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THE EFFECT OF LEARNING *PROBLEM POSING* TO ABILITY UNDERSTANDING DRAFTMATHEMATICS STUDENT CLASS XI IPA SENIOR HIGH SCHOOL AL-FALAH

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Abstract
The aims of this study were (1) to find out the differences in the ability to understand mathematical concepts between students in classes who received problem posing learning and students in classes who received conventional learning. (2) Knowing the differences in the ability to understand mathematical concepts between students in the high, medium and low groups in terms of the level of mastery of mathematics. (3) Knowing the interaction between the learning model and the level of mastery of mathematics in the ability to understand mathematical concepts. This research is an experimental research with research units determined based on learning groups and the level of students' mastery of mathematics. Learning groups are divided into two, namely problem posing learning and conventional learning. While the level of students' mastery of mathematics is divided into high, medium and low groups. The population in this study were all students of class XI IPA at SMAN Al-Falah. The research sample was class XI IPA 1 as the experimental class and class XI IPA 2 as the control class. Based on the results of data analysis, the following conclusions are obtained: (1) There are differences in the ability to understand mathematical concepts between students who receive problem posing learning and students who receive conventional learning. (2) There are differences in the ability to understand mathematical concepts between students in the high and medium and high and low groups. But there is no difference in the ability to understand mathematical concepts between students in the medium and low groups.

Keywords *: Problem Posing Learning , Ability to Understand Mathematical Concepts*

INTRODUCTION

According to presumption publicgeneral, that Wrong One lesson Which considered difficult on level education base and medium is mathematics.Pg This Because mathematics relates with ideas And draft-draft Which abstract. As stated by Hudoyo (1988:3) that mathematics deals with ideas idea and concepts Which abstract Andhierarchically arranged and reasoned deductive. Because of the mathematical concept that arranged in a manner hierarchy, so in Study mathematics No can There is steps/stages draft Which skipped. Mathematics should study in a manner systematically and regularly and must be presented with structure Which clear And must customized with developmentintellectual student as well as ability precondition Which has has. Withthereby learning mathematics will be done effectively and efficient.

Because concepts inmathematics own linkages betweenOne with Which other, so student must more Lots given chanceto see the relationship with the material another. It is intended that students can understand math material in a manner deep. For example, If student want to understand draft integral (anti derivative) so especially formerly he must capable understand draft derivative somethingfunction.

Thereby Also if student want to understand draft derivative so especiallyformerly must understand the concept limits.

Importance understanding draftthe math is seen in the first objective learning mathematics according to Ministry of National Education (Permendiknas no 22 year2006) namely understanding mathematical concepts,explain the interrelationships between concepts and apply draft or algorithm in a manner flexible, accurate, efficient And appropriatein problem solving. In accordance with the objective learning mathematics in on so after process learning student expected to understand a concept mathematics so that can useability the in faceproblems mathematics. So can said that understanding draft is part Which most importantin learning mathematics. Matter This like Which stated by Zulcardi (2003:7) that "eye math emphasize on draft". It means in learn mathematicsstudents must understand the concept of mathematics especially formerly so that can finish questions And capable apply learning the in world real.

Based on the explanation above then understanding draft need implanted to students from an early age, namely since child the Still Sit down in seatschool base. They demanded understand about definition, understanding, methodtroubleshooting and operationmathematics in a manner Correct. Because matter the will become stock in learn mathematics on leveleducation Which more tall.According to Slameto (2003:76)mathematics learning is very determinedby strategy And approach Whichused in teaching mathematics Alone. Efficient learning can be achieved if you can use learning strategies right. Therefore teachers are required For professional in operate his job. Teacher Which professional is teachers who always think will be brought to where child he taught, as well as with What direct child he taught For reach results Which wanted with various learning innovation.

Wrong One approach learning innovative Which can applied in math learning for develop ability understandingdraft mathematics student isusing a *problem-posing approach*. Learning with a *problem approach posing* is learning Which emphasize on student For form/submit question based on information or situation Which given. Information Which There is processed in thoughtAnd after understood so participant educatewill be able to ask questions. With exists task submission question (*problem posing*) will cause formation understanding draft Which more Excellenton students to the material that has been given. Activity That will make students more active And creative inform his knowledge And onFinally understanding student to draft mathematics more students Good Again.

