



## EFFECT OF PROJECT BASED LEARNING APPROACH CONTEXTUAL TO CREATIVITY OF STUDENT OF MADRASAH

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### ABSTRACT

The research is intensively analyze influences application of project based learning (PjBL) contextual approach in Madrasah (unique school), that is islamic school with a lot of lesson and student's activities. The research is purposed are to analyze the increase in students' creativity in the application of PjBL contextual approach. Research method that is used is *quasi-experimental nonequivalent (pre-test and post-test) control-group design* research. The population of this research are students of exact ten grade MAN 2 Ponorogo. Taking sample done by using random sampling technique and the classes chosen X MIA 5 as the control class and X MIA 6 as the experiment class. Variable measured in this study were creativity. Research data analysis technique using N-Gain normalized and regression. The research results obtained by increase students' creativity gain of 0,39. Based on the results of study, it can be recommended that the project based learning contextual approach model in effective learning order to improve creativity.

Keywords: *Project Based Learning* ,Contextual , Creativity

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### INTRODUCTION

There are many lesson and full daily activities make student of MAN 2 Ponorogo less concentrate in the following the lesson, including physics. This leads makes them not focus on learning in the classroom. They are not focus of their study because have many thought so lazy thinking especially of general lesson with numeric. Students interested learning recitation without thinking and motor activity that is religious lessons, sports and extracurricular activities.

The condition is not focused in the following general lesson make students of MAN 2 Ponorogo less mastering physics. These led to student's creativity in physics is low. Student just looked physics as numeric such as mathematics. Yulis Kusmono Winarti, physics teacher of MAN 2 expression if science's product of student are rare. They just have less science's product from extracurricular Scientific Group of Youth (KIR), not from physics lesson.

The importance of creativity in teaching has been disclosed Yance (2013) that creativity and social activity can improve learning achievement by using project-based learning (PjBL). Research on creativity also performed Lau (2012) by designing a creative project-based learning can improve student achievement in creativity, and fosters creative ability of students to think independently and innovation. This model can effectively improve the learning effect of the creativity of students and achieve of student power. Besides discussed

Lau (2012), Sambada (2012) found that creativity can affect the ability of solving problems in contextual learning. The higher the creativity, the higher problem solving ability.

Based on the studies that have been there, the problem can be solved with Project Based Learning (PjBL) and contextual learning. PjBL is learning to use the project / activity as media (Daryanto, 2013: 23). Focus research on PjBL is based on the fact that students of MAN 2 Ponorogo ever be a champion one in scientific paper Sunan Giri's Dormitory with the theme "Mengkudu's Electricity" in June 2013. So there have been students of MAN 2 Ponorogo succes in science's project on creativity that is Lely Fransiska Dewi, Hadi Choirul Anwar, dan Yonatan Yulius Anggara.

PjBL can be done in many subject's physics such as electrical, dynamic, fluid, motion kinematics and dynamics of motion. The subject allows for the study between the months of March-April 2015 is a fluid material, heat and optical instruments. Material optical instruments chosen because according Suniati (2013) that student have miss conception when studying optics, reflection and refraction. This miss conception can be overcome with a contextual approach (Suniati, 2013).

Based on the description of the problem students of MAN 2 Ponorogo and research that may be done, this research will discuss Effects of Project Based Learning Approach Contextual (PjBLPK) To Improve Creativity

of Students of Madrasah. Decision taken based on the research validation, observation, tests and questionnaires. Analysis of result using statistical and described.

**METHODS**

This type of research to be carried out is a quasi-experimental research nonequivalent (pre-test and post-test) control-group design. This study selecting a sample of experimental classes and control classes from the population. Experimental class and control class from 6 class natural science students (MIA) of MAN 2 Ponorogo by random sampling. This study assumes that all students class X of natural science students of MAN 2 Ponorogo have the same capability. Pre-tests and post-tests given in the experimental class and control class, but PjBLPK only treated in the experimental class.

Student’s creativity seen from assessment in terms of creativity when they answering test problem solving abilities. Creativity in answering test refers to the four components of creativity Torrance Test (Mokaram, 2011: 39): 1) fluency, 2) flexibility; 3) elaboration, and

