The Application of Project-Based Learning (PBL) Through Storyboard to Improve Reading Achievement of the 10th Grade Students

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ABSTRACT
This study was aimed at finding out (1) whether there was any significant difference in students' reading achievement of the 10th grade students of SMA Srijaya Negara Palembang between before and after they are taught through PBL, (2) whether there was any significant difference in students' reading achievement of the 10th grade students of SMA Srijaya Negara Palembang between the experimental group who are taught through PBL and the control group who are not, and (3) how are the students' perspectives on the use of PBL in learning reading. 72 students of tenth-grade students were chosen as the subject. They were divided into two groups, 36 students of Experimental group and 36 students of Control group. Quasi experimental method was chosen in this study and the techniques of selecting the data were used purposive sampling. The pre-test, post-test, and the questionnaire were used to collect the data for the experimental group. Meanwhile, to analyse the data, the researcher used pair sample t-test and independent t-test. The results showed that there was a significant improvement in the students' reading achievements after using Project-Based Learning with a significant level of $0.000 < 0.05$. This indicates that the implementation of Project-Based Learning helps the students of experimental group improve their reading achievement.

Keywords: Project-based learning method, Storyboard, Reading achievement.

1. INTRODUCTION

Based on 21st century competence (cognitive, interpersonal, and intrapersonal), the government, in this case the Ministry of Education and Culture, issued a breakthrough to improve the quality of education to be able to compete, producing graduates ready to compete globally in the future. The breakthrough was through the implementation of the 2013 curriculum, in other words, that implementation was actually intended to answer the challenges of the times to education, that is to produce graduates who were competitive, innovative, creative, collaborative and have good character. The 2013 Curriculum is useful for developing students' abilities based on students' interests and needs and can improve students' cognitive abilities [1][2].

In the 2013 curriculum, English is one of the subjects that must be learned by students. Besides speaking and writing, students are used to reading and understanding, summarizing and re-presenting the meaning of the text in their own language. For reading, the students are expected to be able to understand the text meaning and represent what they have read in their own language.

SMA Srijaya Negara Palembang is one of the schools that applies the 2013 curriculum. Based on the interview with one of the English teachers in that school, all of the students have problems in mastering English skills. According to the teacher, the main cause of this problem is students rarely read the text given by the teacher because the text is long and not very interesting, while students have little vocabulary mastery. One of the habits of the teacher in learning is the teacher asks students to read the text for a certain time, then ask questions individually. This problem inhibits students learning because it is still teacher centre and teacher is lack of innovation in teaching. Students creativity does not emerge. Those learning problems might be solved by using Project-Based Learning model that emphasizes student centre and also storyboard can improve student's creativity to produce something that requires students to be more independent, creative and innovative.

1.1. Project-Based Learning

Boss and Krauss [3] define Project-Based Learning is an activity that requires students to explore open-

ended questions and extend their skills to create effective outcomes. That way of learning will engage students to be more independent in deciding which options is better, especially in a groupwork. Project-Based Learning (PBL) provides opportunities for students to learn deep content knowledge and 21st century skills. While PBL practices vary depending on grade level and subject area, projects should allow for some degree of student voice and choice, and should be carefully planned, managed, and assessed to connect rigorous academic content to 21st Century Skills (such as collaboration, communication & critical thinking) through student development of high quality, authentic products and presentations [4].

1.1.1. The Steps of PBL on Storyboard

According to Varvel and Lindeman [5], storyboard are a means of portraying data structure, organization, content and links in a visual way to create a conceptual idea of knowledge, place, context and appearance. Doherty and Coggeshall [6] state that storyboarding as a type of post-reading activity that could bring a large number of benefits to the students. For example, storyboard improves the organization, time management and planning of the students because it allows them to organize and picture their ideas before writing them using words. Storyboards also allow students to use various reading techniques such as previewing, visualizing, illustrating, summarizing, sequence understanding, identifying key ideas and descriptions, identifying important information and many more. Last, storyboard promotes the integration of reading and writing during class instruction since students are expected to describe their illustrations in detail.

