

Implementation of Project-Based Learning (PjBL) through One Man One Tree to Improve Students' Attitude and Behavior to Support *Sekolah Adiwiyata*

Risnani¹, Sumarmi² & I Komang Astina²

¹ SMAN 1 Torjun Sampang, Indonesia

² Universitas Negeri Malang, Indonesia

Correspondence: Sumarmi, Fakultas Ilmu Sosial, Universitas Negeri Malang, Jl. Semarang No. 5 Malang, Indonesia. E-mail: sumarmi.fis@um.ac.id

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Abstract

The attitude and behavior of the students of class XI-6 in relation to environmental awareness is very low. It proves that there is no student involvement in environmental conservation. The purpose of this study is to increase students' attitude and behavior related to environmental conservation using "One Man One Tree" Project Based Learning (PjBL). The study is a Classroom Action Research (CAR) conducted within two cycles. The subjects in this study are XI-6 students of *SMAN 1 Torjun*. It is conducted during the 205/2016 academic year. The data are scores of the attitude test and student's behavioral manifestations. The findings show that there is an increase in the students' attitude and behavior related to environmental awareness from the first cycle to the second cycle. The average yield postes attitude of the students on the first cycle is 86, while that on the second cycle is 93.2. The average yield postes behavior on the first cycle is 69 while the average score increases to 90.4 on the second cycle. It is suggested that teachers become more creative in applying the learning model that encourage students to protect the environment.

Keywords: attitude, behavior, One Man One Tree

1. Introduction

"*Sekolah Adiwiyata Mandiri*" is responsible for increasing student's awareness towards the environment. However, there have been some issues related to the tittle "*adiwiyata*" recently. Students do not realize they have done things that damage the environment. Students' lack of awareness towards the environment is shown by abundant litter everywhere or poorly maintained school yard.

When students do not put their garbage in the waste bin, the garbage is scattered everywhere including the school yard. During the recess, students are supposed to go out of their classes and play in beautiful, clean and neat school yard. They will not be able to enjoy clean environment when there is garbage everywhere including the school yard. According to Syafrudie (2009) littering causes damage to the environment and also some diseases.

Students' lack of environmental awareness happens because they are not actively involved in school programs of which goal is to promote environmental conservation. When students are not involved in any environmental conservation programs, they are not going to be responsible for their environment for example plants at the ir school yards. Zahara (2002:448) states environmental damage cases may happen due to lack of knowledge towards the environment.

The problem occurs since the school does not give any reward for the cleanest, well-maintained class. When the school gives such rewards, students are going to be motivated to achieve it. Students will feel sense of belongings of plants they have planted and efforts they have taken to clean and beautify their classes.

Students' lack of environmental awareness is an indicator that the current teaching and learning have yet been able to address issues related to environmental conservation. Environmental conservation, a topic in geography class, consists of theories instead of practical steps to save the environment. Teachers have yet been able to develop students' awareness towards the environment and as the consequence, the students are not able to make

correlation between the materials they learn at school and their daily lives.

It is one of the misconceptions in geography class. Geography class is supposed to be able to raise students' awareness towards the environment especially their surrounding. Maryani (2006) argued that the goal of the geography class is to develop environmental awareness and concern of the students so that they can maintain and improve quality of their environment. Environmental conservation concept for students is to develop one's knowledge, attitude and behavior so that he or she is able to improve quality of his or her life. Young generation is an asset that will carry out the national development in the future and they should be the main priority to get some sort of education about environmental conservation as early as possible so that they are aware how much contribution the environment has for their lives (Mulyana, 2009).

Susilo Bambang Yudhoyono, Indonesian former president, launched One Man One Tree in Indonesia in 2008. The program should be established at school. When one student plants one tree at school, it is going to be shady and pleasant. Students are going to be responsible for the trees because they plant the trees by themselves. It will also improve student's attitude and behavior towards their environment. Implementation of One Man One Tree Program at school increases students' awareness towards the environment. Knowledge about environmental conservation and skills about the methods to carry out sustainable utilization of the natural resources can be developed through formal education (Saragih, 2000, p. 188).