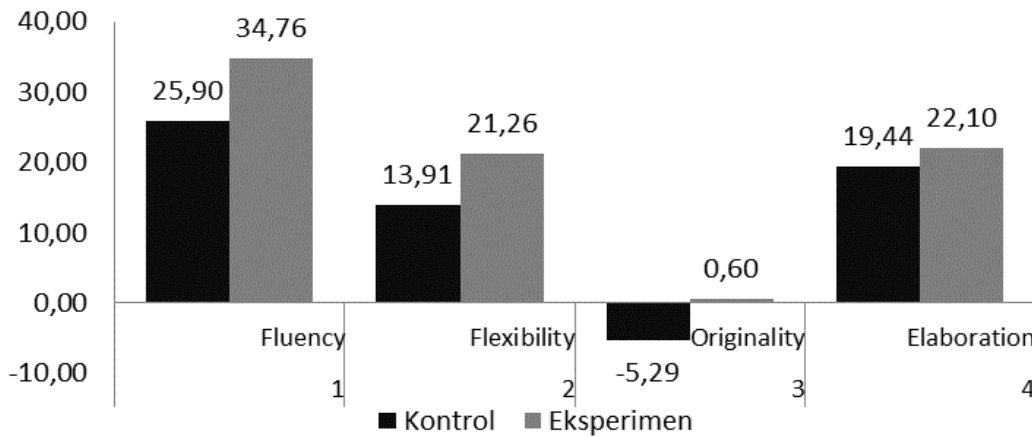
4) Originality. Assessment of creativity while before (pretest) and after (posttest) n-gain analyzed by using the following equation:

$$\langle g \rangle = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}} \quad (\text{Hake, 1999})$$

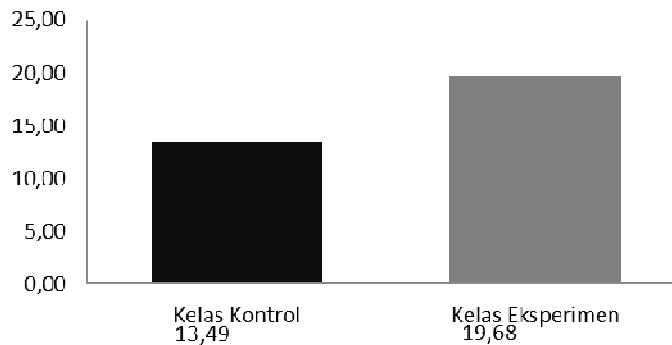
Interpretation of the calculation of n-gain creativity of students from further tests were analyzed by descriptive quantitative. The result strengthened by project assessment, observation sheets and questionnaires creativity attitude. Increased creativity known if it meets the criteria of medium and high. Comparison result in experimental class in comparison and control class to see differences increase.

**RESULTS AND DISCUSSION**

Student’s creativity involves scores of test creativity, creative attitude, and project assesment. Difference result from the three measurements to determine the improvement seen. The average increase in all assessments of creativity shown in Figure 1 and Figure 2.



**Figure 1.** The average increase in creativity of tests, creative attitude, and project assesment



**Figure 2.** The average increase overall creativity

The biggest improvement seen in fluency component and the smallest increase in originality. Average component fluency experience learning PjBLPK the experimental class average 34.76 and the control class average 25.90. Originality after experiencing learning component PjBLPK the experimental class is very low at only 0.60. Originality and control classes who experience learning PjBLPK actually decreased by -5.29. Increase and decrease is due to the courage of students, use of materials unusual project, the imagination of pupils and students enthusiastic about trying new things different in experimentation classes

and control classes as a result of differences in the treatment of learning.

Although there are components that declined in the control class, but overall, creativity control class and experimental class increased as shown in Figure 2. The increase in the experimental class 19.68 and increased control class 13.49. Calculation of the increase in the overall assessment of creativity is supported by the analysis of N-Gain stating criteria for "Low" for the control classes and the criteria of "Medium" for the experimental class. The calculations presented in Table 1 and Table 2.

Table 1 N-class creativity Gain Control

Assesment	No	Componen	Beginning	Ending	<g>	Criteria
Test	1	<i>Fluency</i>	12,15	66,04	0,61	Medium
	2	<i>Flexibility</i>	8,70	31,50	0,25	Low
	3	<i>Originality</i>	0,00	10,50	0,11	Low
	4	<i>Elaboration</i>	0,00	30,00	0,30	Medium
Creative Attitude	1	<i>Fluency</i>	76,9	76,79	0,00	Low
	2	<i>Flexibility</i>	71,75	76,79	0,18	Low
	3	<i>Originality</i>	75,36	76,79	0,06	Low
	4	<i>Elaboration</i>	76,43	83,93	0,32	Medium
Project	1	<i>Fluency</i>	61,11	85,04	0,62	Medium
	2	<i>Flexibility</i>	56,25	70,14	0,32	Medium
	3	<i>Originality</i>	97,22	69,42	-10,00	Low
	4	<i>Elaboration</i>	76,39	97,22	0,88	High
		Avarage	51,02	64,51	0,28	Low

