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## Innovative approach in inculcating positive attitudes towards environmental management

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### Abstract

This study aims to systematically design an environmental learning module based on a constructivist learning approach and to measure its effectiveness on attitudes towards environmental management among some secondary students, involving two different schools in Pekanbaru, Riau, Indonesia. This quasi-experimental study employs pre and post control group design involving some 152 Level Seven students segregated into two; experimental and control groups. Each group is also stratified in terms of students' cognitive ability (high and low). Throughout the intervention process, students in the experimental groups are exposed to environmental learning experience using the designed module, integrated with the constructivist approach. On the other hand, their counterparts in the control groups undergo conventional teaching and learning routines. Essentially, the findings reveal that the module has improved the students' attitude regardless of their cognitive ability. Findings generated from this study provide empirical evidence on the effectiveness of a constructivist approach in environment teaching, particularly in improving students' attitudes towards their environment.

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### 1. Introduction

The earth is deteriorating. Its source is being exploited freely without environmental ethics. The prudent development implementation that was meant to increase the standard of living in a society has a minimal achievement. Ironically, these developments have proven to reduce the quality of life in the society. Upon this consideration, the international body, The United Nations (UN) has declared a development concept called Sustainable Development with a moral dimension (UNESCO, 1977). The only problem is changing the faith,

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attitude and the action of each individual from an environmental unfriendly person to an environmental friendly person.

In the effort of looking for a remedy to the problem, an educational plan on environment awareness for all education level is needed as stated in the Indonesia National Education Legislation No 20 (2003). In view of science education in Indonesia, the statement can be achieved through accentuating that the quality of science education should be directed as such to synchronize with the target of the science education itself, in which, is to focus on the scientific development skill among students through interaction with the surroundings, natural phenomenon and information obtained in the environment. (Depdinas 2004; Suud 2001)

The learning process should be expanded, parallel to the new learning strategy, which has challenged the teacher's profession, depending on the competency of the teacher through learning which stresses in thinking skill and active learning (Sanjaya, 2007). Silberman (2004) stated that the ideology of an active learning was a modification from Confucious. It said, 'I hear and I forget, I hear and see, I might remember, I hear, see and asked or discussed with others, I may understand, from that I hear, see, discuss and apply, I obtained knowledge and skill, I teach others what I master.'

Active learning activity is frequently suggested to be judges from the students' behaviours' perspective. Osman et al. (2007), Djemari (2008), Winkel (2004) and Fishbein (1980) stressed that the connection between attitude and behaviour is through an exposed attitude and that the next course of behaviour can be related. Furthermore, if a student has a negative attitude towards science subject, the student will show a negative respond during the subject, which will give a disappointing implication on the achievement, attitude and involvement. These matters were among the cause factors on why biology learning, especially the environmental topic is not effective among students (Seragih, 2002; Sholahuddin, 2007; Yustina, 2007).

The implication of the geographical surrounding to human at various levels of evolution are to understand, master and use the geographical surrounding as a supportive protection for their survival (Wuryadi, 2009). The environmental education is concerned on the ethics development and the equality of the world's surrounding. It is parallel with the 'Healthy Indonesia 2010' vision or 'Indonesia Sehat 2010', which promote a healthy school program towards life behaviour development in a healthy and clean environment.

Wuryadi (2009) said, an effective method of an environment application is that the method should allow students to involve actively as in to increase understanding, to promote a positive attitude and behaviour towards the environment. Safrudie (1994) stated that the knowledge that a person has will positively correlate in his behaviour such as creativity, perception and attitude. While Mar'at (1998) and Sholahuddin (2007) said, that the current knowledge a student has on the environment will be influencing them in their thinking skill, creativity, perception and the student's attitude towards the environment. Therefore, this research is done to study the student's attitude in environmental management.