Based on the XI-6 students' lacking knowledge about environmental conservation and indicated through their attitude and behavior about cleanliness of their school, the researcher think One Man One Tree Project-Based Learning is suitable to be implemented in the class. PjBL is learning model that uses problem as the preliminary step is to collect and integrate new knowledge based on real-life experience and is designed so that students can investigate and understand various complex issues (Sumarni, 2012).

Implementation of PjBL-based learning in geography class is an effort to develop students' awareness towards the environment. Using PjBL model for material about environmental conservation issue, students construct knowledge about environmental conservation so that students have sense of belongings towards the environment, love their surrounding and eventually develop positive attitude and behavior towards the environment. Gerungan (2000) states learning process develops attitude.

2. Methodology

The study is categorized as collaborative Classroom Action Research (CAR) since it involves both teacher and researcher. CAR consists of several cycles until expected result is achieved. Each cycle consists of 2 meetings. Picture 1 describes steps and procedures of the CAR systematically

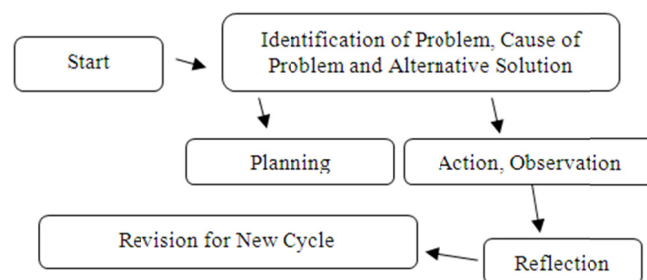


Figure 1. Steps and procedure of CAR (Source: Fatchan et al., 2009)

The researcher acts as planner, executor (as model/ teacher), observer and the one giving report about the findings. Three other geography teachers become observers and help the teacher. The observer's task is to watch carefully and accurately important, meaningful process that solves the problem of the study.

The subjects of the study are students of grade XI-6 *SMAN 1 Torjun*, Sampang, East Java, Indonesia. There are 22 students (18 boys and 4 girls) in the class. The study is conducted during the 2015/2016 academic year. The school was selected as the setting of the study because it is categorized as *Sekolah Adiwiyata Mandiri*.

The data are obtained during the odd semester of the 2015/2016 academic year. The data are a) scores of attitude test, and b) scores of behavioral manifestation test. The instruments are a) attitude test given at the end of each cycle, b) questionnaire in the form of manifestation of behavior given at the end of each cycle, and c)

observation sheets for both students' and teacher's activities.

Data analysis for the students' and teacher's activities during the learning process obtained from the observation sheets is conducted every meeting when the class is going on. The data are in the form of qualitative and quantitative data based on the observers' observations during the class. Likert scale from 1-100 is used to evaluate students' attitude and manifestation of the students' behavior towards the environment.

3. Findings

3.1 Cycle I

The study begins with the researcher's observation in *SMAN I Torjun* in September, 2015. Purpose of the preliminary observation is to find out the problems taking place in geography class at the *SMAN I Torjun*. Based on the observation, it is found out that a) the geography teachers have not used the source of learning available at school, b) the students assume that the cleaning service is responsible for keeping the school clean and as the consequence there are a lot of leaves and plastics scattered around the school, c) many poorly-maintained plants in front of the classrooms indicate students' lack of awareness towards the school environment, and d) the teachers have yet used school facilities such as library, school forest, green house and garbage house maximally during the learning process. Based on the discussion between the researcher and other geography teachers, it is decided that the subjects of the study are XI-6 class students which consist of 22 students.

