

## IMPROVING STUDENTS' ENVIRONMENTAL AWARENESS THROUGH PROJECT-BASED LEARNING (PBL): A CASE AT A SECONDARY HIGH SCHOOL IN KARAWANG

**Sidik Indra Nugraha\***

*Universitas Singaperbangsa Karawang  
sidik.indranugraha@staff.unsika.ac.id*

**Iwan Ridwan**

*Universitas Singaperbangsa Karawang  
iwantutorsaja@gmail.com*

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### Abstract

The environment in which we are living is an important and inseparable part of human life. Any environmental degradation therefore will have both direct and indirect impact on human and other living creatures. This research is aimed at exploring the implementation of PBL and the students' responses towards the implementation of PBL especially in relation to the ways the students learn English as well as raising students' environmental awareness. Employing qualitative case study, this research was conducted at a secondary high school in Karawang. Twenty students of grade eleven participated in this research. The data were collected through classroom observation and interview. The result indicated that the PBL was implemented through several stages, i.e. preparation, designing the project, executing the project, project presentation, and evaluation. The analysis also revealed the students' responses towards the implementation of PBL. It can be concluded that the students responded quite positively towards the implementation of PBL as an effort to improve the students' writing ability as well as their awareness towards environmental issues. Besides its benefits, there are several concerns found related to implementing PBL including learning management, group work distribution, and facilities.

**Keywords:** *Project-based learning, environment analysis, learning English.*

### INTRODUCTION

The environment is an important and inseparable part of human life. Any environmental degradation therefore will have a direct impact on human and other living creatures. Lately the environment has become an issue of concern by scientists and researchers. This is none but due to environmental conditions that continue to

decline which has begun since hundreds of years ago until now. Industrial progress has left a devastating impact on the environment such as pollution, deforestation, global warming, etc.

As part of global citizens, we should actively participate in preventing, reducing, and even repairing environmental damage. One effort to play an active role in raising

awareness of the environment is through education especially English language teaching and learning at schools. English language is included as a part of curricular content mandated by the Ministry of Education and Culture, starting from secondary junior to senior high school in Indonesia. In addition to teaching English, as mandated by the law, it can also be an effective means of introducing environmental issues integrated into the learning process. In the same token, Brown (1991, in Hauschild, Poltavtchenko, & Stoller, 2012), posited that one of the tasks of the teacher is to help students know the issues that directly affect their lives.

Specifically, the method that can be used to support the learning objectives aforementioned is Project-based Language Learning (PBL). According to Moss & Van Duzer (1998, in Foss, Carney, & Rooks), PBL can be briefly defined as a learning approach that accommodates learning by presenting students some problems to be solved or even a product to be developed. Some of the benefits of implementing PBL is that PBL helps students increase self-confidence and build positive attitudes towards learning (Stoller, 2006, in Tsiplakides, 2009). In addition, PBL contributes to student autonomy, students' social life, collaborative skill, and group cohesiveness (see Coleman, 1992; Papagiannopoulos et al, 2000, in Tsiplakides, 2009). In relation to language learning, especially English, PBL can improve English language skills (Levine, 2004, quoted in Tsiplakides, 2009). Furthermore, Beckett & Slater (2005) argue that PBL is an activity over a longer period of time which can simultaneously improve acquisition, content, and language skills. The ultimate goal of PBL is understandable input that appears both during and after the project ended.

Though a considerable research on PBL has been done, the extent to which PBL can improve the student's language skill as well as environmental awareness remain unexplored. To fill this void, this research is aimed at exploring the implementation of PBL and the students' responses towards the implementation of PBL especially in relation to the ways the students learn English as well as raising students' environmental awareness.

### **Project-based Language Learning (PBL)**

Project Based Language Learning (PBL) was first introduced by Kilpatrick in "The Project Method" which emphasizes student learning in problem solving. In line with Kilpatrick, John Dewey introduced the concept of student-centered learning as part of the concept of problem solving. In its development, project-based learning emphasizes the role of students to be more active in social life.

Thomas (2000) defines PBL as a learning model that emphasizes learning in projects with assignments consisting of questions and problems involving students in problem solving and searching for something. According to Hodgins (in Suhartatik, 2014) PBL emphasizes learning where students play an active role or student-centered learning. In other words, students act as independent subjects in completing authentic work as learning outcomes.

There are several criteria in PBL, namely centering, focusing on questions or problems, constructive inquiry or design, delegating tasks entirely to students. The main components of PBL are: (1) asking questions or problems presented to arrange and start activities, and (2) the results obtained from a series of activities, individual communication, or from

activities in the task (Lisminingsih, in Suhartatik, 2014).

