each indicator are indicated in Table 4.

Table 4. Average PEHB scores based on indicators

No	Indicator	Score
1	The utilization of energy that supports environmental health	4.06
2	Environmental health-oriented transportation	3.04
3	Waste management to sustain environmental health	3.30
4	Environmental health concept-based consumption	3.64
5	Recycle towards a healthy environment	3.03
6	Social participation to establish a healthy environment	3.28

The research results in general could describe that the PEHB condition of the elementary school students was in a moderate category. The condition needs improvement with numerous attempts by teachers, particularly for indicators with a low score. The results also suggest that the lowest indicator was in the fifth indicator related to recycling in the surrounding areas. In this case, teachers could provide assignment options to students so they could understand the recycling process. Teachers should convey introduction content on recycling and assign students to collect a variety of used goods that can be reused. A learning process related to recycling is part of biology learning that is integrated into thematic learning (Hacieminoglu, 2016; Li et al., 2019).

Biology learning must emphasize environmental aspects. Improvement in PEHB becomes crucial to be jointly implemented by teachers as well as students. Teachers need to design learning according to environmental values. Learning content must be developed gradually starting with water pollution. The developed content must discuss the entry of pollution into the rivers whose sources are varied, such as industry

or household waste (Lazaridou et al., 2018; Niankara & Zoungrana, 2018; Olsson & Kjällstrand, 2006). Teachers must design so that elementary school students could participate in the prevention of water quality decrease. Concepts related to water filters and simple household waste management need to be taught and applied in students' independent assignments. This will impact students' habits that could solve various environmental problems.

Another issue related to environmental health is air pollution due to motor vehicle emissions. Motor vehicle fume causes a decrease in environmental health quality. The air pollution concept must be intensively taught to students. Students will have more understanding of various pollution issues that have an impact on the decrease in environmental health quality. Moreover, biology learning that is integrated with thematic learning will have effect on the improvement of PEHB implementation. Content development with orientation to PEHB is urgent to develop since it will affect the increase in environmental health quality. Students could implement PEHB in their life in the community which could trigger the occurrence of awareness of protecting the environment (Hasiloglu & Kunduraci, 2018; Sennes et al., 2012). The PEHB learning content can be used in biology learning at various class levels in elementary schools. The content development and numerous activities performed by the students should support the strengthening of PEHB. Learning media employed to convey environmental health-related content must be developed to keep up with current technological developments. Technology has a significant impact on daily life including in biology learning in elementary schools(Buzov, 2014). PEHB should be implemented actually through several contextual learning; thus, it could support environmental conservation efforts. Contextual environmental education will make it easier to create directions to achieve goals that are superior and follow the criteria of 21st-century skills.

Innovation in environmental education will have an effect on numerous variations that could bring more fun to the learning situation. Variation in education can be in the form of the utilization of environmental health-themed content, media, and student worksheets. PEHB is very helpful for students so they could contribute to reducing the environmental pollution. Besides teachers and students, environmental education must be supported by activities of the surrounding communities. Communities must set an example in providing education for the students who are the next generation who will resume sustainability in the future. Innovation in education needs to be cultivated by teachers each semester and must contain environmental health values. Topics in biology learning at elementary school must be in accordance with current issues related to environmental health around the students' school and residence. The development of contextual content will have a positive impact on the enhancement of learning quality in the classrooms(Kartikaningtyas et al., 2018; Paristiowati et al., 2019).

CONCLUSION

Referring to the research results, it can be concluded that the average score of PEHB was in the moderate category. The lowest score was in an indicator that discussed recycling. Whereas, the highest score was in the first indicator, which was the utilization of environmentally friendly energy. The development of learning content related to environmental health in Biology learning in elementary school could affect the improvement of students' PEHB. The efforts need to be continued by carrying out various activities aiming at reducing the environmental pollution.

Suggestion for future research is developing biology learning media on the environmental health topic in elementary school.

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