Table 2. N-Gain creativity experimental class

Assesment	No	Componen	Beginning	Ending	<g>	Criteria
Test	1	<i>Fluency</i>	13,82	71,88	0,67	Medium
	2	<i>Flexibility</i>	0,90	44,70	0,44	Medium
	3	<i>Originality</i>	0,21	8,82	0,09	Low
	4	<i>Elaboration</i>	1,00	38,00	0,37	Medium
Creative Attitude	1	<i>Fluency</i>	75,09	85,71	0,43	Medium
	2	<i>Flexibility</i>	78,21	85,00	0,31	Medium
	3	<i>Originality</i>	71,79	78,21	0,23	Low
	4	<i>Elaboration</i>	74,29	85,71	0,44	Medium
Project	1	<i>Fluency</i>	50,00	85,59	0,71	High
	2	<i>Flexibility</i>	62,50	75,69	0,35	Medium
	3	<i>Originality</i>	82,64	69,42	-0,76	Low
	4	<i>Elaboration</i>	82,11	100,00	1,00	High
		Avarage	49,38	69,06	0,39	Medium

Based on the test results are consistent with observations creativity, creative attitude, and assessment of the project, it was concluded that increased student creativity through learning PjBLPK. The questionnaire results in this study is not used as a basis for conclusions because the questionnaire not show any significant improvement.

The results showed an increase creativity in experimental class higher. This increase occurred after students had six PjBLPK learning. This is consistent with an increase in creativity Luthvitasari invention, et al (2013) when examining the effect of the project on the ability of creative thinking, critical thinking and generic science.

Increasing of creativity is not only seen the value in general, but also be seen from the values of each component of creativity such as fluency, flexibility, originality, and elaboration. The value of creativity of the pre test and post test also showed a change in the category of student's creativity. When pre-test, student's creativity from experimental class and control class categorized "Very Low", and after post test changes into various categories of creativity. After heading the test, the experimental class students with creativity category appeared fairly (50%) and high category (5%). Creativity student high category only appears in the experimental class, while the control class only appears students with sufficient category (37%). Increased creativity that occurs in experimental class and control class according to research Yance (2013) which concluded project learning can enable students including improving social skills, creativity, and learning outcomes.

Increased creativity seen from the value of creativity in line with the increase in the creativity of observation. Creative attitude at the first meeting of the control class show is 76.29 and 78.93 for the sixth meeting so as to have an increase in 2.64. This increase shows that the difference in learning more PjBLPK can improve the attitude of learning PIBLPK creative than usual. Changes in attitude as a result of project-based learning has also been discussed by Baran et all (2011) which showed the difference in the attitude of the students after attending a physics-based learning project on the computer.

Stability enhancement creative attitude in class experiments show that learning can PjBLPK continuously improve creative attitude. Conditioning class for continuous running PjBLPK thus enhancing creativity according to Mishra (2013) which states conditioning learning environment can enhance students' creativity.

The increase seen in tests of creativity and creative attitude is reinforced by the observation project assessment. The first project that is making Charta Eye and Eye Defects and projects 3 that is making of star's telescope. There is a difference in the improvement of project assessment and control class experimental class, but not too far. Assessment projects increased 15.89

experimental class and control class 15.27. Although only a small difference, but still experimental class has the distinction of a higher increase. Creativity seen an increase in the project, indicating the quality of student cooperation in resolving a problem. Cooperation is completing a project in accordance with Hilvonen and Ovaska (2010), which shows the quality of project completion is determined by the cooperation of students and teachers the ability to direct giving rise to the motivation to complete the project.

Interpretation of the components of creativity in project assessment shows that the largest component of the increase in fluency. Elaboration experimental group showed the control class 35.59 and 23.93. Originality components decreased. Originality of the experimental class and the control class 27.80 - 13.22. Components and component flexibility elaboration control class and experimental class revolves around the same figure.

Creativity questionnaire were not used as a basis for decisions about improvement of creativity. Conclusions do not involve an increase in creativity with creativity questionnaire results due to the result in Figure 1. Improved control class creativity of the questionnaire creativity by 1.92 and 0.80 increase in the experimental class creativity. The small size of this increase shows no significant difference in the results of the questionnaire creativity both for the experimental class and the control class.

Increased creativity component includes fluency, flexibility, originality and elaboration. Improved fluency is affected by the courage of students to perform a presentation and ask that a form of motivation to work when learning takes place. Flexibility appears when students doing a project that uses unusual materials they use as loops. Originalities student appears when they maximize their imagination. It happened when they describing parts of the eye in the eye Charta project. Elaboration develops maximum at PjBLPK when they interested try new things when doing a project that is trying to use telescope to see objects located far away.