Cycle I consists of four stages namely planning, action/ implementation, observation and reflection. Planning consists of preparing a) syllabus, b) lesson plan for the first meeting where students made posters of which theme is "*Budayakan Menanam*," a movement that encourages people to plant more trees, that for the second meeting where students campaigned, that for the third meeting where students develop One Man One Tree program, that for the fourth meeting where students make plan to write report. Time allotment for the first cycle is four meetings (4 x 45 minutes), c) scoring sheet that consists of scoring sheet for poster, campaign, student's worksheet, practical work and peer evaluation, d) instrument for attitude test and behavior manifestation test and e) observation sheets.

Cycle I happened on Tuesdays February 18 and 25, 2016. The teacher began apperception by asking students to watch video (Go Green campaign). The students watched and then analyzed the content of the video.

3.1.1 Project Preparation

The teacher gave some problems for the students to discuss. They were 1) why flood happens in Sampang every year, and 2) what actions the society should take to preserve their environment and prevent the flood in Sampang. After the students had finished their discussions, they came to the front of the class for presenting the result of their discussions. The students were not very comfortable when they were asked to present their discussions because they did not do such activity very often. The teachers should keep motivating students to improve their self-confidence especially during presentation.

3.1.2 Planning the Project

The students made group of four or five students; these groups consisted of the students with different abilities. Even though the students had been assigned their groups, they needed some time to sit with their groups.

The students were asked to discuss and make timetable to create poster, select title for the poster and decide the group leaders. The discussion ran well although some students did not participate actively. Students may finish their project at or outside the school. They were asked to make documentation about their activities in the form of pictures or videos.

3.1.3 Project Implementation

The project the students did was to organize teaching and learning process (giving assignment outside the class). The students designed their posters during the recess or when the school had over. It happened because the students lived far from each other.

The teacher kept supervising and monitoring the students while they were working on their posters of which theme was "*Budayakan Menanam*," the movement to motivate people to grow trees. All of the students participated actively in making the posters. Once they have finished their posters, the stusents prepared for their presentations.

Each group was active and creative as they had different ideas to design their posters as interesting as possible. Students enjoyed doing the project indicated by active participation of each student while doing the project. Each group recorded their work in the form of photograph or video.

3.1.4 Project Presentation

The students presented their work in group in front of the class. The theme of their projects is “Budayakan Menanam” and the students should make posters using the theme. The students still did not feel very confident when they presented their posters in front of the class. Other groups gave some input and questions related to the posters. The observers also gave some explanations to help the groups that presented their posters so that the discussions ran smoothly. Some students did not fully engage during the presentation.

3.1.5 Evaluation and Reflection

The students and the researcher all together did some evaluation at the end of the presentation. Each group was given opportunity to share their experiences so that other students could listen to and analyze them. Some obstacles the students encountered while they were doing the projects were 1) time for doing the project, 2) long distance between one student’s house and the other students’ house, 3) different ideas about the titles of the posters, 4) different designs and words to use for the posters, and different ideas about what colors to use for the posters.

3.1.6 Preparation for the Project

The teacher presented video about environmental damage. The students were given opportunity to share their opinions related to the video and opinions about methods to take care of the environment. The activity was related to the following project that is One Man One Tree project.

3.1.7 Planning for the Project

The students discussed and planned their One Man One Tree project in group. They had to plan who the leader of the group was, what the timetable was like, which trees to grow, where to grow the trees and what equipments were needed to plan the tree. The students found out in which part of the school they could plant their trees in. The researcher always gave supervision for the students so that they could plan and carry out their projects well. Most of the students actively participated in the project while a few did not.

The following step was to describe planning for the project based on the result of the discussion. All of the groups agreed to plant the trees during the school time at the school forest or some empty lands at school. Other groups listened to their friends’ plans and gave their opinions to improve the plans.

At the end of the lesson, the students were given post-test related to their attitude and manifestation of behavior. The post-test ran smoothly. When the school was over, the students campaigned their posters outside the class. Each group did their campaigns at the school’s yard. Some students felt shy and were hesitated during the campaign while some others were strongly motivated. Motivation and support were needed to raise students’ level of confidence during the campaign so that they could encourage other students to be aware of the environment.

