Energy Transformation Topic: Correlation between Pre-Classroom Reading Activity and Students’ Curiosity

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Abstract. This research aimed to analyze the correlation between pre-classroom reading activity and students’ curiosity to science. 31 participants were selected randomly from one of the junior high schools in Cimahi. Spearman’s correlation was chosen since the data from two variables were not normally distributed. The result shows that there was a weak correlation between reading before learning and students’ curiosity in the classroom and it was not significant. Several factors influence this result, one of them was students’ reluctant in daily reading to science content.

1. Introduction

Reading is a simple activity that many people do as a routine. There are various reading materials available nowadays that people can choose, such as newspaper, magazine, books, digital media and so on. It is very important to help younger generations to get used to reading from school age to make them familiar with reading. Students must be given opportunities to read in promoting reading habit, and also teacher must be a role model [1]. Reading activity is an option that we can use to stimulate students’ motivation to learn science. Giving intervention before the classroom begins, such as asking students to read, is an alternative way to grow students’ motivation to learn [2]. The prior studies indicate that the reading habit, in Indonesia is still low [3], so that implementing various reading activities would be great.

Reading could be used as a medium to stimulate students reading more and more. For example, when students are given fascinating articles or journals, the students’ motivation to read is enhanced [4]. The motivation to know more would trigger their curiosity. Pre-classroom activity reading is used to stimulate students’ curiosity about scientific discovery. Various scientific activities, such as proving the existence of certain energy forms and matter resulted from photosynthesis, is related to curiosity [5]. Curiosity is in between motivation and knowledge [6]. Students’ curiosity is significant for learning and doing science [7]. The intensity of students’ curiosity must be enhanced due to PISA assessment which is targeted to evaluate certain competencies in science and reading literacy [8], [9].

In Indonesia, giving the reading task before attending the classroom is really common. Students are asked to read the topic and expected them to be curious, even to understand about the topic before they learn in the classroom. Students also need to fully participate when the discussions are conducted, like giving question or opinion. Furthermore, evaluation is required to be accomplished. Recent studies...
revealed that reading is beneficial and at the same time it could not be beneficial. Reading has no significant correlation with critical thinking [10], but the continuity of reading will encourage students’ higher-order thinking skills, such as critical thinking [11].

It is essential to figure out certain activities to develop the students’ curiosity in the classroom. Emphasizing the reading habit is highly expected to generate the students’ curiosity which is signed by students’ participation in the classroom related to the research topic. The topic discusses energy, which consists of energy forms, energy transformation and photosynthesis. This study aimed to evaluate the relation between reading science articles activity, about energy transformation, before they attend science classroom and students’ curiosity during the learning process. Is there any correlation between these two variables? Pre-classroom reading activity was used as an alternative to stimulate students’ reading habit to enhance students’ curiosity to learn transformation energy topic.

2. Experimental Method
The aim of this study was to examine the correlation between pre-classroom reading activity (PCA) and students’ curiosity in science class. The study was made of 3 meetings, wherein each meeting, discovery learning model combined with reading activity was implemented and students did a reading activity before attending the class. In the classroom, students were given several texts to read in three consecutive meetings: Energy forms, energy transformation and photosynthesis. Throughout the learning process, students were involved in various practical activities such as observing several types of energy using simple tools and proofing the oxygen resulted from aquatic plants. Students’ curiosity was observed through their activities during learning.

The participants of the study were students at one of public junior high school in Cimahi. Data were collected from 31 students of 7th grade, consist of 16 males and 15 females. Two instruments were used to gather data: pre-classroom reading activity questionnaire and observation sheet to assess students’ curiosity during learning. Figure 1 illustrates the instruments were used to measure each variable. Data were collected and analyzed by statistical software to find the correlation between pre-classroom reading activity and students’ curiosity in the science class. A non-parametric test, Spearman’s correlation, was used to analyze these two variables as the data were not normally distributed. The result of the statistical test would be interpreted and compared with related theories.

3. Result and Discussion

3.1. Results
In this study, students were asked to read before they attended the classroom to enrich their insights, called pre-classroom reading activity. The purpose was to stimulate students’ curiosity during the learning process. Table 1 shows information about the frequency of students’ pre-classroom reading activity for three consecutive meetings. The distribution of students who performed a reading before
attending class was adequately balanced. From 3 meetings, most students only read once before they attended the class. It was followed by the other students who always read before they join the class. From the data, students approximately accomplished teacher’s instruction to read before the class begins. The students who did not read before attending class respectively in the entire meetings have the lowest number.

**Table 1.** The number and percentage of students’ pre-classroom reading activity in three consecutive meetings.

| Frequency of pre-classroom reading activity | 3 meetings | 2 meetings | 1 meeting | None |
|--------------------------------------------|------------|------------|-----------|------|
| n                                          | 8          | 7          | 10        | 6    |
| Percentage (%)                             | 25.81      | 22.58      | 32.26     | 19.35|

As can be seen from the Figure 2, most students who did once pre-classroom reading activity from 3 consecutive meetings are dominant. Based on the figure, the highest proportion shows that students are not curious in science learning. 7 out of 10 students did not show their curiosity during learning science in the class. For students who always did pre-classroom reading activity also shows the nearly result. 6 out of 8 students did not curious toward the science learning in the class. Other results show the same trend. Students’ curiosity was very low, though the intensity of pre-classroom reading was high.