METHOD STUDY

Study This is study experiment with applying learning *problem posing* in math. Research units determined based on grouplearning And level mastery student math. Differentiated learningbecome two type that is learning with *problem posing* and learning conventional. Whereas level mastery mathematics student distinguished become group tall, currently And low. Study This use *design group control pretest-posttest* . In design This bunch sample chosenrandomly assigned class (A) from a certain population.Then the samples are grouped into two groups, namely the experimental group and control group. Next second group Good group experiment nor group control given pretest (O) Which The same. Group experimentsubject to variable treatment certain (X)in period time certain whereas group control given learningnormal. Then the two groups given the same posttest (O). Treatment Which given to class experiment form application learning *problem posing* whereas on class control given learning conventional. After treatment learning, researched impact Which appear on subject study as consequence from treatment learning Which applied that is ability understanding draftstudent math.

RESULTS AND DISCUSSIONRESULTS STUDY

1. Analysis Data Results Pretest

Before gift treatment that islearning *problem posing* on class experimental and conventional learningon class control so second class the given pretest Which The same.The purpose of giving this pretest is to look at the initial abilities of the two groups before given treatment as well as For see equality two class

(class experiment and control class).

For know normality datamark ability understanding draft math students on pretest for each group learning (PP, CV) the Kolmogorov-Smirnov (KS) test was used. hypothesis zero Which tested: Ho: Sample distributed normal, oppose alternativeHa: Sample No distributed normal.Criteria testing: If mark probability (sig) of Z is greater than $\alpha = 0.05$ then the null hypothesis is accepted. Summary of test resultsnormality served on the table 1 following:

Table 1. Ability Value Normality Test Understanding of Students' Mathematical ConceptsOn Pretest by Group Learning

Group Learnern	N	KS	Sig	Ho
Problem Posing (PP)	45	1.142	0.147	Accepted
Conventional (KV)	45	1,080	0.194	Accepted

On Table 1 seen that mark probability (sig) For every group learning is greater than $\alpha = 0.05$, this means hypothesis zero accepted. With thereby, data pretest mark ability understanding draft mathematics studentdistributed normal.

Next, test the homogeneity of variance population from data mark ability understanding of students' mathematical concepts onpretest based on learning groups using Levene's test. hypothesiszero Which tested: Ho: $\sigma 1 = \sigma 2$ oppose alternative Ha: $\sigma 1 \neq \sigma 2$. Test criteria is If mark probability (sig) more big from $\alpha = 0.05$, so hypothesis zero accepted. Summary of test calculation results homogeneity variance population served on Table 2 follows:

Table 2. Population Homogeneity Test of Variance Value of Ability to Understand Students' Mathematical Concepts in the Pretest Based on Learning Groups

StatisticsLevene (F)	dk1	et al2	Sig	Ho
0.010	1	88	0.919	accepted

On Table 2 seen that mark probability (sig) is greater than $\alpha = 0.05$, this means the null hypothesis is accepted. With thereby, variance population from markability understanding draftstudents' mathematics on pretest-based group learning homogeneous.because second group data distributed normal And the variance homogeneous, then to know there is or No exists difference average second group data based on grouplearning used test t. From results analysis can put forward that mark probability (sig) is 0.943 or more than $\alpha = 0.05$. This means the group variance experiment and control are the same or No There is difference average second group data.

From results pretest second class sogot average for group tall on class experiment as big 59.5 And average group tall on classcontrol as big 59,9. Average For group currently on class experiment as big 48,8 And For class control as big 49. Whereas average for the low group of the experimental class amounted to 41.3 and for the control class of 41.8. From results pretest in on seen that ability beginning second group learning is relatively the same. Therefore, So it can be said that this research started from ability Which The same.