Based on the observation, it was found out that the average percentage of One Man One Tree Project-Based Learning (PjBL) model was 84%. Based on the criteria of success, the model was considered successful when the percentage of students’ and teacher’s activities was $\geq 85\%$. Table 1 describes the average percentage of attitude and manifestation of behavior post-test.

Table 1. Average result of attitude and manifestation of behavior post-test in cycle I

Attitude Post-Test Average		Manifestation of Behavior Post-test Average	
Post-test	Category	Post-test	Category
86	High	69	Mild

Based on the researcher’s observation in cycle I, it was found out that a) most of the students participated actively in the lesson while a few of them were not fully engaged; b) some students were dominant during the presentation while some other students were distracted; c) the students did not make use of the available sources of learning to solve the problems; d) the planning for the project was good and students performance was maximum; e) the posters were good and meet the criteria (the theme) but some groups did not submit their posters on-time; and f) the teaching learning process carried out by the researcher and the students ran well but some revisions were needed for the following cycle.

3.2 Cycle II

Cycle II was carried out on Thursday, March 3 and 10, 2016.

3.2.1 Project Implementation

The students went to the green house to take the seeds of the plants they wanted to grow for One Man One Tree project. The students could choose the number and type of plants they wanted to grow. The green house located in *SMAN I Torjun* is the place for plant nursery both perennials and ornamental plants.

The students were impatient to start planting. The students were enthusiastic to plant their trees. Each group plants their trees in different location as planned previously. The activity attracted other students and the teachers so they participated in the activity. The principal of *SMAN I Torjun* also planted the tree. Support and motivation from both the teachers and other students improve the students' enthusiasm and confidence in carrying out the program. One thing the researcher paid attention to was students' determination and responsibility in planting the trees. The students were very creative thinking how to grow their plants well. The students also put some pieces of wood to support their new plants in order to prevent other students from accidentally destroying their plants.

The students had already changed their behavior that is their awareness to save their environment. Besides planting, some students also took the garbage scattered on the school forest voluntarily. The groups that had finished planting their trees helped other groups that have yet finished their job.

3.2.2 Project Presentation

The group presented and reported the result of their growing project. The students made some progress during their presentation. The students started to feel confident and enthusiastic while presenting their projects. Other groups gave input and questions when one group presented the result. The students focused on the presentation and did not feel distracted.

3.2.3 Evaluation and Reflection

The students described their experience that 1) planting the trees at school was their first experience; 2) planting the trees strengthened their friendship; 3) planting the trees was one form of exercise; 4) the students had sense of belongings towards their plants; and 5) in general, the students planted more than one tree.

The students got much appreciation because they had carried out the project very well and showed that they cared of their environment. The projects improved the students' responsibility, independence, motivation, dedication and also friendship. The students made documentation of their activities while they were doing the project as the evidence for their work.

3.2.4 Project Preparation

The researcher explained some impacts of the inappropriate methods of environmental conservations. The students were given opportunity to state their opinions towards the material. The activity was related to the following project that is writing report about One Man One Tree project. The students were very enthusiastic and confident in stating their opinions.

3.2.5 Planning of the Project

With their group, the students discussed which students are going to be the leaders during the report writing process, as well as the timetable and title of the report. The students were given some supervision so that they could plan their report well and were able to write good report. The students started to actively participate in giving suggestions while working with their groups.

The following step was presenting the project plan based on the result of the group discussion. Other groups listened and gave some input so that all groups could carry out their plans well. All groups agreed that the project was carried out outside the school time.

3.2.6 Project Implementation

The project was carried out outside the school hour. Despite writing the report outside the school hour, the students could always ask for some supervision and suggestions from the teachers. The following step was to prepare the result and prepare project presentation for the following meeting.

