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**APPLICATIONS RESEARCH-BASED LEARNING ENVIRONMENT EDUCATION  
COURSE FOR WRITING SCIENTIFIC**

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**ABSTRACT**

The purpose of this study to explain applications research-based learning in educational environment for scientific writing majors social studies department. This study uses a quasi-experimental design with two groups of experimental classes and control classes. The results showed the significant value of 0.002 t-test (<0.05). This means that there is the influence of research-based learning applications on students' ability to write scientific subjects of environmental education with the study of carrying capacity. Four indicators were biggest increase in the introduction, literature review, methods, and the results and discussion.

**Keywords:** Research-Based Learning, Scientific Writing, Environmental Education

**INTRODUCTION**

College education is necessary to change patterns of teaching more to research. The essence of research-based learning to enhance the role and contribution of students in the application. Learning research to provide more flexibility to students in lectures to plunge directly into the field to find out the problems and phenomena. Environment as an object of study give more experience to the students in the learning process of research. Widayati, et al (2010) that research-based learning aims to create a learning process that leads to activity analysis, synthesis, and evaluation, and improve the ability of students and professors in terms of assimilation and application knowledge of

Problems that occurred student less given the space to do research, so that constrained until the preparation of the final project. Class that combines teaching and research will provide valuable experience to students. Reality happens that not many teachers of geography apply lessons learned during lectures in Indonesia. Findings Roza (2014) that

productivity is higher PGMI lecturer in education and teaching as compared with the field of research and scientific work and community service. Therefore, it needs increased productivity with the collaboration of faculty research and teaching.

Research-based learning is a model developed constructivism stream. Lockwood (1994), Research-based learning is a system of instruction the which used an authentic learning, problem-solving, cooperative learning, hands-on, and inquiry discovery approach, guide by a Constructivists philosophy. Ali Al Maktoumi, et al (2016) research-based learning for the exercise provides students the opportunity to practice within Reviews their metacognitive abilities and foster critical thinking, abilities to the make predictions, propose causative factors, and present constructive arguments. This is done/measured through oral presentations and final reports roommates all are the core component of any scientific research. Planting a scientific spirit to the students needed to instill academic ethics as a whole. Step implementation model of Research-Based Learning (RBL) by Tremp (2010) includes: (1) formulating a general question; (2) Overview of research literature; (3) Defining the question; (4) Planning research activities, clarifying methods/methodologies; (5) undertaking investigation, analysing of data; (6) Interpretation and consideration of results; (7) report and presentation of result.

The purpose of writing scientific papers in education is needed to improve students' writing ability. The scientific work as a product of the process of research, observation, analysis, and thoughts of a particular phenomena in the field. Writing scientific papers will train students spatial thinking skills in understanding the environment. Saukah, et al (2010,) stated that the writing of scientific papers can cover the fields of science, technology, and art are done in accordance with the procedures of scientific, and follow the guidelines that have been agreed or stipulated.

The material in this research that the carrying capacity of the environment in Jember district in the education environment is alive. Site under the District Kaliwates, District Sumbersari and Patrang District of Jember region. This study aims to determine the scientific writing skills of students majoring in social studies in Guidance and Counseling University Jember. The benefit for the innovation and development of the course with the research.

## **METHODS**

This study used a quasi-experiment with two groups of experimental class and control class (Campbell and Stanley, 1963). Class experiments using research-based learning

application treatment, while the control class with discussion and question and answer method. The subjects were students at the department of social science University of Jember take a course in environmental education in 2017/2018.

The instrument used in this study is guideline writing and assessment of scientific papers. Guidelines for writing and aspects of the assessment based on the guidelines of scientific writing Jember University Year 2016. The weights every aspect of votes according to the guidelines modified writing instrument Jember University, 2016. Validation is done by experts in environmental science and geography. Analysis data in this study using a test for normality and homogeneity. Test the hypothesis using independent sample *t-test* with *SPSS 16.0 for Windows* at the 0.05 level of significance.

## RESULTS AND DISCUSSION

### 1. Results

#### a. Initial Capabilities Students in Writing Scientific

Value initial capability made by students in the experimental class and control class at the beginning of treatment. Range sheet initial assessment of scientific works with a range of values 0-700. Data writing skills early science students of the experimental class and control class can be seen in Table 1 below:

**Table 1 Capabilities Beginning Student Class Experiment and Class Control**

Criteria	The range of Value	Class Experiment		Class Controls	
		(f)	(%)	(f)	(%)
Bad	0 - 100	0	0	0	0
Very Less	101-200	0	0	0	0
Less	201-300	5	12.5	11	27.5
Enough	301-400	20	50	21	52.5
Good	401-500	15	37.5	8	20
Very Good	501 - 600	0	0	0	0
Perfect	601-700	0	0	0	0
<b>Total</b>		<b>40</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source: The results of the study in 2018.

Early ability to write scientific results in the experimental class and control class is almost the same that is enough. This conclusion is based on the results of data analysis: (1) The majority have sufficient criterion value; (2) The average difference is small and both the sufficient criteria; (3) Distribution of values at the same criteria (less just, and good). The results of the initial value of the second class to write scientific papers proved by independent samples t-test at 95% significance level obtained value of

0.852. The significance value greater than 0.05 means insignificant that shows both the variance (the value of scientific work) homogeneous. The results showed that the ability of the students in the experimental class and the same control.

b. End of Student Writing Ability in Scientific

The students' is ability to final grades given to the students in the experimental class and control class that already obtain treatment. Fit end scientific writing at the beginning. Data final ability students to write scientific papers in the experimental class and control class can be seen in table 2 below:

**Table 2. Ability Students End Experiment Class and class control**

Criteria	Spanning Value	Class Experiment		Class Control	
		(f)	(%)	(f)	(%)
Poor	0-100	0	0	0	0
Very Less	101-200	0	0	0	0
Less	201-300	0	0	6	15
Self	301-400	0	0	25	62.5
Good	401-500	34	85	9	22.5
Very Good	501-600	6	15	0	0
Perfect	601-700	0	0	0	0
<b>Total</b>		<b>40</b>	<b>100</b>	<b>40</b>	<b>100</b>

Source: The results of the study in 2018.