Based on the description of creativity both in terms of tests, observations creative attitude, and assessment of the project, it was concluded PjBLPK can enhance student's creativity of MAN 2 Ponorogo. Learning PjBLPK showed increased creativity is higher than the PjBL learning without incorporating elements contextual approach. Increased creativity through this PjBLPK according to research Andyawati (2013) which revealed the PjBL can increase creativity. Lau (2012) has also been reported that learning with the project will improve student achievement in creativity, and fosters creative abilities of students in independent thinking and innovation.

## **CONCLUSIONS AND RECOMMENDATIONS**

Conditions unfocused student of MAN 2 Ponorogo makes them less learning physics. This leads to

a state of less concentration, low creativity. This condition can be overcome by learning Contextual Approach Project Based Learning. Based on the analysis and findings in the field can be concluded PjBLPK learning can improve student creativity MAN 2 Ponorogo with medium criteria. Increased creativity component includes fluency, flexibility, originality, and elaboration.

Based on the findings and experiences in the field, applying PjBLPK need some advice to achieving and progressing learning well. Some suggestions to consider include:

1. Questionnaire given should be validated by psychology and tested several times before used for research.
2. A similar study should add interviewing techniques to dig deeper findings in the field.
3. Project given the more sought can generate unique and original ideas from student to student originality creativity component can be increased significantly.

## REFERENCES

- Andyawati, N. D. M. S. 2011. Pembelajaran Berbasis Proyek Untuk Meningkatkan Kreativitas Dan Hasil Belajar. *JPP Undiksha*, 44 (1)
- Baran, M., Maskan, A.K., & Toz, N. 2011. Research on the Effect of Certain Variables Chosen and Technology-Supported Project-Based Learning Approach on 11th-Grade Students. *Eurasian Journal of Physics and Chemistry. Education*. 3(1):1-13, 2011. ISSN: 1306-3049.
- Daryanto. 2014. *Pendekatan Pembelajaran Saintifik 2013. Cetakan 1*. Yogyakarta : Gava Media.
- Hake R, R. 1999. Analyzing Change/Gain Score. *American Educational Research Association's Division Measurement and Research Methodology*.
- Hilvonen, J dan Ovaska, P. 2010. Student Motivation in Project-Based Learning. *International Conference on Engaging Pedagogy 2010 (ICEP10) National University of Ireland Maynooth, September 2, 2010*.
- Lau, Shi-Jer., Chung, C. C., Dzan, W. Y., & Shih, R. C. 2012. Construction of a Creative Instructional Design Model Using Blended, Project-Based Learning for College Students. *Creative Education 2012*. 3(7): 1281-1290 Published Online November 2012 in *SciRes* (<http://www.SciRP.org/journal/ce>).
- Luthvitasari, N., DP, Ngurah, M., Linuwih, S. 2013. Implementasi Pembelajaran Berbasis Proyek Pada Keterampilan Berpikiran dan Kemahiran Generik. *Sains. Innovative Journal of Curriculum and Education Technology*, 2(1).
- Mishra, P., Fano, C., & Henriksen, D. 2013. Creativity, Self-Directed Learning and the Architecture of Technology Rich Environments. *TechTrends January 2013, Volume 57, Issue 1, pp 10-13. DOI 10.1007/s11528-012-0623-z. Springer US*.
- Mokaram, A. K., Al-Shabatat, A. M., Fong, F. S., & Abdallah, A. A. 2011. Enhancing Creative Thinking through Designing Electronic Slides. *International Education Studies Vol. 4, No. 1; February 2011*.
- Sambada, D. 2012. Peranan Kreativitas Siswa Terhadap Kemampuan Memecahkan Masalah Fisika Dalam Pembelajaran Kontekstual. *Jurnal Penelitian Fisika dan Aplikasinya (JPFA) Vol 2 No 2, Desember 2012 ISSN: 2087-9946*.
- Suniati, N. M. S., Sauda, W., & Suhandana, A. 2013. “Berbantuan Multimedia Interaktif Terhadap Penurunan Miskonsepsi (Studi Kuasi Eksperimen Dalam Pembelajaran Cahaya Dan Alat Optik Di Smp Negeri 2 Amlapura).” *e-Journal Program Pascasarjana Universitas Pendidikan Ganesha Program Studi Administrasi Pendidikan (Volume 4 Tahun 2013)*.
- Yance, R. D., Ramli, E., & Mufit, F. 2013. Pengaruh Penerapan Model *Project Based Learning* (PBL) Terhadap Hasil Belajar Fisika Siswa Kelas XI IPA SMA Negeri 1 Batipuh Kabupaten Tanah Datar. *PILLAR OF PHYSICS EDUCATION, Vol. 1*.