According to Smeda et al. [7], the teachers are equipped to provide this assistance through a number of steps to create a storyboard because students have different levels and experiences, as follows: (1) brainstorm, (2) storyboard draft, (3) search the material, (4) creating the storyboard, (5) editing and feedback, and (6) presentation and evaluation.

2. METHOD

In this study, Quasi Experimental was applied and used Pre-test Post-test Non-equivalent Control Group Design, a design that provides a pre-test, treatment, and then post-test for experimental group. The total number of populations in the tenth-grade students of SMA Srijaya Negara Palembang was 173. In this study, the writer used purposive sampling technique. In purposive sampling, the writer may decide to use depends on the purpose of the study. The writer chosen the sample based on the students' reading level and taught by the same English teacher. The reason was that the sample has equal ability so that, if students' reading achievement increased, it is because of Project-Based Learning (PBL). The writer took 72 students for the sample. They were divided into two groups, 36 students from X IPA 1 as the experimental group and 36 students from X IPA 2 as the control group.

Before the research, the writer checked the reading level of the students using the Jenning Informal Reading Assessment. The writer used silent passage and the level of the silent passage was independent (5-6), instructional (4.5-5), and frustration (4 or less). Based on the result of students reading level, the students were at level 3. Therefore, the reading material for the students was based on the result of the students reading level.

Reading test which consisted of 27 multiple choice of narrative questions and the questionnaire consisted of 33 statements of Project-Based Learning in reading were used to collect the data. The test was used to find out the students' reading achievement and the questionnaire was used to know the students' perspective of Project-Based Learning in reading. The treatment was given for 16 meetings so that, it can be more optimal for the students to learn and can supported the objectives of this study.

In the first meeting, the pre-test was given to the experimental and control group. For the second until fifteenth meetings, the experimental group was given the treatment by using Project-Based Learning with Storyboard. Teaching procedures applied in this study was to give a project to students to read various story of narrative text based on their reading level, which was level 3 through storyboard. The stories include legend, folklore, myth, and fable. The researcher divided students into 5 groups, then explained about narrative text and shared ideas with students. After that, the researcher gave same story to each group based on the order of levels from 3 to 5. The story will be different on each level. After that, the students made the storyboard draft first. Because they have just read the story, they were not very good at drawing the detailed of the events, so in this lesson they focused more on understanding the story and then made the draft. The next step was the students created storyboards from examples of storyboards draft that students have made. The researcher also repeated a little discussion about narrative text and its structure so that students did not draw stories based on their will, but based on the correct structure. The researcher also checked the order of the stories, helped them match the images to the story and checked the dialogues in the images so it didn't deviate from the story. Students were allowed to be as creative and innovative as possible in drawing the storyboards. The final step was presentation and evaluation. The researcher watched the group presentation and evaluated them based on the arrangement of the story, story creation and presentation. The responsibility of the students in this lesson was to present the storyboard to researcher and other groups in front of the class. In the last meeting, students took the post-test as what they did in the pre-test and fill out the questionnaire.

The instruments had been checked by three validators. The validators reported that the test and the questionnaire were valid. After that, the researcher tried out the reading test to do construct validity. The result of the tried out was checked with SPSS (Statistical Package for Social Science) using Pearson Product Moment. The results of the tried out showed that 27 questions were valid. Then, the value of Cronbach's Alpha (0.919) showed that the test was also reliable.

3. RESULT AND DISCUSSION

Before analysing data, the writer checked the assumption of normality and homogeneity test. The normality test used to know whether or not the data set had a normal distribution. Kolmogorov-Smirnov test was chosen to test the normality. The data are standard if the p-value was > 0.05. The normality test results in experimental and control groups for pre-test and post-test were summarized in the table 1.

Table 1. Normality Test

Groups	Pretest				Posttest			
	Mean	Std. Dev	Sig.	Kolmogorv-Smirnov Test	Mean	Std. Dev	Sig.	Kolmogorv-Smirnov Test
Exsperimental	51.89	9.183	0.200	0.088	65.78	10.351	0.200	0.120
Control	45.67	9.885	0.200	0.101	54.22	12.474	0.188	0.123

The results showed that the significant values (2-tailed) of pre-test and post-test in the experimental group were 0.200 and 0.200. The significant values of pre-test and post-test in the control group were 0.200 and 0.188. Since the p-values were higher than 0.05, it can be stated that all the data had the normal distribution.