For a student to self understand, a method of learning using the module need to be executed, in which, the learning process need to be built in stages using a constructive approach. Based on a philosophy that said learning is an active process, students will use it on experiences gained by teachers in the following arrangement of 5 constructivist teaching phase. They are orientation phase, elicitation phase, restructuring of ideas, application of ideas and review change in ideas with reflection and assessment/evaluation.

## 2. Research methodology

The *quasi* experiment (Cook & Campbell, 1979) was conducted at the Junior High School in Pekanbaru, Riau Indonesia from March until September 2008. There were 75 students in the constructivism learning group and 77 students in the conventional learning group. A dependant variable, which is the attitude in environmental management in the first topic, "The ecosystem components and dependency in the ecosystem." The second topic is, "The human role in managing the environment pollution and destruction." The treatment group learning implementation is using the environment learning module. The control group undergo a normal conventional learning. The research instrument is using questionnaire to determine the attitude with reliability 0.904 to 0.950. Data obtained will be analyzed descriptively and inference analysis with ANOVA and MANOVA.

### 3. Research finding

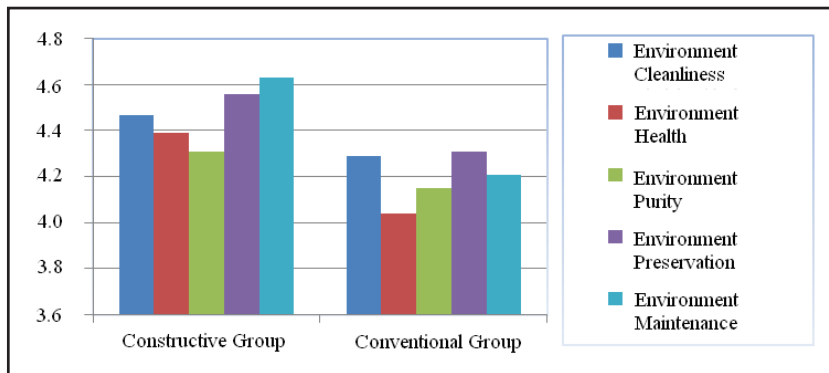


Figure 1. Bar chart of constructive group attitude profile and post conventional test

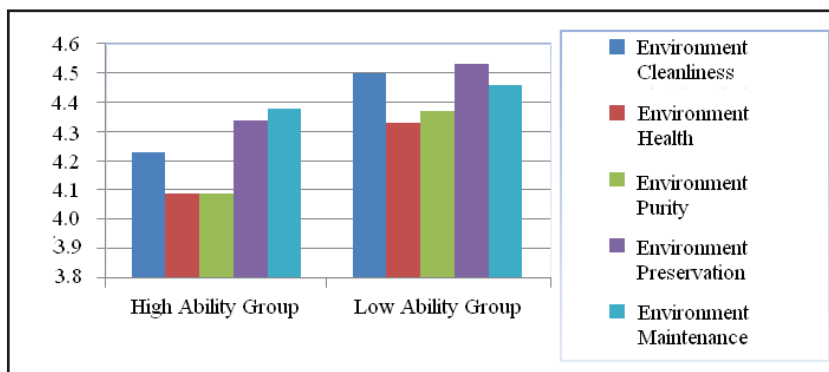


Figure 2. Bar chart of post test on profile attitude category based on the student's ability level

Table 1. Mean score description and post test on profile attitude based on the student's ability level

No	Attitude Sub-Indicator	High Ability Group		Low Ability Group	
		Mean Score	Category	Meann Score	Category
1	Environment Cleanliness	4.27	Good	4.495	Good
2	Environment Health	4.09	Good	4.335	Good
3	Environment Purity	4.09	Good	4.365	Good
4	Environment Preservation	4.32	Good	4.53	Good
5	Environment Maintenance	4.38	Good	4.46	Good
Overall Attitude Mean Score		4.23	Good	4.435	Good

Figure 1 shows in total, the attitude indicator on the constructivism group is higher than the conventional group after the treatment has completed. The environment purity attitude indicator is lower than the other indicators in the constructivism group. Whereas, in the conventional group, the highest attitude indicator is the environment cleanliness, and environment purit has lower indicator when compared to other indicators in the chart. Figure 2 show the high ability group has a lower attitude indicator when compared to the lower ability group upon completion of the treatment.