2. Analysis Data Results Posttest

Data results test ability understanding draft mathematics studentafter learning described And analyzed based on factor group learning And level mastery student math. To find out there or No exists difference Whichsignificant furthermore used statistics inferential ANOVA two track, butpreviously carried out the requirements test viz test normality distribution data And test homogeneity variance population. For test normality distribution data used test Kolmogorov-Smirnov (KS). Null hypothesis Which tested: Ho: Sample distributednormal, oppose alternative Ha: Sample No distributed normal. Criteria testing: if the probability value (sig) of Z is greater than $\alpha = 0.05$ hence the hypothesis zero accepted. On results test normality obtained that mark probability (sig) For every group learning

(experiment And control) on every group PM (tall, currently, low)more big from $\alpha = 0.05$, This means hypothesis zero accepted. With thereby data value of the ability to understand the concept mathematics student based on study group And level mastery mathematics student distributed normal.Next, test the homogeneity of variance population from comprehension scores draft mathematics student after learning (posttest) based on group learning And level PM using Levene's test. hypothesiszero Which tested: Ho: $\sigma 1 = \sigma 2$ oppose alternative Ha: $\sigma 1 \neq \sigma 2$. Test criteria is If mark probability (sig) more big of $\alpha = 0.05$, hence the null hypothesis accepted.

Based on results test homogeneitydata obtained that mark probability(sig) is greater than $\alpha = 0.05$, this means hypothesis zero accepted. With thereby,variance population from score abilityunderstanding draft mathematics student based on group learning And level mastery mathematics student homogeneous.because all group data distributed normal And the variance homogeneous, then to know there is or No exists difference abilityunderstanding draft mathematics studentbased on learning groups, forknow There is or No existsdifferences in the ability to understand the conceptmathematics student based on levelmastery of mathematics (high, medium andlow) as well as For know interaction between group learning with level mastery mathematics inability understanding draftstudents' mathematics used the ANOVA test two track.

From the results of our two-way ANOVA test will can know is There is differences in the ability to understand the conceptmathematics between students in the class Which acquire learning *problem posing* And student on class Which obtain learning conventional. From results test ANOVA two track obtained mark probability (sig) For learning = 0.000. By Because mark sig is smaller than $\alpha = 0.05$ then the null hypothesis rejected. This means there is a difference ability understanding draftmathematics among students who acquire learning *problem posing* with which obtain learning conventional. From the results of our two-way ANOVA test Also can know difference ability understanding draft mathematics between students in groups tall, currently And low (reviewed from level mastery mathematics student).

From results test ANOVA two track in above obtained probability value (sig) for level mastery mathematics = 0.001. By Because mark probability (sig) moresmaller than $\alpha = 0.05$ then the null hypothesis rejected. Matter This means at least There is one group is different from another. For know group where Which different in a manner significant in ability understanding draftstudent mathematics then it can be seen from results test Scheffe. By Because That next with test Scheffe on significance level $\alpha = 0.05$.

Table 3. Scheffe Test Average Value of Students' Ability to Understand Mathematical Concepts Based on PM Level

Level PM Student	differencen Average	Sig	Ho
Tall –Currently	5.06	0.047	Reject
Tall -Low	9,27	0.000	Reject
Moderate –Low	4,21	0.127	Accept

On table 3 seen that markprobability (Sig) For partner high and medium group is 0.047 or not enough from $\alpha = 0.05$ so hypothesiszero rejected, so that can concluded that abilityunderstanding of students' mathematical concepts on the height group differed significantly with student on group currently. Thereby also ability understanding draft mathematics student on grouptall different in a manner significant with students in the low group. This can seen from mark sig = 0.000 or less from $\alpha = 0.05$. For medium and low sig value is 0.127 or more than$\alpha = 0.05$ it can be concluded that No there is difference significant on ability understanding draftmathematics between student on group currently and low. Apart from that, from the results of the second ANOVA test track in on We Also can know is There is interaction between group learning And level mastery mathematics student in ability understanding math concept.

the hypothesis that in test is:From results test ANOVA two track inabove obtained probability value (sig) for interaction = 0.026. By Because mark probability (sig) is smaller than α = 0.05 so hypothesis zero rejected. Matter This means There is group learning Which interact with level mastery mathematics siawa in ability understanding draft mathematics student. For know learning where Which interact with levelstudents' mastery of mathematics then can seen from test results Scheffe in on. Based on the Scheffe test results above can pulled conclusion that differenceability understanding draftmathematics between learning *problem posing* And learning conventional in the high group students differently significantly compared to students ongroup currently. This means there is interaction between learning (PP and KV) with level mastery mathematics student (tall And currently) in ability understanding draftmathematics.

