**THE APPLICATION OF *BIOCARD* TO IMPROVE
STUDENTS' MOTIVATION IN LEARNING ON THE
TOPIC OF TAXONOMY**

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Abstract

The aim of this research is to improve students' learning motivation in their learning process by using biocard media on the topic of taxonomy at Junior High School 10 Pontianak. This is a classroom action research for the seventh grade students in which 10 male students and 20 female students participated. This research was carried out in 2 cycles, the first and second cycle research instruments were questionnaires, each consisted of 20 statements. Based on the results of the first cycle research, students' learning motivation which included in the low category was 6.67%, while the high category was 73.33% and 20% was very high. In cycle 2 there is an increase in students' learning motivation that there are no students (0%) who are categorized as low, 10% are in the high category and 90% are categorized very high. It can be concluded that by using biocard media, it can increase students' learning motivation in the taxonomy material.

Keywords: Biocard, learning motivation, taxonomy.

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Biology as one of the scientific subjects is expected to be a useful tool for students to learn primarily about living things. The numerous concepts in learning Biology sometimes caused students to have low interest to comprehend the subject. This matter unfortunately can influence students' success in achieving learning goals.

The most important problem in learning science at Junior High School 10 Pontianak is a low learning motivation and most teachers still use teacher- center method because it is considered easier to deliver material. One of the obstacles faced by the teacher is students who are unprepared before attending school.

The results of the observation at Junior High School 10 Pontianak on teachers, in carrying out learning in school they always use the lecturing method, discussion and practice altogether in the classroom. The teacher conveys theories and facts so that students feel that learning science must memorize many names and theories. Most students do not pay attention to the material presented. The lecture and discussion method are tiring for students because there is no adequate visual illustration, the field practice method is constrained by the time and school environment that does not represent each encountered material. There are several reasons students experience difficulties in understanding and learning science including, concepts that are abstract and difficult to observe. "Basically children learn through concrete things. To understand an abstract concept, children require concrete objects as intermediaries or

visualizations "(Harun, et all, 2003). Consequently, learning media is expected to be a solution to answer the problem. According to Briggs in Sudjana (2011), learning media is physical means to convey contents or learning material.

One of the possible media to be implemented in learning science of Biology is biocard media. In this study, the researcher used cards sized 13.5 x 7 cm with pictures of species or other living creatures completed with details and explanation both in Bahasa and Chinese. There are some other benefits of biocard; (1) Students love to play (cards) while learning Biology and improving Chinese vocabularies simultaneously. (2) Biology does not scare student, instead, it becomes an enjoyable and attractive subject. (3) Students practice their teamwork and playing fair. (4) Learning Biology is also to study another subject, which is Chinese (Suparno, 2007).

If students are interested in the learning media, it is hoped to improve their motivation, especially on science. It is supported by Arsyad (2013) who says that flashcard is one of the media used in learning process to ease and clarify materials delivery or ideas to enhance new willingness and interest, grow learning motivation and stimulation, and to give psychological influences on students. Therefore, the use of biocard on this study is hoped to boost students' motivation on the topic of taxonomy to the seventh- grade students class H at Junior High School 10 Pontianak.

METHOD

This study is a Classroom Action Research, a study done by teachers in their own classroom with planning, implementing and reflecting teaching activity. The study was set in class H, seventh grade of Junior High School 10 Pontianak on the topic of taxonomy. The participants of this study is the students of class H, with 30 students, consisting of 10 males and 20 females. Of the 30 students of class H, students can find out whether their motivation is very low, low, high or very high for science lesson, especially in the material of taxonomy. From these results, an action was taken to increase students' motivation. The increase in science learning motivation was measured by comparing the results of first cycle questionnaire motivation with second cycle questionnaire. Each cycle has four stages, they are planning, implementing, observing, and reflecting (Arikunto, 2013).

Planning

At the planning stage, researchers re-observed the condition of learning science in seventh grade of Junior High School 10 Pontianak. The activity is to determine the preparation of observation sheets, what will be observed, what indicators will be observed, who the students will be observed, and how to observe them, as well as explore the Lesson Plan (RPP) material for Living Diversity to be explained by the teacher.

