www.bircu-journal.com/index.php/birci
Budapest International Research and Critics Institute-Journal (BIRCI-Journal)
Humanities and Social Sciences
ISSN 2615-3076 Online)
ISSN 2615-1715 (Print)
Budapest Institute

The Effectiveness of Learning to Write Explanation through a Scientific Approach Using Project-Based Learning

Yusmaniar[1], Rochmat Tri Sudrajat[2], Ika Mustika[3]
[1,2,3]*Master of Indonesian Language Education, IKIP Siliwangi, Indonesia*
yusmaniar22@guru.sma.learning.id, rochmattrisudrajat@ikipsiliwangi.ac.id, ikamustika@ikipsiliwangi.ac.id

Abstract

The purpose of this study was to see how the effectiveness of project-based learning with a scientific approach was able to improve students' ability to write explanatory texts. This study uses a quasi-experimental method by using a research design in the form of Nonequivalent Control Group Design. The samples used were two classes, namely class XI MIPA 1 as an experimental class with 36 students receiving project-based learning treatment and class X MIPA 2 as a control class with 36 students receiving problem-based learning treatment. The results of the explanatory text writing test based on observations showed data that project-based learning was more effective in improving students' explanatory text writing skills, this was also reinforced by the data from observations that showed that 95% of students were more motivated to improve their explanatory text writing skills when using project-based learning

Keywords
scientific approach; project-based learning; explanation text

I. Introduction

Education is the foundation of a successful career, financial freedom, the ability to think and reason critically and to make informed decisions. Without education we will be limited to perform tasks and we will be ignorant to the things that are happening in and around our surrounding, and according to Martin Luther King, a people without knowledge is like a tree without roots. For education to be of great value, curriculums should be implemented (Philips, S. 2020)

Writing is one of several language skills that must be mastered by students. Writing is the highest level of other language skills, namely reading, listening and speaking skills (Paul, 2007). In addition, writing is a very important activity because writing activities can help social development, develop students ' creativity, and improve students' critical thinking skills (Bakry & Alsamadani, 2015). Writing is also a productive process or activity because it can produce products in the form of written works that can be used as a means of conveying messages or communication (Cahyani, 2012; Tarigan, 2013; Abidin, 2015; zdemir, & Aydın, 2015).

The 2013 curriculum currently in effect delivers that language is believed to be a vehicle for transmitting knowledge. This indicates that the students' language skills are able to increase understanding of the science to be studied (Hamidah, 2015). The 2013 curriculum offers an approach that is capable of cultivating students to learn actively by honing cognitive as well as affective. To hone these cognitive and affective skills, the implementation of the 2013 curriculum is aligned with a scientific or scientific approach In other words, the 2013 curriculum emphasizes the modern pedagogic dimension in learning, namely by using a (scientific approach) approach scientific (Faizah, 2015).

Hosnan (2014) states that the implementation of the 2013 curriculum with a scientific approach is a learning process designed so that students can construct a concept through several steps, including: observing, formulating problems, formulating hypotheses, collecting data from various sources, analyzing data, drawing conclusions. and communicate the results found. In other words, scientific learning creates a learning atmosphere that can encourage students to find out from various sources through observation so that they have a meaningful understanding. Because the essence of the scientific approach is learning by applying the concept of scientific research towards learning that is empirical, active, creative and effective (Hamidah, 2015). Therefore, students' explanatory text writing skills need to be improved through appropriate learning stages (Emilia, 2012).

In addition, the low skill of writing explanatory texts is indicated by the lack of students' ability to organize ideas well, develop an essay framework, and compose sentences and the vocabulary used is still limited. They still do not understand the use of correct spelling (Safera, 2017; Susdiana, 2017)

So that student involved active in learning needed model learning appropriate with character student with approach scientific. Wrong one model learning that can be applied is the project based learning (PJ BL) learning model or we often mention project-based learning. P J BL is one of the learning models that emphasizes contextual learning and involves students conducting collaborative investigations, through complex activities so as to motivate students to be more active and take the initiative to obtain things. which they want good on side knowledge, understanding, and his skills. The Project Based Learning (PjBL) model is an innovative learning centered on students (student centered) and places the teacher as a motivator and facilitator, where students are given the opportunity to work independently in constructing their learning, directing students to problems directly and then solving them involves work. projects that are indirectly active and trained to act and think creatively. (Marlanti, 2011; Suranti et al., 2017; Mustika & Ain, 2020; Kusadi et al, 2020).

So we can assume when project-based learning (P J BL) students can develop the creativity of their ideas in existing problems, so that k etiquette given Duty which nature open, as for example is make explanatory text based on the observations of each student, they can easily explore their ideas as outlined in the form of explanatory text . As revealed by Sumarmi (2012) and Pradita (2014). That this P J BL can Upgrade creativity student. Based on explanation the, so purpose of this research is to see the effectiveness of the project-based learning model to improve text writing expansion.

