Students learning motivation towards environmental-based biological learning activities

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Abstract. Motivation consists of both internal and external encouragement. It affects student learning activities. This study aims to determine the relation correlation between motivation and environmental-based biology learning activities in senior high schools in Pidie District, Aceh, Indonesia. The research method was quantitative; specifically, a quasi-experimental design. The study was conducted. For three months, from September to November 2018. The subjects were 99 students in three high schools in Pidie district, Aceh, Indonesia The instruments used in this study where a student learning motivation questionnaire and an observation sheet of student learning activities. The parameters measured were the level of motivation and the student learning activities. Data analysis involved the Pearson correlation determine the level of relation between learning motivation and environmental-based biology learning activities. The results showed that the relationship between learning motivation ($X_1$) and environmental-based biology learning activities ($X_2$) was 0.804, indicating the study concludes a strong positive correlation between the two variables.

1. Introduction

Motivation is crucial to stimulate Year 10 science students in learning. Motivation is a combination of both internal and external factors that encourage a person to achieve predetermined goals [1]. Each student has different motivations in learning correlation relation. Thus, biology-based learning activities outside the school environment are expected to increase student motivation to understand biodiversity.

Biology learning emphasises the provision of direct learning experiences through the use and development of scientific process skills and attitudes [2]. Biology learning is directed to discover and proves concepts so that it can help students to gain a deeper understanding through the process of scientific work [3]. Therefore, learning in the environment outside the school will promote in-depth understanding, teachers can engage students by utilizing the environment as a source of learning to provide an in-depth understanding of biodiversity.

The environmental conditions around SMAN 1 Mutiara, SMAN 1 Simpang Tiga and SMAN 1 Sakti in Pidie District has a great potential for carrying out student learning activities, due to the availability of learning resources to explore good and more tangible biodiversity material. The environment outside the school is a borderless laboratory that is rich in learning resources, especially biodiversity material. It is one of the integral aspects of studying biodiversity, including gene, species and ecosystem diversity. Environmental-based learning is feasible to do because it includes a learning
approach that seeks to increase student’s involvement by using the environment as a learning resource [4]. Learning resources can be a medium of student interaction [5].

Environmental-based biology learning activities will not be monotonous, because it enables several activities, including observing, classifying (grouping), communicating, asking questions and concluding. Interesting learning activities will motivate and foster a greater curiosity of students towards biodiversity material as a subject they must relate to their lives.

Preliminary observations and interviews had been conducted for several biology teachers at SMAN 1 Mutiara, SMAN 1 Simpang Tiga and SMAN 1 Sakti in Pidie District. It was found that biology-based learning outside the school environment on biodiversity material was rarely done by biology teachers, mainly due to time constraint. Thus, the environment used has been so far limited to the school environment. The teachers thought that biology-based learning outside the school environment requires more thorough planning and more time.

Environmental-based biology learning activities are among the most appropriate and relevant strategies to deepen understanding and increase student learning activities and motivation. Linking the instructional content with daily life contexts and student needs will enhance their learning motivation and will result in more efficient and effective teaching and learning process [6].

Some studies related to the use of the environment as a source of learning has been conducted. One of which was a study involving Year 8 students of MTsN Kembang Sawit Kebon Sari Madiu [7]. It showed that the use of environmental media made students more enthusiastic and engaged in learning [7]. The real events and circumstances they faced made them more critical and creative in solving problems [7].