In the next preparation stage, the teacher and the researchers worked together to create *biocard* media for the material of Living Di-

versity, so that the material presented with the target of increasing motivation could be adjusted. The making of *biocard* media also paid attention to the indicators of increasing motivation which would be measured later.

Acting

At the stage of action or implementation, researchers as observers together with science teachers as model teachers carried out first cycle in class VII H during science lesson using *biocard* media. The teacher explained the material Diversity of Living things using *biocard*. Then 30 students are grouped into 5 groups and asked to discuss and work on student worksheets with the help of *biocard* media. The goal is that each student can actively communicate with his group friends. The role of the teacher as a model teacher directs and helps students if there are difficulties in working on the worksheets with the help of *biocard* media, while researcher observed the classroom situation and documented all events in each cycle. After completing the learning process in each cycle, students were given a motivational questionnaire. Motivation questionnaire is a non-test instrument in the form of a questionnaire sheet with 20 statements on the questionnaire sheet. The answers of each statement given have a range from positive to negative answers, consisting of Strongly Agree (SS), Agree (S), Disagree (TS) and Strongly Disagree (STS) (Riduwan, 2012).

Observation

Observation, carried out together with the implementation of

Table 1. Percentage categories for student motivation.

Percentage Number	Category
$\leq 75\% - 100\%$	Very High
$\leq 50\% - <75\%$	High
$\leq 25\% - <50\%$	Low
$0\% - <25\%$	Very Low

(Riduwan, 2012)

actions in the classroom. Observation by giving an observation sheet to the observer to observe the process of implementing the learning carried out according to the design of the lesson plan (RPP) that has been made.

Reflection

Reflection is an action to examine data about changes that occur in students, class atmosphere and teachers. In this stage, the researcher and observer discussed the learning results obtained when the observer observed the learning process that was taking place.

Technique of Data Analysis

Student motivation questionnaire results were analyzed by the following steps: (1) Making recapitulation of student motivation questionnaire results. (2) Calculating the percentage of each item with the formula:

$$\frac{\text{Total score of students' answers}}{\text{ideal score}} \times 100\%$$

Ideal score = maximum score x number of respondents (Riduwan, 2012).

The percentage number is used to see students' positive responses in learning. Percentage category refers to Riduwan (2012) which can be seen in Table 1. The indicators of this study

are 1) the application of learning through *biocard* media is said to be successful if there is a match between the material presentation of 70% in the first cycle and 80% in the second cycle at each meeting from the observation sheet to the implementation process of learning; 2) Student learning motivation was said to increase if the number of motivated students learn at each cycle reaches 75%.

FINDING AND DISCUSSION

One example of the biocard used can be seen in Figure 1. In addition, the teacher observation sheet is also used to determine the implementation of the learning process that has been carried out using biocard media (Table 2). The implementation of learning activities has been carried out according to the learning implementation plan both in the first cycle and the second cycle of 100% each.

At the stage of implementing the first cycle of action, the teacher carries out learning with discovery learning models through group discussions based on the Lesson Plan (RPP) that has been prepared. During the action, the observation of the learning process was carried out by an observer, one of the teachers at the research site. At the beginning of the lesson, the teacher started the class by giving greetings and prayers, then

Figure 1. *Biocard* Example

submitting apperception and motivation by giving several questions including: Have you ever been to a traditional market? Are vegetables and fruits sold in the same place? The grouping? Then the teacher displayed *biocard* media by showing several images related to grouping living things. At this stage, most students seemed enthusiastic in paying attention to the teacher, but there were still some students who seemed silent and out of focus.

The next stage then the teacher created 5 groups of students consisting of 5-6 students in each. At the stage of creating the groups, most students were still noisy and busy with their respective affairs so they were not well controlled. Then the teacher conveyed the main points of taxonomy or classification of the living creatures; the definition of classification, general and specific purpose of classification, and criteria for grouping plants and animals.

At this stage, not all students paid attention to the teacher's explanation, there were still some students who were not focused. Based on the results of the analysis with the observer, this was due to the teacher being too focused on explaining the material so that he did not focus to discipline the students. After giving an explanation, then the teacher gave a question related to the material that was not understood, at this stage, most students were just silent and reluctant to ask so the question and answer process only happened from one direction. When the question was given, most students did not know the answer, and only a few students dared to answer. This was due to students who were familiar with the lecture method, so that the psychology of students was not trained to answer questions and be active in learning.