So Also difference ability understanding draft mathematics between learning *problem posing* And learning conventional on student high group significantly different compared to students in the group low. This means that there is an interaction between learning (PP and KV) with levels mastery mathematics (tall And low) in ability understanding draft mathematics. But the difference in ability understanding draft mathematics between learning *problem posing* And learning conventional on student group currently No different in a mannersignificantly compared to students onlow group. This means no interaction between learning (PP and KV) with level mastery mathematics (currently And low) in ability understanding math concept.

Interaction between learning (PPAnd CV) with level masterymathematics student on group currently and low in comprehension ability math concept. This is because of the difference mark on post test between learning ppand KV in the moderate group students different in a manner significant with learning Which The same on group low. There is an interaction betweenlearning (PP and KV) with levels mastery mathematics student on group tall And currently in ability understanding draft mathematics. Matter This Because difference mark on post test between learning pp And KV on student group tall differentin a manner significant with learning Which The same on medium group.

There is an interaction betweenlearning (PP and KV) with levels mastery mathematics student on group tall And low in ability understanding draftmathematics. Matter This Because difference mark on post test between learning pp And KV on student group tall differentin a manner significant with difference learning Which The same on group low.

DISCUSSION

Research yielded several findings Which analyzed based on group learning And level mastery math.Level mastery mathematics is the level of student mastery of mathematics Which owned before learning going on. Mark average math mastery test obtained in the experimental class is 76 and the value the average math mastery test obtained in the control class was 75.9. Mark mastery average math on both class the the difference verysmall so that it can be said to be relatively the same.Mastery average score mathematics student group tall onclass experiment as big 89.9 And onclass control as big 89.6. Mark averagegroup students are in classexperiment as big 77.5 And on classcontrol as big 77,1. Mark average studentgroup low on class experimentas big 58,1 And on class control of 60.6.

Besides findings in on, found also that achievement KKM on class experiment as big 71% And on class control as big 69% Where KKM score is 70. This showsthat ability student Which involvedin this study are relatively the same. Besides that can said that material precondition before learning Enough masteredstudent so that can concluded thatstudent Ready accept material lesson new.

The average score of the comprehension ability test draft mathematics For material derivative function before learning Which obtained student on class experimentis 49.6 while that obtained atcontrol class was 49.95. Average value test ability understanding draftmathematics on second class the the difference is very small so that it can said relatively The same.The average score of the pretest results for students group tall on class experiment of 59.5 and in the control class of59,9. The average value of students in the medium groupon class experiment as big 48,8 And in the control class of 49. The average value flat student group low on class experiment as big 41,3 And on class control of 41.8. Apart from the findings it was also found that achievementKKM on class experiment at 0% and in the control class by 0%.

Results this shows that the ability of students involved in the research (class students experiment And student class control) it's relative The same, so that can said that second equivalent class. The research results show that ability understanding draftmathematics student on class with learning *problem posing* more Good than ability understanding draftmathematics student with learningconventional. Findings This supported bythe acquisition of the average value in the class with learning *problem posing* of 78.9 And on class with learning conventional as big 70,8. Viewed fromachievement KKM, on class with learning *problem posing* the number of students Which reach mark KKM as much 40 person (88.9%) And on class withlearning conventional as much 25 person (55.6%).

Achievement mark Which tall on learning problem posing This caused Because on learning*problem posing* student trained For ask or create questions later finish question Which made by another group. When students make questions, students are required to understand concept of the material that has been received, as well as when solving problems that have been made by other groups of students Also demanded For understand the concept.From results study obtained data mark average ability understanding draft mathematics student on grouphigh is 80.38, in the medium group mark the average is 75,33 whereas in the low group is 71.11. From data the seen exists differenceWhich significant on ability understanding draft mathematics between students in the high group, medium and low.