2. Methodology

This research employed a quantitative descriptive method, a quasi-experimental design with one group pretest - posttest design model, as presented in Table 1.

| Group | Pretest | Treatment | Posttest |
|-------|---------|-----------|----------|
| A     | 0       | X         | 0        |

The population in this study were 459 Year 10 students of the Sciences Program, spread over three high schools in Pidie District, Aceh, Indonesia, namely SMAN 1 Mutiara, SMAN 1 Simpang Tiga, and SMAN 1 Sakti. The details are displayed in Table 2.

| No. | School name         | Year 10 Science | Total |
|-----|---------------------|-----------------|-------|
| 1   | SMAN 1 Mutiara      | 33              |       |
|     | X-1                 | 33              |       |
|     | X-2                 | 33              |       |
|     | X-3                 | 33              |       |
|     | X-4                 | 33              |       |
|     | X-5                 | 33              |       |
|     | X-6                 | 33              |       |
|     | X-7                 | 30              |       |
|     | X-1                 | 30              |       |
|     | X-2                 | 30              |       |
|     | X-3                 | 30              |       |
| 2   | SMAN 1 Sakti        | 30              |       |
|     | X-4                 | 30              |       |
|     | X-5                 | 30              |       |
|     | X-6                 | 30              |       |
|     | X-7                 | 30              |       |
|     | X-1                 | 17              |       |
| 3   | SMAN 1 Simpang Tiga | 17              |       |
|     | X-2                 | 17              |       |
|     | X-3                 | 17              |       |
|     | Total               | 459             |       |
The research samples were 99 students selected through the pretest. The selected students should have an average pretest score of 47.5, with the provisions can determine approximately 25-30% of the number of subjects [8]. The study took place from September to November 2018. The instruments used in this study were a student learning motivation questionnaire and an observation sheet of environmental-based biology learning activities. The parameters measured were the level of activity and student motivation. The data were tabulated and calculated using the Pearson correlation.

3. Results and Discussion
Table 3 presents the results of the correlation analysis between learning motivation and biology-based learning Activities based on the environment.

|                          | Learning motivation | Learning activity |
|--------------------------|---------------------|-------------------|
| Learning Motivation      | Pearson Correlation | .804**             |
|                          | Sig. (2-tailed)     | .000              |
|                          | N                   | 99                |
| Learning Activity        | Pearson Correlation | .804**             |
|                          | Sig. (2-tailed)     | .000              |
|                          | N                   | 99                |

**. Correlation is significant at the 0.01 level (2-tailed).

The results of the Pearson correlation shown in Table indicated that there was a significant positive correlation between learning motivation ($X_1$) and environmental-based biology learning activities, ($r=0.804 > r, p=0.00$). Referring to the guidelines for the Pearson correlation interpretation criteria, we can interpret the correlation coefficient as a very strong correlation between students’ motivation to learn ($X_1$) and environmental-based biology learning activities ($X_2$). The positive correlation indicated that the increase in student learning motivation ($X_1$), will also increase the environmental-based biology learning activities ($X_2$) of students in the senior high schools in Pidie District, Aceh, Indonesia.

The results of Pearson correlation analysis show a positive relationship between the learning motivation and student learning activities in the environmental-based biology learning in Pidie District, Aceh, Indonesia. The result indicates that learning activities cannot be separated from motivation. Motivation is the driving force of student learning activities.

Environmental-based biology learning in three high schools in Pidie District involved outdoor learning activities, ranging from observing, classifying, communicating, asking questions and concluding. The students require strong encouragement to conduct learning activities. The success in learning is inseparable from individual motivation so that each person will experience changes for the better.

The empirical fact shows that all Year 10 sciences students in three participated schools had a high motivation when they participated in environmental-based biology learning activities. One of the reasons was that learning was neither boring nor monotonous. This means that the activities carried out in environmental-based biology learning would not run well if the students in selected schools did not have a high level of individual motivation. This finding is reinforced by the results of a research conducted by Emilia Fägerstama, and Jonas Blom reported that studying biology in the outdoor environment has a positive cognitive and affective impact on Swedish middle school students aged 13-15 years [10]. Students with higher levels of intrinsic motivation tend to improve the quality of their learning in learning and have more positive feelings towards the field of study [11].
4. Conclusions
The results showed the Pearson correlation coefficient between learning motivation (X_1) and environmental-based biology learning activities (X_2) was 0.804 (p=0.00). This result indicated a very strong correlation between the two variables.

5. References
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