![Figure 2. The summaries of students’ pre-classroom reading activity.](image)

Spearman’s test was used to analyzed the correlation between pre-classroom reading activity and students’ curiosity. The result of the statistical test shows that there is no significant correlation between pre-classroom reading activity and students’ curiosity. Table 2 illustrates the result of the statistical test of the correlation between those two variables. Spearman’s correlation coefficient value (r) is 0.069, which shows a weak correlation between two variables and the p-value shows 0.712 (sig. 2-tailed, α=0.05). It means there was no significant correlation between pre-classroom reading activity and students’ curiosity in the classroom. In addition, Figure 3 gives information about the contribution of pre-classroom activity to students’ curiosity which was extremely low, less than 1% nearly to zero (0.5%). From the figure, it could be known that pre-classroom reading activity is not the main factor of students’ curiosity.
Table 2. The result of statistical test to evaluate the correlation between pre-classroom reading activity and students’ curiosity.

| Pre-classroom reading activity | r     | $r^2$   | sig. |
|-------------------------------|-------|---------|------|
| Students’ curiosity           | 0.069* | 0.005   | 0.712|

*) Spearman’s correlation coefficient

Figure 3. The percentage of pre-classroom reading activity toward students’ curiosity.

3.2. Discussion

Students are usually assigned to read before attending class. This instruction is really common and students commonly ignore it all. This finding shows that the distribution of students who read before attending class for the three consecutive meetings varies adequately. Reading is not the students’ primary concern because reading before class is not commonly evaluated. It reduces the students’ motivation due to their assumption that pre-classroom reading is only a formality. Enhancing students’ motivation to learn, particularly to read, is essential because it would influence their productivity [12]. Certain alternatives could be applied such as giving them reward like point to boost their score in the exam. In the attempt to increase the frequency of pre-classroom reading, the punishment may also be awarded to students who did not perform a reading assignment before learning.

From the supporting data which were gathered, the students were hard to find several solutions to solve daily cases in the real world. When they were asked about the most effective alternative energy to be used by vehicles to save the energy, more than 35% out of them failed. The renewable energy concept is something hard to be understood and applied due to the use of non-renewable energy today is still dominant. The fossil-fuel is the largest energy that be consumed by society related to the availability both appropriate vehicles and the fuel itself. However, pre-classroom reading activity is a great idea to be implemented in enhancing student’s knowledge and their curiosity about information related to energy.

In addition, the students who curious during learning photosynthesis in the third meeting were also low. The artificial of photosynthesis condition in investigating the number of oxygen was presented using aquatic plant while the lights come from the high-intensity light lamps. The movements of water molecule could clearly be observed when the oxygen was generated by aquatic plants. The students were asked to investigate the result of photosynthesis reaction. However, students still sat on their chairs and only observed the processes in a few seconds.

Most students in this research are not curious to learn energy transformation topic. It is indicated by the analysis of the score of students’ curiosity. It is found that more reading does not show curiosity from students. The reading materials for students before they attend the class are varied and they are
not given the same texts by a teacher. A variety of reading materials is allegedly the cause of students’ low curiosity, so that the same reading materials need to be available. Certain materials such as academic journals will have a positive impact [4]. Giving specific reading material and relevant with the energy transformation is one of many solutions.

The finding of this study reveals that there is no significant correlation between pre-classroom reading activity and students’ curiosity in energy transformation learning. It is easily could be seen when the frequency of pre-classroom reading is not aligned with students’ curiosity. Curiosity is influenced by many factors, one of the most dominant is a cognitive skills [6]. Pre-classroom reading activity is commonly implemented in attempting students’ readiness to learn. However, the participation of students in the class which shown curiosity still hard to be found. A few students actively asked the question, but most of them were inactive. They only did the instruction that is given by the teacher. The pre-classroom reading activity seems not influencing their curiosity during learning.

Energy transformation topic is quite simple because it discusses very basic concept both physics and biology. Moreover, all of energy forms were presented directly using several tools and the investigating of oxygen in photosynthesis process were demonstrated using Ingenhouz basis. It makes science easy to understand. However, curious is owned by everybody since they were born, but it needs to be ignited [13]. Curiosity is automatically existing in students’ mind. In addition, we need to push them to express their actions related to curiosity.

Pre-classroom reading is one form to stimulate students’ curiosity, but it is still not enough. The motivation to learn is also significant to improve learning [14], including students’ curiosity. Pre-classroom reading activity was only given less than 1% contribution to students’ curiosity. It shows that other factors contribute more than 99% in influencing students to be curious when learn about energy transformation topic. This finding strengthens the fact that pre-classroom reading has no correlation with students’ curiosity. Lack of evaluation of pre-classroom reading also must be considered to support any attempts in enhancing students’ curiosity.

4. Conclusion
Pre-classroom reading activity is potential to stimulate students’ curiosity and let them bring their curiosities in the class. However, it is not too effectively enhance students curiosity, particularly in energy transformation topic. The use of virtual text digitally such as smartphone application could be a new solution. Generating the articles virtually would make it easier to be learned, because today all of people always brings their own phone everywhere. The variety content such as pictures and videos also could be applied to facilitate the students who have no interest in reading. It could be implemented in the future research.

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