There is interaction between group learning (PP and KV) with levels mastery mathematics student in ability understanding draftmathematics. Interaction happen between group learning (PP And CV) with the mastery of mathematics group tall And currently nor on high and low mathematics mastery groups but there was no interaction in the group medium and low. these findings are supported by the acquisition of the average value of ability understanding of students' mathematical concepts ongroup tall, medium and low In the high group, the acquisition valueaverage ability understanding draft mathematics on class withlearning *problem posing* of 87.6 more Good than learning conventional as big 72,64. AchievementKKM on group tall withlearning *problem posing* as much as 15 person (100%) whereas on learning conventional as much 8 person (53.3%).

On group currently, acquisitionmark average ability understanding draft mathematics on class with learning *problem posing* of 78.94more Good than learning conventional as big 71.7. Achievement KKM on learning *problem posing*as big 15 person (88.2%) And on learning conventional as big 10 person (58.8%). On group low, acquisition mark average ability understanding draft mathematics on class with learning *problem posing* of 73.46more Good than learning conventional as big 68,9. Achievement KKM on learning *problem posing*as big 11 person (84.6%) And on conventional learning by 8 people(57.1%). From mark average And achievement KKM it can be concluded that on all groups of students (high, medium and low), ability understanding draft mathematics student on learning *problem posing* more Good than learning conventional. Howeverbased on the results obtained, it turns out in high group students, learning problem posing more influentialcompared to on group currently Andlow.

Results This because on activity*resolution posing* student trained For can hook information/situation Which they get with the material already they learn. With therebyunderstanding student to material lesson will be better. As well as in the within solution posing activities , students trained For formulate sub-subquestion Which lead toproblem solving. Thus students trained For finish question in a manner systematic. Whereas on activity *postsolution posing* will get train students For more understand draft material lesson. Matter This because on students' *post solution posing* activities are trained make question Which kind with question given, so expected to be can strengthen draft Which has they accept.

In third activity problem posing in on, student demanded For make question Which related with material Which has taught. For make question the needed mastery *Which* Good to draftbase Which has taught. On student group tall, draft Which given more fast mastered than student medium and low groups. Therefore That learning *problem posing* moreinfluential on group students tall.

CONCLUSION

Based on the results of analysis and discussion that has been put forward inprevious chapter, obtained some conclusion as follows:

1. There is difference ability understanding draft mathematics between student Which obtain learning

problem posing with which to acquire conventional learning. Ability understanding draft mathematics studenton class Which obtain learning *problem posing* better than student on class Which obtain learning conventional.

2. There is difference ability understanding draft mathematics between students in the high, medium and low Which reviewed from level mastery mathematics. Ability understanding draft mathematics studenton group tall different with students in the medium group. Thereby also ability understanding draft mathematics students in the high group different with student on group low. But No there is differencesignificant in abilityunderstanding draft mathematics between student on group currently and low.
3. There is interaction between learning (PP and KV) with the level of mastery mathematics student in ability understanding of mathematical concepts. Interactionoccurs between learning (PP and KV) with level mastery mathematics on group tall And currently as well asin the high and low groups. But No there is interaction between learning (pp And KV) with level mastery mathematics on group currently And low in ability understanding draft mathematics.

Suggestion

Based on conclusion fromstudy This, furthermore, put forwardsuggestions as follows:

1. Learning *problem posing*should Keep going developed infield And made as alternative choice Teacher in learning mathematics daily. Matter This because learning the can increase ability understanding draftmathematics student.
2. In implementinglearning *problem posing* with objective increase abilityunderstanding of students' mathematical concepts, teachers besides need to prepare everythingcomponent learning carefully also need to consider level mastery mathematics student.Learning *problem posing* more applied to classes with an averageflat mastery mathematics studentbelong tall.
3. Teacher mathematics shouldstage changesin a manner gradually in learningevery day according to the conditions or ability student. Matter This neededso that learning No monotone and boring.

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