To determine the data were homogenous or not. The data from two different groups (experimental and control group) were used Levene test for monitoring the homogeneity test. The data sets are homogenous if the significant value (2-tailed) is higher than 0.05. The results of the homogeneity test can be seen in the table 2.

Table 2. Homogeneity test

Group	Levene's Statistic	Sig.
Pre-test and Post-test in Experimental Group	0.803	0.373
Pre-test and Post-test in Control Group	1.875	0.175
Pre-test in Experimental and Control Group	0.240	0.626
Post-test in Experimental and Control Group	1.026	0.315

The results showed that the significant values (2-tailed) from pre-test and post-test in experimental group was 0.373, the result from pre-test and post-test in control group was 0.175, the result from pre-test in experimental and control group was 0.626, and the result from post-test in experimental and control group was 0.315. From the results, all of the data from experimental and control group considered homogeneous.

3.1. Paired Sample t-Test

Paired sample t-test was used to see the improvement between before and after the control and experimental groups were taught using the storyboard as the implementation of Project-Based Learning methods. The summary of the paired sample t-test is in the table 3.

Table 3. The result of paired sample t-test

Group	Test	Mean	Mean Difference	T	df	Sig. (2-tailed)
Experimental	Pre	51.89	-13.889	-14.330	35	0.000
	Post	65.78				
Control	Pre	45.67	-8.556	-5.950	35	0.000
	Post	54.22				

Based on the result of paired sample t-test in the experimental group, the mean score of the post-test (65.78) was higher than the mean score of the pre-test (51.89) with the mean difference of 13.889. Since the p-value (sig. (two-tailed)) of the experimental group was 0.000 and it is lower than 0.05, the null hypothesis (H0) was rejected and the research hypothesis (H1) was accepted. Therefore, there was a significant difference in reading achievement of the 10th grade students of SMA Srijaya Negara Palembang before and after they were taught by using Project-Based Learning.

Meanwhile, the results of paired sample t-test in the control group showed the mean score of post-tests (54.22) was higher than the mean score of pre-tests (45.67) with the mean difference of 8.556. Since the p-

value (sig. (two-tailed)) of the control group was 0.000 and it is higher than 0.05, it can be concluded that there was a significant difference between the mean score of pre-test and post-test of the control group.

3.2. Independent Sample t-Test

An independent sample t-test was used to measure the significant difference between students who were taught by using Project-Based Learning (Experimental Group) and those who were not (control group). The result of the independent sample t-test was shown in the table 4.

Table 4. The result of independent sample t-test

Group		N	Mean	Mean Difference	T	df	Sig. (2-tailed)
Pre-test	Experimental	36	51.89	6.222	2.767	70	0.007
	Control	36	45.67		2.767	69.624	
Post-test	Experimental	36	65.78	11.556	4.277	70	0.000
	Control	36	54.22		4.277	67.698	

Based on the results of independent sample t-test, the mean difference of pre-test between experimental (51.89) and control group (45.67) was 6.222. Since the p-value was 0.007 and it was less than 0.05, there was significant difference of pre-test between experimental and control group. Meanwhile, the mean difference of post-test between experimental (65.78) and control group (54.22) was 11.556. Since the p-value was 0.000 and it was lower than 0.05, the null hypothesis (H0) was rejected and research hypothesis (H1) was accepted. Therefore, there was a significant difference in reading achievement between students who were taught by using Project-Based Learning (Experimental group) and those who were not (Control group).

3.3. The Result of Questionnaire

In order to know the students' perspectives on Project- Based Learning in learning reading. The questionnaire was given to the experimental group, which was taught by the storyboard as the implementation of Project-Based Learning method. The questionnaire consisted of 33 questions which were categorized in strongly agree (5), agree (4), neutral (3), disagree (2), and strongly disagree (1). The questionnaire was distributed after the experimental group has given the treatment. The highest score in the students' perception on Project-Based Learning was 93 and the lowest score was 77. The results of the questionnaire were shown in the table 5.