II. Research Methods

The research method is basically a scientific way to get data with certain goals and uses (Sugiyono, 2012). The method used in this research is quasi-experimental or more often referred to as quasi-experimental, this method is a type of comparison that compares the effect of giving a treatment (Treatment) on something object (group experiment) as well as look great effect of the treatment (Arikunto, 2010). This study uses a research design in the form of the Nonequivalent Control Group Design , this design is almost the same as the pretest-posttest control group design , only in this design the experimental group and control group are not chosen randomly (Sugiyono, 2011). Research done at S M AN 2 Cikampek with taking group sample based on class, with class XI MIPA 1 as the experimental class with a total of 3 7 students received project-based learning treatment while XI MIPA 2 as the control class with a total of 3 8 students received treatment with problem-based learning.

III. Results and Discussion

This study used two classes as samples in the study. One class is used as a control class and the other class as an experimental class. The research carried out includes several steps, including: planning, research activities and evaluation. In carrying out the research activities carried out, the researcher carried out several steps, namely carrying out initial tests, treatment, and carrying out final tests. The following can be seen the initial values of the control class in table 1 and the experimental class in table 2.

Table 1. Initial Value of Control Class

Mark	Category	Frequency	Presentation (%)
90 – 100	Very good	0	13.15
80 – 89	Good	0	0
70 – 79	Enough	3	7.89
55 – 69	Not enough	5	13.15
< 50	Very less	30	78.96
	Amount	38	100

From the table above, the number of students in the "Very Good" category is 0%, category “Good” amounted to 0%, category “Enough” amounted to 7.89%, category “Poor” amount 13.15%, and student on category "Very Not enough" amounted to 78 , 96 %. The average value of all students is **62.94** from a total sample of 38 student.

Table 2. Experiment Class Initial Grade

Mark	Category	Frequency	Presentation (%)
90 – 100	Very good	0	0
80 – 89	Good	1	2.70
70 – 79	Enough	15	40,50
55 – 69	Not enough	18	48.64
< 50	Very less	3	8.16
	Amount	37	100

From table 2 shows the students in the "Very Good" category amounted to 0%, the "Good" category amounted to 2.7%, the "Enough" category amounted to 40.5 0 %, the "Less" category amount 48.64%, and student on category "Very Not enough" amounted to 8.10%. The average value of all students is **65.08** from a total sample of 37 student.

After the pretest was carried out, the researchers took action or treatment to determine the effectiveness of a model in learning. In this case, the control class was treated with a problem-based learning model, while the experimental class was treated with a project-based learning model. The syntax in P J BL has the potential to empower students' social skills. This project-based learning model looks involve more students in the learning process, so that students are more active in process learning (Kusadi et al. 2020) and expected will have implications for more final results good.

After the treatment, the researcher tested again through the post-test to see Mark end. Following shown results posttest for class control on table 3 and posttest scores for the experimental class in table 4.

Table 3. Final Grade Control

Mark	Category	Frequency	Presentation (%)
90 – 100	Very good	6	15.79
80 – 89	Good	12	31.58
70 – 79	Enough	15	39.47
55 – 69	Not enough	5	13.16
< 50	Very less	0	0.00
	Amount	38	100

From the table above, the number of students in the "Very Good" category is 15 , 79 %, the "Good" category is 31,5 8 %, the "Enough" category is 3 9 ,47%, the "Less" category amounted to 13 , 16 %, and students in the "Very Poor" category amounted to 0%. The average value of all students is **7 4.71 from a** total sample of 38 student.

Table 4. Experiment Class final grade

Mark	Category	Frequency	Presentation (%)
90 – 100	**Very good**	**14**	**37.84**
80 – 89	**Good**	**14**	**37.84**
70 – 79	**Enough**	**9**	**24.32**
55 – 69	**Not enough**	**0**	**0**
< 50	**Very less**	**0**	**0**
	Amount	**37**	**100**

Table 4 shows that the student data in the "Very Good" category is 37.8 4 %, the "Good" category is 37.8 4 %, the "Enough" category is 24, 32 %, the "Less" category is 0%, and students at the “Very Poor” category amounted to 0%. The average value of all students is 85.02 from a total sample of 3 7 students.

Based on the initial data from the control class and the experimental class, we can see the difference between the two classes and how effective the project -based learning model is for the ability to write explanatory texts. The following is shown in table 5.