### **Characteristics of Project Based Learning**

According to Lisminingsih (in Suhartatik, 2014) and Beckett (in Hoose, 2017) PBL includes the following characteristics:

- The project lasts for several weeks or months.
- Students play a role in choosing a topic or approach in the project.
- Students play an active role as group members. Collaborative work defines the importance of PBL.
- Students play an active role in finding information or doing research outside their reading books such as searching for information from the internet. Research includes data collection activities, observations, and / or interviews.
- Students are actively involved in activities that often arise in real life. Often the project helps the surrounding community.
- Students use the results of research to create products and / or give a presentation to the community about what they have learned.
- Students reflect and assess the results of their work, in addition to the assessment given by the teacher. After the teacher gives the first feedback, they fix it. Observers and other students can participate in the final product assessment or presentation.

Furthermore Johnson & Parrish (in Hoose, 2017) emphasizes the activeness of students to read and analyze data, diagrams, graphs, and several other types of complex texts. Students must learn to combine information from a number of relevant sources. Students are expected to be able to develop or choose from several alternative solutions to a problem, and give reasons why they choose these alternatives. Projects usually have results in the form of student work presentations, such as reports or oral presentations. These presentations give students the opportunity to sharpen their academic skills needed at the tertiary level.

The use of PBL in the context of language learning has long been used as a way to train students to use language in integrated listening, speaking, writing and reading skills (Beckett & Miller, in Hoose, 2017). PBL requires students to apply their language skills in authentic contexts such as conducting research, interviewing subjects, and negotiating with their peers. Some schools apply PBL as a way to teach English skills and other subjects such as natural sciences, social sciences, or citizenship (Colombo, 2002, in Hoose, 2017).

### **Benefits of Project Based Learning**

Gora (in Suhartatik, 2014) describes some of the benefits of implementing PBL as follows:

1. Problem solving, where students learn to look for solutions to problems encountered;
2. Self-directed learning, where students can foster and practice a sense of responsibility, initiative, and freedom for independent learning;

3. Creative thinking, where students can practice the ability of students to create new things;
4. Real world connection, where students can practice connecting concepts learned and applying them in solving real-world problems;
5. Cooperative and collaborative learning, where students train to share and cooperate with others;
6. Reflection, where students practice to express and retell their learning experiences; and
7. Authentic material, where students produce products as a result of their efforts in the project.

Some research show positive results on the development of student learning, especially in language learning. Using the research and development method Suhartatik (2014) reports the development of PBL models in learning English by producing products in the form of English learning VCDs. Expert validation shows that the model developed has an "excellent" category in terms of learning objectives, content, and material selection.

Within the scope of vocational schools, Marisah and Robiasih (2017) elucidated the results of research on the implementation of PBL in improving students' speaking skills in a school in Yogyakarta, and the strengths and weaknesses of PBL. They found that many students had the opportunity to speak English as they studied with the PBL approach, and some of the advantages and disadvantages of PBL such as stimulation to interact with group members increased. However, one of PBL's weaknesses is that teachers cannot monitor student learning progress intensively.

Diem (2012) documents a project called "Faculty Voice". In the project, students work in groups as news editors to produce news so that there is no traditional learning in the classroom. Teachers play a role in providing feedback and helping students when they encounter problems related to technology and language. At the end of the semester, some changes are related to language competence and some special skills. Foss, Carney, McDonald, & Rooks (2008) tested the effectiveness of the English learning approach through PBL in an intensive English training program at a university in Japan. The author claims that PBL is an alternative learning model for short-term English courses.

## **METHOD**

### **Research design**

This study employs a case study research method to uncover the development of PBL in learning English. In addition, case studies are used to analyze project implementation both during and at the end of the project to see students' perceptions about the implementation of PBL in their English skills especially in writing and their awareness of the environment.

### **Research sites and participans**

The research site is located in one of the high schools in Karawang Regency, West Java. The author chose this school to be a research site based on the following considerations: 1) the school is supported by adequate learning facilities including projectors, internet hotspots, language centers, libraries, etc.; and 2) the feasibility of access to the research site.

The research participants include twenty high school students in grade 11,

consisted of 17 female respondents and 3 male respondents. Teaching and learning activities were carried out every Monday from 07.30 to 09.00 for two months. The participants have been studying English formally in school for five years, and their English skills vary from elementary to intermediate levels based on Test of English as a Foreign Language (TOEFL) results.