Based on Table 1, the group with higher ability has the highest min score attitude towards the environment maintenance ( $M=4.38$ , Category=Good). The lower ability group has the highest environment preservation min score attitude (4.53) when compared to other indicators. However, for both group, it is proven that the min score for the higher ability group (4.23) is relatively lower when compared to the lower ability group (4.43).

The result on *Post Hoc Bonferroni (Multiple Comparisons)* on the post test of the attitude towards environmental management that are obtained from the five attitude indicator showed that: (i) cleanliness attitude indicator is insignificant between the constructivism group and the conventional group at a higher ability. But the other four indicators, which are health, purity, preservation and environment maintenance are significant between the constructivism group and the conventional group at a higher ability. (ii) The difference of the five attitude indicators min score are significant between the constructivism group and the conventional group at a lower ability. (iii) Between the higher ability constructivism group and the lower ability constructivism group, the difference mean score of the four attitude indicators are significant towards the environmental management. The four attitude indicators are environment cleanliness, environment health, environment purity and environment preservation. It can be concluded that on the whole, the post test of the attitude between the constructivism group and the conventional group at a higher ability and at a lower ability are significant. The attitude difference between the higher ability constructivism group and the lower ability constructivism group are significant.

Table 2: Quantitative analysis finding based on hypotheses test:

Hipotesis	Statement	Hipotesis Action
H <sub>o1</sub>	There is no significant difference on the students' attitude towards the environmental management in the post test	Rejected
H <sub>o 1.1</sub>	There is no significant differences on the students' attitude towards the environmental management between the constructivism group and the conventional group at a higher ability.	Rejected
H <sub>o 1.2</sub>	There is no significant differences on the students' attitude towards the environmental management between the constructivism group and the conventional group at a lower ability.	Rejected.
H <sub>o 1.3</sub>	There is no significant differences on the students' attitude towards the environmental management between the higher ability of the constructivism group and the lower ability of the same group.	Rejected.

Data from the assessed questionnaire has strengthened the quantitative analysis findings, which showed the treatment group is significantly different from the controlled group at both students' ability towards the attitude (see Table 2).

#### 4. Discussion and Implication of the Study.

The study showed that learning by using PAS module is able to increase the attitude of the junior high school students towards the environmental management. The constructivism learning has made the students become active as activities in each phase has helped to instruct students to construct their current knowledge and their newly obtained information to relate to the experience, nature and the students' environment in real life (Theo & Ramli, 2003; Suud, 2001). Constructivism is able to motivate the students' ability and help to instruct learning (Suparno, 2009; Silberman, 2004) that enable the lower ability student to be at par with students with higher ability. This study has also identify that the constructivism approach is the foundation in constructing the formal operational concept, in which, the method suitability is able to stabilize the student's cognitive development level in environmental learning, that has been integrated in biology subject, especially among the junior high school students. This study gave an implication on teaching and learning practice in classes. The intervention of the environment learning module with the integration of constructivism teaching is implementing the following a short term environment module intervention is said to generate positive effect on the attitude of students, especially the lower ability group in environmental learning.

## 5. Conclusion

The environment learning module intervention in this study has showed that the participant's attitude in experiment group is better than the conventional group, be it at a higher ability level group or the lower ability level group. This study has also contributed to the teaching strategy which are five-phase constructivism approach integration and active learning strategy. But this study has a few of its drawbacks which almost failed the study. In order to enhance the strategy, the researchers would like to give out a few suggestions that should be considered by others, who are interested in doing the same study. The suggestions are: A pre-attitude test should be done. This is to determine the changes or the treatment effect on the student's attitude, although the time frame would be longer.

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