Table 5. Value Difference Between Control Class and Experiment Class

Class	Average Achievement Score		Change
	Pre-Test	Final Test	
Control class with Project Based Learning (PJBL) method	62.94	74.71	+11.77
Experimental class with Project Based Learning (PJBL) method	65.08	84.02	+18.94

Data on table 5 show that occur enhancement achievement students for the control class of 1 1,77 while for the experimental class of 1 8,94 . This indicates that project-based learning is more effective than learning based on problem for Upgrade ability write explanation text for class XI. Effectiveness learning could occur. This is possible because project-based learning has several advantages, including: inviting students to get more motivated in the learning process. Regarding the advantages of the project based learning model, namely increasing motivation, improving problem solving skills, increasing collaboration, improving skills and being able to manage resources (Ngalimun, 2013; Setyowati & Mawardi, 2018). Or in other words that this learning is systematic, has stages

from simple to complex so that it motivates students to be more active and take the initiative to get the things they want both in terms of knowledge, understanding, and skills (Marlanti, 2011; Mustika & Ain, 2011). 2020).

At the time of research at experimental class, project-based learning is very helpful for them to complete their assignments, because students participate in the learning process and develop the skills that exist in students. However, there are some weaknesses of this learning model that might be possible we assume as resistance in process learning, including: 1). Existence student which dominate activity so that no want to value idea from friend which considered not enough capable, 2). there is possibility student which not enough active in group work, 3). when the topic given to each group is different, it is feared that students will not be able to understand the topic as a whole, 4). organization ingredient lesson, planning, and implementation this method is difficult, 5). Lesson material is often so broad that it can obscure the subject matter of the unit discussed.

The obstacles that occur during the learning process which we often refer to as control variables, the control variables in this study can be overcome with several alternatives, namely: 1). Show students, test assessment indicators 2). create a pleasant learning atmosphere, 3) teachers always improve self-competence in order to have special skills in implementing learning models, the central role of teachers in the teaching and learning process (Wahyuti, 2015). In addition to the obstacles in the learning process, there are also advantages that exist in this project-based learning model, including: 1). Can share knowledge with others, 2). work together to achieve common goals, and 3). recognizes that everyone has certain skills that are useful for the project at hand and displays all the important intellectual and social dispositions needed to solve real-world problems (Abidin, 2007; Lestari et al., 2016; Suranti et al., 2017)

To support the effectiveness of this research, the data were also taken through observation. The following describes the results in table 6.

Table 6. Experimental Class Observation Results

No	Student Observation	Implemented			
		Yes		Not	
		F	%	F	%
1	Mastery in learning				
	a. Say greetings	37	100%	0	0%
	b. Following the prayer together before the lesson starts	37	100%	0	0%
	c. Sit neatly	3 4	91.89 %	3	8.11 %
	d. Study equipment is already on the table	3 5	94.59 %	2	5.41 %
2	Activity in class				
	a. Asking about explanatory text material regarding text content, structure and rules	3 4	91.89 %	3	8.11 %
	b. Answering the teacher's questions about the material for writing explanatory texts	3 4	91.89 %	3	8.11 %
	c. Dare to come forward to explain the explanatory text material regarding the content of the text, its structure and rules	3 2	86.49 %	5	13,51 %
	d. Dare to appear to read the results of writing an explanation text	37	100%	0	0%

3	Listen to the teacher's explanation				
	a. Concentrate and focus on following the lesson	37	100%	0	0%
	b. explanatory texts given by the teacher	37	100%	0	0%
	c. Participate in learning until the end of writing an explanatory text using the project-based learning method	37	100%	0	0%
	d. Doing the task of writing an explanatory text based on a predetermined theme	37	100%	0	0%
4	Material Mastery				
	a. Able to answer questions teacher with lanc a r	37	100%	0	0%
	b. Able to write explanatory text with using project-based learning methods Learnig	37	100%	0	0%
	c. Able to write explanatory text with specified theme	3 4	91.89 %	3	8.11 %
	d. Able to mention the contents of the text, structure, rules, and steps in compiling an explanatory text	3 4	91.89 %	3	8.11 %

The results of the observation of student activities showed that most of the 3 7 students carried out the learning process well. The overall presentation was 9 6.28 % of students showed that they followed the lesson well and 3.72 % of the students did not follow the project-based learning model.

IV. Conclusion

From explanation which displayed on results and discussion, could concluded that project-based learning is effective in improving students' abilities in explanatory text writing activities based on observations and is also strengthened by field observation which show that 95% student gap that learning project-based can increase motivation and increase creativity or generate ideas in make text report. So that from conclusion the could Some suggestions are given, including that this learning can be used for cognate material which capable dig creative v itas through stages method scientific or scientific approach, but this learning model needs to be re-examined for learning whose material properties are in the form of logic.

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