After explaining the material, then the teacher distributed worksheets and *biocards* to each group. At

Table 2. Observation result of the implementation of the learning process

Observed Aspects	Implementa- tion of 1 st Cycle		Implementation of 2 nd Cycle	
	YES	NO	YES	NO
Exploring students' initial knowledge (<i>Stimulation</i>)	√		√	
Delivering the learning objectives (<i>Stimulation</i>)	√		√	
Guiding students in identifying prob- lems (<i>Problem statement</i>)	√		√	
Guiding students in processing and col- lecting data with the help of <i>biocard</i> (<i>Data collection</i>)	√		√	
Guiding students in processing and ana- lyzing data with the help of <i>biocard</i> (<i>Data processing</i>)	√		√	
Provide opportunities for students to find concepts through examples in eve- ryday life with the help of <i>biocard</i> (<i>Verivication</i>)	√		√	
Directing students to present the results of the discussion and conclude the learning material (<i>Generalization</i>)	√		√	
Remind students of the next material	√		√	
Provide evaluation				

this stage most students were still noisy and not well managed, this was because this method felt new for students so many of them had not yet understood. After the worksheets and *biocards* were distributed then the teacher guided the students to do the steps of the *biocard* game and explained how to fill in the sheets. Furthermore, the teacher directed students to have group discussions based on *biocards* received by each group. In the process of implementing learning, *biocard* media is used to increase student motivation because media is an inseparable part of teaching and learning process in order to achieve educational goals in general and school learning objectives in par-

ticular. It is also used to create fun learning atmosphere, attractive environment to catch students' attention and improve learning outcomes (Arsyad, 2013).

Based on the observation, it was found that not all group members were actively involved when using *biocards* and only few were active speakers in discussion. Only 3-4 people played an active role, while some of the group members were the passive audience. The two students who were least active in learning in the first cycle included AG and MF. Both of these male students were students who liked to chat and joke in class so that they were lack of moti-

vation to continue the lessons. Overall, most students still needed guidance from the teacher. At this stage, all groups needed guidance from the teacher because most of them did not understand. The guidance was not optimized because of the duration.

After conducting a discussion, then the teacher asked several group representatives to deliver the results of the discussion. At this stage, it was seen that students delivered presentations smoothly even though they still needed guidance to be more focused. After learning, the teacher concluded the material that had been studied. Before ending the lesson, the teacher instructed students to fill in the motivation questionnaire.

At the end of the meeting, an evaluation was done of the lessons learned and the teacher provided information about the upcoming material. After reflecting with the observers, there were some weaknesses that must be modified at later stage, they were: (1) Less motivation from the teacher at the beginning of the class; (2) The teacher was not good at controlling the learning process, this could be seen from students who still made noise and were busy with themselves during the learning process, while the teacher was too focused on giving instruction; (3) Duration was not well managed, which caused inefficient learning at each stage, especially when using *biocards*; (4) Teacher did not encourage passive students to contribute more in discussion.

At the stage of implementing the second cycle, the teacher carried out learning with group discussions

based on the Lesson Plan (RPP) that was prepared. During the activity, the observation of the learning process was carried out by an observer, one of the teachers at the research site.

At the beginning of learning, the teacher began the lesson by greeting the students and leading the prayer, then conveying apperception and motivation by giving several questions including: "Are plants and animals included in one kingdom?" "Besides plants and animals, is there another kingdom?" At this stage, most students seemed enthusiastic in paying attention and answering teacher's questions, even though they gave meaningless writings, or funny comments on the *biocard* image.

The next stage then the teacher divided students in five groups, each consisting of 5-6 students. At this stage, all students managed to create the groups well. This was due to the teacher being assertive towards students so that they made groups in discipline. Then the teacher conveyed the main points on the topic, like the classification of five kingdoms of *Whittaker* (*monera*, *protists*, *fungi*, *plantae* and *animalia*). At this stage, all students paid attention to the teacher's explanation well, and tried to be immensely focused. After giving an explanation, the teacher gave a question related to the unclear material. At this stage, most students were more active and not reluctant to answer the question. Students were able to answer the questions confidently, and only a few students were silent. This was because the teacher always encouraged students and rewarded them through delivering values and

Figure 1. Graph of student motivation improvement in learning.

scores to students who actively participated.