3.2.7 Project Presentation

The students presented their reports on One Man One Tree project enthusiastically. The students clearly understood the content of their presentations. The audience gave some suggestions and questions related to the presentation. The presenters seemed to be confident while they answered to their friends' questions. Other students were fully engaged and listened to the presentations intently.

3.2.8 Evaluation and Reflection

Evaluation on the report is based on both the product and the process. The evaluation started from report writing preparation, report writing planning, report writing, presentation and evaluation based on the Project-Based Learning (PjBL) syntax model. The One Man One Tree reports the students wrote were good. The products were varied in terms of title, content and issues being discussed.

The students shared their experience while working on the project for example 1) the students began to understand importance of environmental conservation; 2) there was the same perception to decide the title of the report; and 3) all students actively participated in giving ideas. Based on the evaluation and the students' opinion, it can be concluded that One Man One Tree Project-Based Learning (PjBL) can improve students' awareness towards the environment and their ability to work in groups to finish a project. As the result, the classroom was getting cleaner and the plants were well-maintained. There were plants in different parts of the school. At the end of the lesson, the students were given post-tests in the form of attitude test and manifestation of behavior test.

Based on the observation of One Man One Tree Project-Based Learning (PjBL) model cycle II, the average percentage is 95%. It means the overall learning process using One Man One Tree Project-Based Learning (PjBL) model has meet the lesson plans and has been well-executed. Table 2 describes the average percentage of attitude and manifestation of behavior post-test.

Table 2. Average result of attitude and manifestation of behavior post-test in cycle ii

Attitude Post-Test Average		Manifestation of Behavior Post-test Average	
Post-test	Category	Post-test	Category
93.2	High	90.4	High

Based on the reflection, cycle II was the last cycle of the study. Based on the observations during cycle II, some important things to note are a) One Man One Tree was very useful for both the students and the school because the program improves the number of trees/ plants at school; b) the principal is interested in the program and encourages other schools in Sampang that become *calon sekolah adiwiyata* to carry out the same program; c) there is a change in students' behavior after the One Man One Tree Project-Based Learning (PjBL) model is implemented; d) the students are willing to take of the plants grown around the school area and start to show how discipline they are in doing it; e) the students feel sense of belongings towards their plants and they always watch over and take care of their plants. As conclusion, One Man One Tree Project-Based Learning (PjBL) is the most suitable learning model and no other cycle should be conducted because there has been some improvement from cycle I to cycle II.

4. Discussions

4.1 Improvement of Student's Attitude with One Man One Tree Project-Based Learning (PjBL) Model

Based on the findings of the study, it is found out that One Man One Tree Project-Based Learning (PjBL) model improves students' attitude. Attitude is measured using post-test that uses the Likert scale (strongly agree, agree, neutral, disagree, and strongly disagree). The average score of the post-test in cycle I is 86 while the average score in cycle II is 93.2 or categorized as high. Based on the scores, it is concluded that there is improvement in students' attitude in cycle II.

The students' performance in One Man One Tree project is very good and the score is 96.8. The students participated actively during the project. They were enthusiastic and impatient to grow the tree at school. Each student planted more than one tree. The US Department of Education in SSME (2006) states that PjBL has positive impacts towards students, especially their motivation, understanding and participation.

Planting trees at the school became the students' first experience in planting trees. Based on the researcher's and observers' observation, the students enjoyed the activity so much. One type of interest can be expressed from a statement that shows how much students enjoy doing one thing more than another. Some students prefer practical lesson like planting the trees to sitting in the classroom and learning theories. Using school as source of learning allows us to create school with environmental awareness (Afandi, 2013).

One Man One Tree project the researcher has designed improves students' awareness towards environmental conservation. Besides planting, some students also pick up the litters around the school forest. It is a positive sign that the students have understood what environmental conservation is. The One Man One Tree project also attracts the teacher's and other students' attention to grow trees and as the result, the students were motivated to

carry out the project. Project enables students to involve their mental, physical, and psychological entities as well as their sense and social skills because they do various things at the same time (Purworini, 2009).