### **Data Collection and Analysis**

The data were collected through classroom observation and interview. According to Gay (in Yuliani & Lengkanawati, 2017), classroom observation is an activity to gather data about classroom research aiming “at observing and understanding the natural environment as lived by the participants without altering or manipulating it.” The observation was conducted during the learning process in the classroom. In general, it attempts to capture what the students do throughout the stages of PBL, i.e. preparation, designing the project, executing the project, project presentation, and evaluation.

In addition to classroom observation, interviews were used to obtain further information about the attitudes of the respondents regarding the application of PBL in learning to write. It was administered in Bahasa Indonesia to avoid misunderstanding and for the sake of the participants’ convenience as well. The interview process was recorded digitally with participants’ permission. All data were analyzed through interpretive and narrative lenses. McNamara (1999) emphasized that interviews are useful for understanding the stories behind the research participants’ experiences, and are also useful as a follow up to the responses obtained from the questionnaire. In addition, in the semi-structured interview format, each

respondent's case can be explored in more detail (Williams & Burden, 1999).

### **FINDINGS AND DISCUSSION**

This section provides an account of the implementation of PBL and the students’ responses towards the implementation of PBL especially in relation to the ways the students learn English as well as raising students’ environmental awareness. The data gathered from classroom observation and interview reveal findings of the procedures of the implementation of PBL as well as issues and hindrances found during implementing the project. The details of the research findings and discussion will be elaborated in the following account.

#### **The implementation of project-based language learning (PBL)**

Data analysis taken from observation and focus group discussion showcased several stages when PBL was implemented including preparation, designing the project, executing the project, project presentation, and evaluation. These stages will be discussed in detailed as follows:

##### *Preparation*

In this stage, the teacher discussed briefly what the students are going to learn through the project and specifically what learning objectives they are trying to attain, that is, completing the projects on recycling materials while keep focusing to practice English in terms of procedure text. The skills were emphasized on developing students’ vocabulary, awareness of the text structure, and its grammatical features in both oral and written form. The students are going to work on project and thus the class is split into groups of four, constituting five

groups of PBL in total. The teacher then asked the students to select a project on recycling materials that they commonly found such as plastic bottles, wrappers, straws, etc. The students had to discuss what project they are going to make out of those types of waste by recycling them.

#### *Designing the project*

In designing the project, the students would be informed that they are going to work on group to work on the projects that they had prepared in the stage A. They were informed about the scope of the projects, the resources available to aid their learning. They were therefore asked to freely access the learning resources available such as the internet, textbooks, newspapers, etc.

#### *Executing the project*

This is the most important stage in the implementation procedures of PBL. Before the project began, the teacher first informed the students that since the language objective to achieve was procedure texts they had to practice English, both oral and written language, while completing the project. The students would start working the projects in groups. They would start completing the project while at the same time practicing English language points that were mentioned earlier.

#### *Project presentation*

Students developed their presentations based on the findings and the project they had developed. With the teacher's guidance and support, they could revise their writing along with the feedback from their peers. While paying attention to the group presentation, the remaining students would provide feedback in the rubric available. The students therefore

were able to engage in the classroom presentation. The aspects included in the rubrics were the structure of the presentation, articulation of ideas, verbal and non-verbal language, etc.

#### *Evaluation*

The evaluation was conducted at the end of the PBL program. It included the project artifacts that the students had completed, group presentations, and the procedure text. The assessment of project artifacts were graded using rubric. The evaluation in PBL was geared towards 4C's 21<sup>st</sup> century learning including Creative/critical thinking, collaboration, communication, and creativity. This approach is feasible to use for both group work and individuals.

Likewise, student presentations were conducted using rubrics which cater such aspects as presence, language skills, organization, and mastery of the subjects, visual aids, and overall impression. Finally, the students procedure text were graded in terms of its text structure, communicative purpose, and lexico-grammatical.

As described aforementioned, the PBL was implemented through five stages, including preparation, designing the project, executing the project, Project presentation, and evaluation. This to a certain extent differ to Katz and Chard's (1989) stages of PBL in the classroom that only cater three main stages including preparation, field work, and culminating and debriefing event. However, the overall stages of PBL in this current research was conducted in line with Katz and Chard's (1989).

**The students' responses towards the implementation of PBL especially in relation to the ways the students learn English as well as raising students' environmental awareness**

The students' responses to be discussed are related to the students' experiences before, during, and after the PBL was completed. Specifically, it describes their opinions towards the implementation of PBL including what they like the most as well as their apprehension and hindrances during the learning process. The students' responses towards PBL will be discussed in the following account.

