Junior High School Students’ Perception about Simple Environmental Problem as an Impact of Problem based Learning

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Abstract. Environmental problem is a real problem that occur in student’s daily life. Junior high school students’ perception about environmental problem is interesting to be investigated. The major aim of this study is to explore junior high school students’ perception about environmental problems around them and ways to solve the problem. The subject of this study is 69 Junior High School Students from two Junior High School in Bandung. This study use two open ended question. The core of first question is environmental problem around them (near school or house). The core of second question is the way to prevent or to solve the problem. These two question are as an impact of problem based learning in science learning. There are two major findings in this study. The first finding, based on most students’ perception, plastic waste cause an environmental problem. The second finding, environmental awareness can be a solution to prevent environmental pollution. The third finding, most student can classify environmental pollution into land, water and air pollution. We can conclude that Junior High School Students see the environmental problem as a phenomenon and teacher can explore environmental problem to guide the way of preventing and resolving environmental problem.

1. Introduction
Nowadays, many environmental problem happen in the earth. We should see this environmental problem as a complex problem that occur in student’s daily life. Natural environment is important part of our lives and science education because we must teach Junior High School students how to appreciate natural environment. There are many environmental problem around us, for example air pollution caused by vehicles and industries emission. Junior high school students can see these problems everyday whether it is near school or near their house.

Problem based learning can be used in science learning, especially in environmental concepts. Through problem based learning, students can solve a complex, ill-structured problem that discipline-based content [1]. In problem based learning, students are introduced to real world problem (environmental problem) so students will place environmental problem as their needs and will gather information that match to environmental problem in their daily life. Science learning must be connected to natural environment as an integral part of it. Problems are introduced to act as triggers for science learning [2]. Throughout environmental problems, students can learn to work collaboratively in order to improve problem solving skill and critical thinking. Science teacher play important role as
a facilitator in science learning and responsible to guide students in making science learning as a meaningful and joyful learning.

Junior high school students’ perception about environmental problem is interesting to be investigated. This statement as a foundation of this study. The reason is we can see student’s perception about environmental problem around them as an impact of problem based learning. In this article, there will be an exposure of student’s perception about environmental problem around them.

2. Experimental Method
This study is a descriptive study. The procedure of this study is described in Figure 1. Environmental concepts in science learning as an initiation of this study. Science teacher use problem-based learning approach within environmental concepts, so that students see environmental problem around them as real world problem. The student of Class VII in two Junior High School located in Bandung as a subject of this study. About 69 junior high students (36 students from Junior High School A and 33 students from Junior High School B) are the subject of this study.

Two questions are exposed to Junior High School students as an impact of problem-based learning in science learning especially in environmental concepts. The questions are:
1. Mention two environmental problems around you (near school or near house)!
2. Mention two simple solution for preventing or resolving the problem!
These question need short answer to see spontaneous answer. All answer are collected to be analysed.

3. Result and Discussion

3.1. Environmental problem

Each student gives two example of environmental problem, so that there are 72 answer for Junior High School A. Based on student’s answer about environmental problem around them, there are 14 kinds of answer. As we can see in Figure 2, the answer are less water infiltration (2.78%), less field (1.39%), burning garbage (6.94%), flood (22.22%), cigar smoke (1.39%), smell of garbage (6.94%), vehicle emission (8.34%), polluted river (6.94%), garbage strewn (30.56%), industrial emission (2.78%), dirty toilet (2.78%), plastic garbage (1.39%), Clean environment* (2.78%), No Garbage* (2.78). We can see two interesting answers which are clean environment and no garbage around students.
On the other hand, there are 66 answers for Junior High School B because each student gives two answers. Based on student’s answer about environmental problem around them, there are 12 kinds of answer. As we can see in Figure 2, the answers are vehicle emission (18.18%), CFC gas (3.03%), garbage strewn (27.27%), dirty sewage (9.09%), burning garbage (12.12%), polluted land (7.57%), plastic garbage (3.03%), polluted river (12.12%), pesticide uses (1.52%), flood (3.03%), industrial emission (1.52%), and cigar smoke (1.52%).