Table 5. The result of questionnaire

Interval	Category	Frequency	%
0 - 19.99%	Strongly disagree	0	0
20% - 39.99%	Disagree	0	0
40% -59.99%	Netral	0	0
60% - 79.99%	Agree	2	6
80% -100%	Strongly Agree	34	94
	Total	36	100

From the result, we knew that most of the students were in the strongly agree interval (94%) which means that according to students' perceptions, Project-Based Learning could improve students' reading achievements.

3.4. Interpretation

Based on the findings of the study, there were several interpretations that could be drawn. The findings for the experimental group showed that there was an increase in mean between the pre-test and post-test before and after the treatment was applied. The mean score of the post-test was 65.78 and it was greater than the mean score of the pre-test with the score 51.89. Since the significant value (2-tailed) was 0.000 and it is lower than 0.05, the null hypothesis (H0) was rejected and the research hypothesis (H1) was accepted. Therefore, there was a significant difference in reading achievement of the 10th grade students of SMA Srijaya Negara Palembang between before and after they were taught by using Project-Based Learning model and using storyboard as a media.

The increase of the students' reading comprehension achievement might be caused by the implementation of Project-Based Learning. As a learning model, Project-Based Learning requires students to be independent so that, they can design and structure their assignments including for reading class. A lot of impact that we can get if we like to read, especially for people whose first language is not English. Through the process of reading, we can train our brain to think critically, learn to analyse or conclude a text or paragraph, and improve learning skills. According to Nunan [8] the purpose of reading for the second language learners are as follows: (1) to obtain information for some purpose or because of curiosity about some topic, (2) to obtain instruction on how to perform some tasks for the work or daily life, (3) to keep in touch with friends by correspondence or to understand business letter, (4) to know where or when something will take place or what is available, and (5) for enjoyment or excitement. By using Project-Based Learning model, students' reading achievement can be increase because learning activities in Project-Based Learning has characteristics that support the effectiveness of the learning process. According to Simpson [9] the characteristics of Project-based Learning are as follows: (1) student-centre so the teacher becomes facilitator or coach, (2) leads to the authentic integration of language skills and processing information from multiple sources, (3) encourages collaboration among students, and (4) allows learners to demonstrate their understanding of content knowledge through an end product. It is related to Chu et al's [10] study. The study examined the impacts of a group project inquiry approach on primary school students' reading skills. Using a case study design, an inquiry

project-based learning (PBL) approach, with the collaboration between three types of teachers and the school librarian was implemented to support the development of reading abilities and interests of students in a primary school in Hong Kong. The participants included Primary 4 students, teachers, and parents. Progress in the International Reading Literacy Survey (PIRLS) tests were used to measure students' reading skills; survey questionnaire and interviews were used to analyse respondents' impressions of the PBL study; and the PIRLS survey was used to measure students ' attitudes and perceptions of themselves. Analyses of quantitative and qualitative data showed positive effects on the students' reading ability and attitudes. It can be concluded that Project-Based Learning is a solution to increase students' reading achievement so that, students become more active in the class. It also allowed students to be involved in every stage of learning and assignment, so that it could improve their learning abilities.

As one of the ways to accomplish the assignment which is to make a storyboard, students need to read through a wide range of reading materials as for the sources ranging from books, magazines, newspapers, article to net surfing. Doherty and Coggeshall [6] state that storyboarding as a type of post-reading activity that could bring a large number of benefits to the students. In this study, storyboard improved the students' skills in organization, time management and planning. It allowed them to organize and picture their ideas before writing them using words. Storyboards also allowed the students to use various reading techniques such as previewing, visualizing, illustrating, summarizing, sequence understanding, identifying key ideas and descriptions, identifying important information and many more. Last, storyboard promoted the integration of reading and writing during class instruction since students are expected to describe their illustrations in detail. Because most of the content of storyboard are images, students are more interested in learning the material. As Project-Based Learning model mostly required students to work in groups, students have more time for discussions and collaboration in accomplishing their work. In addition, the students were encouraged to be more creative and innovative to produce the best products for their storyboards.