Based on increasing percentage from cycle I to cycle II and the results of the observations, it can be concluded that One Man One Tree Project-Based Learning (PjBL) model improves students' awareness towards the environment. One Man One Tree Project-Based Learning (PjBL) model enables students to work together and think critically as manifestation of their awareness towards the environment as well as influence the stakeholders getting involved. It is basically easier to develop one's characters (critical thinking, attitude and behavior) when the person is involved in the activity rather than through theoretical learning (Handoyo, 2011).

Learning can develop attitude. One Man One Tree Project-Based Learning (PjBL) model is an effort to raise students' awareness towards their environment, for example growing trees. Using the kind of learning, the students are trained to construct their knowledge independently. As the result, the students have sense of belongings and care about their environment so that they have positive attitude and behavior towards the environment. The findings are in line with Davidoff (1991) who states that attitude can change and develop due to the process of learning, socialization, information, cultural influence and experiences.

Project Based Learning (PjBL) has huge potential to improve students' attitude. It involves students' cognitive processing as well as gives direct experience that will influence students' attitude. Syafrudie (2009) states that knowledge and direct experience from the learning process will develop students' positive attitudes towards the environment.

4.2 Improvement of Student's Behavior with One Man One Tree Project-Based Learning (PjBL) Model

The implementation of One Man One Tree Project-Based Learning (PjBL) model can improve students' behavior. The average post-test score in cycle I is 69. The average score in cycle II is 90.4. The manifestation of the students' behavior towards the environment in cycle I is 64, while it increases to 93.8 in cycle II. Based on the scores, it is concluded that the students' behavior improves in cycle II.

The findings show there is significant difference in the students' awareness towards the environment prior to and after the implementation of One Man One Tree Project-Based Learning (PjBL) model. Environmental awareness of the students of XI-6 grade is improving after the implementation of the model. It is indicated by change in the students' behavior at school for example they are getting more discipline in cleaning their classroom and water the plants at school. The students start to have sense of belongings towards the plants they grow. The type of learning is meaningful and unforgettable for the students because they learn through experience by carrying out particular project (Cadge et al., 2002).

One Man One Tree Project-Based Learning (PjBL) model that has been implemented can give interesting, meaningful learning experience as well as explore students' ability and experience. Positive learning experiences students have will result in positive behavior. Norita et al. (2007) state that attitude and behavior are the reflection of one's understanding gained through learning process. Furthermore, Bonczek et al. (2007) explain that it is difficult to get real-life experience inside the classroom so students should be given opportunity to go out of their classroom and explore.

Based on the increasing percentage of post-test scores from cycle I to cycle II and the observations, it can be concluded that One Man One Tree Project-Based Learning (PjBL) model can increase students' awareness towards the environment using One Man One Tree Project-Based Learning (PjBL) scenario.

5. Conclusion and Suggestions

Based on the findings and conclusion, it can be concluded that:

- 1) The implementation of One Man One Tree Project-Based Learning (PjBL) model can increase student's knowledge about environmental conservation. Students are aware of the importance of protecting the environment in the present and the future.
- 2) The implementation of One Man One Tree Project-Based Learning (PjBL) model can increase student's attitude towards the environment. The students participate actively in taking care of the school environment.
- 3) The implementation of One Man One Tree Project-Based Learning (PjBL) model can increase student's behavior towards the environment. The students start to care about their environment that is indicated by their willingness to keep the school clean, take care of the plants around the school and throw away garbage in the waste bins.

Based on the findings, discussions and conclusion, it is suggested that:

- 1) Teachers become more creative in selecting teaching learning methods that raise students' awareness to take care of the environment.
- 2) Further studies about implementation of One Man One Tree Project-Based Learning (PjBL) model should be carried out. Other researchers should develop scenario (lesson plans and others) to be implemented in other classes other than geography class.

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