From Figure 3 and Figure 4, we can see seven same answer about environmental problem. They are flood, cigar smoke, burning garbage, vehicle emission, polluted river, garbage strewn, and industrial emission. Junior high school students see environmental problem as part of their daily life. Beside of
that, most students mention garbage strewn as an environmental problem. Science teacher needs to teach using environmental problem in order to educate students about sustainable development in the future [2]. Environment concepts as one part of science learning. Vehicle emission consist of xenobiotic compounds that are foreign to the biosphere [4]. This kind of emission cause environmental problem especially air pollution and also acid rain [5]. The problem that exist is dirty toilet at School A, include sometimes students forget to turn off the tap. Turning off the tap is like a domino effect. By turning off the tap, we can save the energy [6]. Based on Figure 3, students mention that CFC gas as an environmental problem, and ozone layer become thinner each year [7].

According to student’s answer, pesticide can cause land pollution. So, earthworms can be a bioindicator of polluted land [8]. Overusing of pesticide and fertilizer can cause land pollution [9]. From Figure 3 and Figure 4, we can see polluted river and dirty sewage become problem for our natural environment because these two problem can decrease water quality. Bad water quality in river/sewage can cause bad human health [10] and even affect water biota/ecosystem [11]. As an example, there are water crisis in China [12] and also bad air quality [13] and the China’s government tried to overcome these environment problem. The plastic also become an environmental problem around the Students. Even in Canada, plastic harm water ecosystem and become a serious problem [14]. This case happened also in China [15] where there are environmental problem cause of plastic waste. All explanation about environment problem can eager science teacher to be creative in teaching environment concepts by choosing problem as a foundation science learning.

3.2. Simple solution

From the second question, each student gives two simple solutions so that there are 72 answer (Junior High School A). There are 15 kinds of answer, wise in land uses (1.39%), put trash into trash can (23.61%), Bio-pore (1.38%), Garbage Bank (26.39), Recycle (9.72%), cleaning environment together (4.17%), picking up trash (5.56%), sorting out (5.56%), 4R (4.17%), Water filter (1.39%), environmental awareness (5.56%), keep toilet clean (4.17%), plant trees (2.78%), use bicycle (2.78%), organic fertilizer (1.39%).

![Figure 4. Simple solution (School A)](image)

There are 66 answers from Junior High School B Students about simple solution for environmental problems. From the answer, there are 11 kinds of simple solution for environmental problem, use
bicycle (19.69%), plant trees (9.09%), picking up trash (1.52%), put trash into trash can (33.33%), treating waste (10.61%), environment awareness (10.61%), Bio-pore (1.52%), less garbage burning (4.55%), water filter (3.03%), less air conditioner (4.55%), 4R (1.52%).

**Figure 5.** Simple solution (School B)

Based on Figure 4 and Figure 5, there are six same answers about simple solution to prevent or resolve environmental problem. They are put trash into trash can, 4R (Reduce, Reuse, Recycle, Replace), water filter, environment awareness, plant trees and use bicycle. There are many solution for preventing and resolving environment problem. Base on Figure 4, recycling is a simple solution. A research shows that recycling can overcome environment problem especially land pollution [16]. Heavy traffic can cause terrible air pollution [17] and we can prevent it by using bicycle to school [18]. In every industry, they should have waste water treatment [19] in order to resolve water/river pollution. The way student give simple solution for preventing or resolving environment will help them to think critically. The science teacher become facilitator for students themselves.

**4. Conclusion**

From the exposure and analysis above, there are two conclusion. First, Junior High School Students see the environmental problem as a phenomenon, for example environmental pollution around them. Second, science teacher can explore environmental problem to guide the way of preventing and resolving environmental problem by exposing example of real environment problem around them.

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