After explaining the material, then the teacher distributed worksheets and *biocards* to each group. At this stage, most of the students were still noisy and not well-managed, this was because this method was still new for students and many of them did not understand yet. After the worksheets and *biocards* were distributed, then the teacher guided the students to carry out the steps of the *biocard* game and explained them how to fill the worksheets with the help of *biocard* media. Next the teacher directed students to have group discussions based on the *biocards* received by each group.

Based on the results of observations, most of the group members were actively involved in discussion, only a few students were passive and not taking the lesson seriously. Overall, students felt happy with the learning carried out through the use

of *biocard*. This was because the teacher always gave motivation to students and became more assertive towards students who did not take the lesson seriously.

After conducting a discussion, then the teacher asked several group representatives to deliver the results of the discussion. At this stage, it was seen that students delivered presentations smoothly and directed. After learning, the teacher gave conclusions from the topic that has been discussed and provided a motivation questionnaire to be filled out by students before closing the lesson.

Increased student learning motivation occurs in each cycle (Figure 1). Basically students are very enthusiastic every time there are new things. The use of *biocard* media has provoked students' attention in learning, this is in accordance with the statement of Trikinasih et al (2016) in his research that children learn through concrete things. Real visuali-

Table 3. Average results of motivation indicator percentage.

Indicator	Average % (1st Cycle)	Average % (2nd Cycle)
Willingness and desire to success	62,77	82,5
Have encouragement and need for learning, so that independent learning appears.	64,79	82,5
Have hopes and aspirations for the future, observed from attention and interest.	62,5	85,83
An appreciation in learning to pursue an achievement.	65,83	85,42
Interesting activity in learning, observed from students' self perseverance without getting ordered.	66,94	85,28
Supportive learning environment to give students better experience in learning.	61,11	88,61

zation (Concrete things) is an intermediary for better science- learning.

Giving guidance to students when students faced difficulties in working on their worksheets would help them to understand the material better and to achieve the success of the learning process. In this learning process, the teacher directed each group to discuss with their group friends if they felt difficult. According to Brown in Sudjana (2011), he revealed that learning media can affect the effectiveness of learning. Besides that, at the end of lesson the teacher provided reinforcement to the group that happened to get the best results of their discussion based on Student Worksheets (LKS) so as to generate interest in learning.

From Figure 1, the results of the analysis of student learning motivation questionnaire sheets in first cycle, it was found that 2 of the 30 students are included in the very high category with a percentage of 100%

indicators achieved and have experienced improvement (Table 2).±From Figure 1, the results of the analysis of student learning motivation questionnaire sheets in first cycle, it was found that 2 of 30 students (6.67%) include in the low category, 22 of 30 students (73.33%) include in the high category and only 6 of 30 students (20 %) including very high categories. Meanwhile, in second cycle there was an increase where there were no students (0%) who were low motivated, and 3 of 30 students (10%) were highly motivated while the rest were very high in motivation, 27 of 30 students (90%). This shows that with the use of biocard media, student learning motivation increases in learning.

From the above data it can be proven that the target in this study has been reached where Increased motivation on each indicator can occur if someone has the desire and willingness to carry out an activity or

action in order to achieve certain goals (Uno, 2010). This is also in line with the opinion of Schram in Suparno (2007) arguing that learning media is a messenger technology that can be used for learning purposes so that all aspects of learning can be achieved easily.

CONCLUSIONS AND SUGGESTIONS

Biocard learning media can improve students' learning motivation in Natural Sciences (IPA), Taxonomy (Life Classification) Material, in class H seventh grade students of Junior High School in Pontianak from first cycle to the second cycle. The increase is marked by achieving 100% indicators improvement from first cycle to 30 students belong to the very high category. The second cycle where Increased learning motivation is observed with increasing willingness and desire to succeed, independence in learning, attention and interest, achievement in learning, perseverance in learning with less instruction and a conducive learning environment. Based on these conclusions, it is recommended to try on other material that has higher level of difficulty.

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