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Influence Of Inquiry Based Science Education (IBSE) Approach From La main à la pâte (LAMAP) on Student Creativity and Communication Skill in Global Warming Subject

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Abstract

Inquiry Based Science Education (IBSE) approach from La main à la pâte is similar to K-13 in Indonesian curriculum. This research aimed to know influence of IBSE on students creativity skill dan communication skill of student. The partisipants were grade VII students in SMP N 5 Yogyakarta. This research is quasi experimental design. Data from this research has been analysed by using one way ANOVA. The results showed that Inquiry Based Science Education (IBSE) approach from La main à la pâte could be increase students creativity and communication skill in SMP N 5 Yogyakarta.

Keywords: *IBSE (Inquiry Based Science Education) Approach from La main à la pâte, Creativity, communication skill*

Introduction

Curriculum 2013 (K-13) implemented in Indonesia is similar to Inquiry Based Science Education (IBSE) from Lamap/ La main à la pâte. Inquiry Based Science Education (IBSE) have The La main à la pâte 10 principles :

- a. Children observe an object or phenomenon in the real world and experiment with it.
- b. In the course of their investigations, children use arguments and reasoning, pooling and discussing their ideas and results, constructing their knowledge.
- c. The activities the teacher proposes to pupils are organised in sequences within a teaching module. They are related to official programmes and give pupils a certain autonomy.
- d. A minimum of two hours a week is devoted to the same theme over several weeks. Continuity of activities and pedagogical methods is ensured throughout the school programme.
- e. Each pupil keeps an experiment book, written and updated in his own words.

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- f. The main objective is a gradual appropriation by pupils of scientific concepts and techniques, along with consolidation of oral and written expression.
- g. Families and/or the neighbourhood take part in work done in class.
- h. Locally, scientific partners (universities, engineering schools) support class work by making their skills available.
- i. Locally, teachers' colleges make their pedagogical and didactic experience available to teachers.
- j. Teachers can obtain the teaching modules, ideas for activities, and answers to various questions at the website www.lamap.fr They can also take part in collaborative work by exchanging ideas with colleagues, trainers and scientists. (www.lamap.fr)

There are many problem with implementation K-13 in class room management . One of the problem is that students have less creativity skill and communication skill. This problem was caused student characteristic, student usually keep silent when teacher ask a question was call uncomuncative learner. This is different with expectation from K-13. The learning outcome from K-13 which demand affective goal for student must have a creative thinking, critical thinking and communication skill, was call HOTS (Higher Order Thinking Skill). The benefit of Inquiry Based Science Education (IBSE) approach from LAMAP in management classroom could establish creative skill and communication skill of student.The syntax from (Inquiry Based Science Education) IBSE from Lamap has four steps, That step is raising question, making hipotesis, experience, communication and making conclution. This syntax are similar with K-13, with scientific approach. The Diferent Characteristic of Inquiry Based Science Education (IBSE) are student have autonomy to create note book. Student will have creativity skill from learning activity with IBSE Approach. The note book from student can used to measure creativity skill like authentic assessment ini K-13.

Various factors influence the effectiveness of inquiry based instruction and the school must consider all of this to develop and implement inquiry based instruction (Pi-Hsiang Wang at all, 2015). It is make researcher want to know about influence Inquiry Based Science Education from Lamap to creativity skill and communication skill of student in SMP N 5 Yogyakarta.

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Research Metodologies

The kind of this research is quasi experimental design. There are two class ini this research, experimental class and controlled class with research design nonequivalent control group design. Sample in this research reach with randoming sampling technique. The treatment of experiment class is student learn global warming with Inquiry Based Science Education (IBSE) approach which controlled by control class without any treatment. VII-6 was became experiment class and VII-8 was became control class. The analysis of the data prescale and postscale of creativity and communication skill with one way ANAVA, then qualitative content analysis method (Creswell, 2009) used for observation instrument and the note book of student.