When asked about what the students enjoyed the most during learning PBL, some students said that they enjoyed working with their peers without excessive teacher's interference as documented by Ahmad (pseudonym):

[1] Ahmad: *"I like working with my friends because I can do things that I can't do myself, and I like that."*

This is consistent with Markham, Larmer, & Ravitz (2003, cited in Lattimer & Riordan 2011) positing that PBL often involves peer collaboration, a strong emphasis on critical thinking and communication skills, and interdisciplinary learning. This is particularly true that, as observed, the students seemed to enjoy the collaborative work with their peer since it helps them to communicate things involved in the project by using English (see also Diem, 2012). This is undoubtedly exposed them to real life language use. Another aspect to notice is that the student's cognitive sensitivity to process in completing the project. In other words, PBL opens greater opportunity for the students

to express ideas while at the same time challenging the other. It therefore provides the students opportunities to be critical learners.

In addition to collaborative group work, the students felt that they could learn with minimum dependence on the teacher. This was experienced by, among others, Ani (pseudonym):

[2] Ani: *"The teacher had only explained the objectives and the project that we were going to work on. After that we were asked to search information that we need for the project, and it was quite interesting."*

As aforementioned in [2], Ani (pseudonym) expressed her affection over learning through PBL particularly in that it can improve her learning autonomy. Learner autonomy refers to the ways learners can manage the way they learn (Barillaro, cited in Yuliani & Lengkanawati, 2017). Barillaro further argues that it refers to learning endeavors that give learners more opportunities to set goals, define what to be learnt and graded, select methods and techniques to be used, monitor acquisition procedures and evaluate what has been attained. This offers learners opportunity to be self-independent learner with little teacher assistance. As observed in the classroom, it was noticed that learners started develop their new way of learning, moving away from the traditional one that rely too heavily on the teacher existence in the classroom. Once they work in groups, they became immersed and developed autonomy themselves. In this way, the teacher's role then changed from the primary source of information into more of coordinator, supervisor and examiner.

Another aspect of PBL that drew students' attention was that while they were focusing on the communicative aspect of language, they acquired content knowledge, in this case, environment-related issues. And this has become the focus of the current research. This was experienced by Damar (pseudonym) as follows:

[3] Damar: *Learning English through project is interesting since I can explore issues around us that is environment. I think we can know better the environment around us because we have to search for waste materials that can be reused for functional purposes.*

As mentioned in [3], it is argued that PBL offers the students opportunity to search and explore information related to the project. This was consistent with Penuel & Means (cited in Miller, 2016) arguing that PBL engages learners to acquire knowledge on the content material and skills. In this case, the students were asked to find information about environmental issues, that is, reusable waste materials. Then worked in groups to develop project aiming at transforming those waste materials into such functional things as, e.g. vas, pocket, pencil case, etc.

Other aspects least noted in PBL gathered from classroom observation and interview include self-confidence, learning engagement, using technology (smartphone, computer, and the internet). However, all these aspects account for the students' improvement in language skills and raising their environmental awareness.

Nonetheless, implementing PBL leave several issues impeding its potential benefits in EFL classroom. Given the

observation and interview, several issues and problems arise. The first issue to notice is related to learning management. It was quite hard for the teacher to monitor he students commitment to the project and, more importantly, practicing English while completing the project both inside and outside the classroom.

The distribution of work amongst group members also remain an issue. It was hard for the teacher to ensure that each group member shared relatively equal amount of workload. So, each can contribute to the completion of the project. To minimize the problem, the teacher can appoint a group leader to make sure that each group member can contribute equally to the completion of the project and, more significantly, practicing English. Final issue was concerned with accessing and utilizing facilities. Some students expressed concerns about poor facilities, i.e. computer and internet connection at school. In addition to limited facilities, some students also found difficulties in utilizing computer and the internet. This needs further preparation and training on utilizing technologies for educational purposes.

## CONCLUSION

This research was concerned about of the implementation of PBL and the students' responses towards the implementation of PBL especially in relation to the ways the students learn English as well as raising students' environmental awareness. It was revealed that the PBL was implemented through several stages, i.e. preparation, designing the project, executing the project, project presentation, and evaluation. The analysis also revealed the students' responses towards the implementation of PBL. Given the analysis, it can be concluded that the students responded quite positively towards

the implementation of PBL as an effort to improve the students' writing ability as well as their awareness towards environmental issues. Besides its benefits, there are several concerns found related to implementing PBL including learning management, group work distribution, and facilities.

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