For the control group, the paired sample t-test result' showed that the mean score of post-tests was 54.22 and it was greater than the mean score of pre-tests 45.67 with the mean difference of 8.556. Since the significant value (2-tailed) was 0.000 and it is higher than 0.05. It can be concluded that there was a significant difference between the mean score of pre-test and post-test of the control group. The significant improvement in reading achievement in control group might be caused by their reading level. Students of class X IPA 2 (control group), had higher reading level than the students of class X

IPA 1 (experimental group). It also means that students in the control group might have better vocabulary mastery. The average initial reading score of control group before they got the treatment was 45.66 meanwhile for experimental group was 51.88. Their score was not too far, it means that their abilities in reading were not too far away. During learning process with English teacher in that school, it could increase the students' comprehension and achievement of control group.

For the questionnaire, the results showed that after the students of experimental group got the treatment by using Project-Based Learning model, most of the students were in strongly agree (94%) and agree (6%) intervals. The items of the questionnaire consist of the Project-Based Learning in reading. The questionnaire was filled out on the last day of the treatment so that, the result of the questionnaire represented the treatment process given by the researcher. Students filled out the questionnaire based on the experience and the learning process about Project-Based Learning given during the treatment. Most of the students chosen strongly agree because during the treatment using storyboard as a media which had lots of pictures, made them very enthusiastic to read and discussed the stories to determine the right pictures to produce the best storyboard. Project-Based Learning required students to be the centre of the learning process and work together with each group or classmates so that students were trained to communicate and think critically because of that process. Most of the students chosen strongly agree which means that the learning process of reading with Project-Based Learning was very helpful. Using storyboard as a media also made the material and the learning process more interesting. It means that based on their perceptions, Project-Based Learning could improve students' reading comprehension achievements. It is related to Maulida's study [11] about the effect of storyboard technique on reading narrative text ability. In this study, there were 186 respondents from SMAN 9 Pekanbaru who were given a pre-test, post-test and treatment. The result showed that the implementation of storyboard has beneficial effects as a technique in teaching reading comprehension.

At last, a conclusion may be taken that Project-Based Learning model was supportive to upgrade the reading achievement of the students especially for the experimental group at the SMA Srijaya Negara. Subsequently, it was considered that applying Project-Based Learning model and using storyboard as a media was prepared to move forward the reading achievement of the 10th grade students of SMA Srijaya Negara Palembang. The study findings showed that the application of Project-Based Learning had given a positive impact on reading achievement of the 10th grade students of SMA Srijaya Negara Palembang. In other words, Project-Based Learning model using

storyboard could improve students' reading achievement. In line with Widiseta [12] about his research title Improving Students' Reading Comprehension Through Project-Based Learning (PBL) For Grade XI Students at SMA N 1 Teladan Yogyakarta aims on how the use of Project-Based Learning can improve the students reading comprehensions. The result of the study showed that students seem enthusiast in doing PBL for their reading so they could discuss their understanding and express it into the project.

4. CONCLUSION

Based on findings and interpretation of the study around the application of PBL (Project-Based Learning) to improve reading achievement of the 10th grade students of SMA Srijaya Negara Palembang, it is concluded that applying Project-Based Learning model could improve reading achievement of the of the 10th grade students of SMA Srijaya Negara Palembang. Most of the students of experimental group who got treatment by using Project-Based Learning model could improve their reading achievement. Project-Based Learning trained students to worked together and communicate so students became more active in learning. They also became more independent and think critically because they were required to be the center of the learning process. Based on the questionnaire, students' perceptions of Project-Based Learning in reading really helped them. The material used is interesting to them because it usedstoryboards as a media, which many used images for the learning. The students understood more and master reading texts well because they easily remember things that are fun for them.

AUTHORS' CONTRIBUTIONS

The authors conducted the research at SMA Srijaya Negara Palembang to complete this article and give each other advices, criticism, and enthusiasm for this article in order to get a good final result.

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