Results

Inquiry Based Science Education from Lamap was implement with foru syntax in global warming subject. Student learn global warming was started raising question about global warming. All of the question from student written in note book. Then, students were making hipotesis about their question. After making hipotesis, student must created experiment to answer question and hipotesis. Finally, student make conclusion about their experiences and presentation in class.

Creativity and communication skill of the student in SMP N 5 Yogyakarta was categories in adequated. This phenomena was not appropriate with expectation K-13. Nevertheless the student in SMP N 5 Yogyakarta are very fast learner but they must have soft skill. The one of soft skill are creatifity skill and communication skill. Data of the prescale score of creativity skill as presenting in following Table 1. Data of the prescale score of communication skill as presenting in following Table 3.

Table 1. PrescaleScore of Students Creativity Skill

class	N	Prescale		
		Min	Maks	Average
control	30	49	70	58,23
Experiment	31	45	68	58,71

Based on Table 1, we can find nothing different between experiment class and control class. The average for both the class in 58.

Table 2. Postscale Score of Students Creativity Skill

Class	N	Postscale		
		Min	Maks	Average
Control	30	49	68	59,10
Experiment	31	55	69	61,45

Table 2 shows the postscale of creativity score. The average control class is 59.10 and the experiment class is 61.45. Compare with prescale postscale showed increased score. Product of this learning with IBSE Approach is Note Book.

Table 3. Prescale Score of Students Communication Skill

Class	N	Prescale		
		Min	Maks	Average
Control	30	58	75	66,30
Experiment	31	51	79	64,97

The average prescale score of communication skill of control class were 66.30 and experiment class were 64.97. The corresponding of postscale score of control class were 67.10 and experiment class 69.55 which shows in following Table 4. Table 5 shows score categories of observation. There are four categories to collect data. The result of observation can find in Table 6.

Table 4. Postscale Score of Students Communication Skill

Class	N	Postscale		
		Min	Maks	Average
Control	30	59	80	67,10
Experiment	31	64	77	69,55

Table 5. Score Categories of Observation

No	Cuantitatif score	Categories
1	$17,5 \leq X \leq 21$	Excellent
2	$14 \leq X \leq 17,5$	Good
3	$10,5 \leq X \leq 14$	Average
4	$7 \leq X \leq 10,5$	Poor

Table 6. Communication Skill Score from Observation

No	Observation sheet	Control Class		Experiment class	
		Average	Categories	Average	Categories
1	1	15,656	Good	17,938	Excellent
2	2	16,031	Good	18,344	Excellent
Average		15,843	Good	18,141	Excellent

Based on the calculation of average scores, then obtained an average score of communication skill in control class were 15.843 and categorized (good) while for the experimental class has an average score at 18.141 and categorized into excellent or very good.

Hypothesis test was use One Way ANOVA with Inquiry Based Sceince Education (IBSE) Approach as deppendent variable. The result from One way ANOVA can find in Table 7 for creativity skill.

Table 7. The ANOVA Test Result Prescale Score of Creativity

	Sum of squares	df	Mean square	F	Sig
Between Groups	3,459	1	3,459		
Within groups	1657,75	59	28,098	0,123	0,727
Total	1661,21	60			

Results prescale creativity values obtained from the ANOVA test is a significance of 0.727 and this value is greater than 0.05 (> 0.05), so according to the rules of decision-making H_0 is accepted and nothing differences between the control class and experimental class in creativity. Based on the calculation of the value of creativity can be said prescale both classes have the same level of creativity. F value tables for $df 1 = 1$ and $df 2 = 59$ is 4.00 while the F count obtained at 0.123 This value is smaller than F table so that by the rules of the decision-making H_0 is accepted and nothing differences between the control class and experimental class in creativity , ANOVA test results creativity postscale score are presented in the following Table 8

Table 8. The ANOVA Test Postscale Score Result of Creativity

	Sum of squares	df	Mean square	F	Sig
Between Groups	84,311	1	84,311		
Within groups	1128,38	59	19,125	4,408	0,04
Total	1212,69	60			

Based on calculations performed on values obtained creativity post skala 0,040 significance of this value is less than 0.05 (<0.05), then H_0 is rejected. The value of F table 4.00, while the calculated F value obtained was 4,408 so that the value of F count larger than F table. This conclude was H_0 is rejected, then there is a positive effect of the application of the Inquired Based Science Education (IBSE) approach against the creativity of the students in the subject matter of global warming. ANOVA test results of students' products are presented in the following Table 9.