Results of scientific writing ability to end the highest value and the lowest experimental class 417. class 598 controls get the highest score and the lowest 495 285. Table 2 shows that the experimental class students are in the good criterion of 85%, whereas in the control class with enough criteria (62.5%). Experimental class increased enough criteria to be good, while the control class has the same scientific writing abilities as early ability is criteria enough. This indicates that the application of research-based learning better in improving scientific writing skills of students.

c. Gain Score

Applications research-based learning used in this study to enhance the students' ability in scientific writing. Indicators of the ability to write scientific papers analyzed from the gain score (the difference between prior knowledge and the ability of the end of the experimental class and control class). The average value of each part of the ability to write scientific papers can be seen in Table 3 below:

**Table 3 Average Score Every Indicators Writing Ability of Scientific**

Indicators Writing Ability Scientific	Average value of the Student					
	Class Experiment			Class Controls		
	MI I	MI II	Gain Score	MI I	MI II	Gain Score
General	35,17	46.00	10.83	38.78	44,33	5.55
Title	23.53	31.96	8.43	19.82	24.96	5.14
Introduction	57.73	79.96	22.23	66,67	68.42	1.75
Reader Review	51,43	76.81	25,38	50.00	65.00	15
Method	47.19	77.81	30.62	53.50	60.00	6.5
Results and Discussion	61,53	96,53	35	65.58	76.39	10.81
Closing	34.67	44.96	10.29	35.94	40.28	4.34
Bibliography	17.15	27.53	10.02	16.97	22.24	5, 27
Total	328.4	478.56	152.8	347.36	401.62	54.36

Source: The results of the study in 2018.

Table 3 shows that the experimental group experienced an increase in the introduction, literature review, methods, and the results and discussion. Four indicators are increasing due to the use of research-based learning applications in which there are observations and interviews. Students are able to practice what research methods designed to indicators in chapter 3.

Grade control increase in the study of literature, methods, and the results and discussion. Data collected in the control class is secondary data in the form of documentation. The increase stemmed from a discussion process in which students make better in formulating methods. The increase in the value of the control class is not too big. This indicates that the writing of scientific research-based learning helps students than discussion and question and answer.

The results of gain score further tested by using a parametric statistics. Test the hypothesis using independent sample t-test. The result of the calculation with a significance value of 0.002 ( $<0.05$ ), which means the application research-based learning has influence in student writing.

## 2. Discussion

Application research-based learning has an influence on students' scientific writing skills. The success of this application can be viewed on the process and results of the activity of students in understanding, presenting, and practicing the preparation of scientific papers as a result of the inquiry. This is consistent with the findings of Guinness (2012), that Advocates for research-based learning have pointed to the need to develop an enthusiasm for critical inquiry, resourcefulness and creative solutions in undergraduate students.

Application research-based learning influence on scientific writing skills of students allegedly due to the following. First, Research-based learning has the scientific payload in the form of data and evidence from the field directly. Data and facts are known to students in the field stated in the introduction, literature review, and discussion. Fact environmental education on environment capacity as the background on the observation that includes data and documentation. The fact of the data easier for students in formulating problems and objectives of the research.

Second, students become more active in their learning by collaboration in the preparation of the report so that they have a better understanding of scientific writing. Forms will be more diligent student liveliness discuss in building knowledge in the right direction. Students are more motivated to know how to find data, scientific journals, and reference books in solving scientific reports. This process is more focused on collaborative student activities. According to Johnson (1990), that the willingness to learn will be higher when students can freely and active during learning. Findings Xiaolai Qinghuai Liu and Li (2011), emphasized that the research-based learning can improve exploration capability of learning, motivation, and the quality of student innovation.

Third, students interested in the application of research-based learning will be focused and able to think critically in solving scientific reports. Student interest in the activities of field observations and completion report influencing their Prominent in the collection of scientific reports in a timely manner. This is in accordance exposure Gulo (2002), that one of the principles to create learning conditions in order to optimize student learning activities is to integrate physical and intellectual.

Fourth, the stages of research based learning applications include: (1) Provide the problem based on facts on the ground; (2) Develop group; (3) Develop a research plan with the support of data, books, and journals; (3) To formulate a question or hypothesis of the study or research subjects; (4) Develop methods or research methodologies; (5) to collect data; (6) Analyze the data; (7) Interpreting the results of data analysis in groups; (8) Prepare scientific reports; (9) Present the results and scientific reports; and (10) Publishes scientific

reports or scientific articles. All of these stages have the consistency and relevance related to the development of geographical science actualization. This is supported by the findings of Haviz (2018), that the development of research-based learning has internal consistency and relevance in the development of scientific knowledge to produce good theory and actual character.

Control class using discussion and question and answer method to increase, but not too big. Specific improvements in indicators of literature review, methods, and the results and discussion. This suggests that the ability to write a scientific use of research-based learning is better than the method of discussion and question and answer.

## CONCLUSION

Application research-based learning affects the students' ability in scientific writing on the subject of environmental education. This is evidenced by the results of hypothesis testing (*t-test*) gain score of scientific writing skills with a significance value of 0.002. The average scientific writing skills in the experimental class are better than the control class. Indicators that increased the ability of students in the experimental class lies in the introduction, literature review, methods, and the results and discussion.

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