Table 9. The ANOVA Test Results of Student Product

	Sum of squares	Df	Mean square	F	Sig
Between Groups	40,673	1	40,673		
Within groups	584,967	59	9,915	4,102	0,047
total	625,639	60			

Based on the ANOVA test results conducted on the product of students, obtained F count equal to 4.102 and 0.047 significant. F count that is greater than the value of F table so according to the rules of decision-making so that H_0 is rejected. While based on the significance of the values obtained from the calculation is smaller than 0.05 so according to the rules of decision-making so that H_0 is rejected. It can be said that there is a positive effect of the application of the Inquired Based Science Education (IBSE) approach for the creativity of students, especially global warming material. The ANOVA Test result of Communication Skill prescale score presented in Following Table 10.

Table 10. The Result ANOVATest Prescale Score of Communication Skill

	Sum of squares	df	Mean square	F	Sig
Between Groups	27,06	1	27,06	0,749	0,39
Within groups	2131,27	59	36,123		
total	2158,33	60			

ANOVA test result of the communication prescale was obtained a significance value of 0.390 where the value is greater than 0.05 that is based on the hypothesis made so that H_0 is accepted. There is no difference in the ability of communication between the control class and experimental class. As for the value of F table for $df_1=1$ and $df_2=59$ is 4.00 then calculated F value is smaller than F table that is equal to 0.749 so according to the rules of decision-making so H_0 is accepted. There is no difference in communication capability and class control class experiment. While the results of ANOVA postscale score of communication skill presented in Table 11

Table 11. The Result ANOVATest Postscale Score of Communication Skill

	Sum of squares	df	Mean square	F	Sig
Between Groups	69,596	1	69,596	4,377	0,041
Within groups	938,076	59	15,9		
total	1007,67	60			

Based on tests conducted Anova obtained significance value of 0.041 where the value is less than 0.05 (<0.05) so H_0 is rejected. F count obtained at 4.377 This value is greater than the F table is 4.00 to $df_1 = 1$ and $DF_2 = 59$ so that based on the calculation then H_0 is rejected

Based on data analysis with one way ANOVA test, the approach applied inquired Based Science Education (IBSE) of La Main à La paté (Lamap) in the subject matter the global warming significantly positive effect on students' creativity. Decisions can be taken based on testing

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conducted on a scale of creativity and creativity assessment sheet is to be applied inquired approach Based Science Education (IBSE) of La Main à La paté (Lamap) in the subject matter of global warming then there is a positive influence on the students' creativity.

Based on the results prescale score was known that early communication skills of students is the same. For postscale F count larger than F table so that H_0 is rejected, while the significance value less than 0.05 so that H_0 was rejected and H_a accepted. The results of the observation sheet showed that the experimental class communication skills better than the control class, namely the category of excellent or very good. As for the control group the average value of the communication observation sheet shows that the communication skills of students in the category of good or good. The second is based on the average it can be concluded that $\mu_1 > \mu_2$ so that H_a was accepted. Decisions can be taken based on testing conducted on a scale of communication and observation sheet that communication with the approach applied inquired Based Science Education (IBSE) of La Main à La paté (Lamap) in the subject matter of global warming then there is a positive impact on students' communication skills.

Conclusion

Our result indicated that Inquiry Based Science Education (IBSE) from LAMAP had a positive influence on student creativity and communication skill. The average score of prescale and postscale was increased.

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