COMPARISON OF MATHEMATICAL PROBLEM SOLVING ABILITIES BETWEEN HIGH SCHOOL STUDENTS WHOSE LEARNING USES THE CONTEXTUAL TEACHING AND LEARNING (CTL) APPROACH AND THE DISCOVERY APPROACH

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Abstract

Learning mathematical conventional and monotonous cause students saturated, conditions such need existence innovation so that happen significant changes to success learning mathematics. Wrong one effortfrom facet teacher is with apply various methods and approaches relavan from every principal discussion corresponding with characteristics material in presentation to students. Howdo teachers empower students onthe method teaching interesting mathematical sothat lesson Mathematics not again tobe a boring lesson and load for students in study . And the teacher's task is asfacilitator who must ready facilitate students in study .In implementation author giveaway some instruments from start test early to test end for knowing development and influence from approach under study. So that obtained valid picture is not just like that theoryfrom book . In research this finally author could conclude that in the analysis of the gain data there are difference , because accordingto calculation from data processing using device Mini-tab 16 soft obtained P0.032meaning H o rejected sothat theconclusion thereis difference Ability solving problem mathematics between approach Contextual *Teaching And Learning(CTL)* and approaches Discovery

Keywords : Mathematical solving ability , *Contextual teaching and learning*

Abstrak

Pembelajaran matematik yang konvensional dan monoton menyebabkan siswa jenuh, kondisi yang demikian perlu adanya inovasi sehingga terjadi perubahan yang signifikan terhadap keberhasilan pembelajaran matematika. Salah-satu upaya dari segi pengajar adalah dengan mengaplikasikan berbagai metode dan pendekatan yang relavan dari setiap pokok bahasan sesuai dengan karakteristik materi dalam penyajiannya kepada siswa. Bagaimana guru memberdayakan siswanya pada metode pengajaran matematika yang menarik sehingga pelajaran Matematika tidak lagi menjadi pelajaran yang membosankan dan beban bagi siswa dalam belajar. Dan tugas guru adalah sebagi fasilitator yang harus siap memfasilitasi siswa dalam belajar. Dalam pelaksanaanya penulis memberikan beberapa instrument dari mulai tes awal sampai tes akhir untuk mengetahui perkembangan dan pengaruh dari pendekatan yang diteliti. Sehingga diperoleh gambaran yang valid tidak sekedar teori dari buku. Dalam penelitian ini akhirnya penulis dapat menyimpulkan bahwa pada analisis data gain terdapat perbedaan, karena menurut perhitungan dari pengolahan data menggunakan perangkat lunak Mini-tab 16 didapat P 0,032 artinya H_o ditolak sehingga kesimpulannya terdapat perbedaan Kemampuan pemecahan masalah matematik antara pendekatan *Contextual Teaching And Learning (CTL)* dan pendekatan Penemuan.

Kata Kunci: Kemampuan Pemecahan Masalah, *Contextual teaching and learning*

INTRODUCTION

Education has an important role in various fields of life. Education is essentially all the efforts made consciously to foster personality and develop human, physical and spiritual abilities that last a lifetime in and outside of school. Mathematics is a subject that has a very dominant role in shaping the human mindset in dealing with various problems. But the reaction we still feel that mathematics is a subject that is difficult to teach or to learn. The use of teaching approaches that are not in accordance with the material taught, has resulted in learning outcomes that are less than optimal, as experienced by SMAN 1 Batujaya. Every year the average results of mathematics repetitions for class X of SMAN 1 Batujaya in the academic year 2011/2012 are still below the minimum completeness criteria (MCC). For MCC class X Batujaya 1 High School, namely 67. With the condition of learning outcomes that are considered to be still low, steps are needed to improve learning outcomes better than before.

Based on the description above, the author considers the need for the application of learning models that allow to improve student learning outcomes in mathematics, so students are able to play an active role in the learning process and remember longer the mathematics material they have learned. One model that is predicted to improve student mathematics learning outcomes is a learning model with a Contextual Teaching And Learning (CTL) approach. The cornerstone of the Contextual Teaching Learning (TCL) philosophy is constructivism, which is a learning philosophy that emphasizes that learning is not just about learning. Students construct knowledge in their own minds. Even knowledge cannot be separated into facts. Facts or propositions that are separate, but reflect skills that can be applied (Directorate of Advanced First, 2003: 26). The discovery learning approach is a teaching approach that regulates teaching in such a way that the child acquires knowledge that he did not know before but is not informed, partially or wholly alone. Based on the description above, this study aims to determine whether there are differences in mathematical problem solving abilities between high school students whose learning uses the Contextual Teaching and Learning (CTL) Approach and the Discovery Approach. Thus this research is expected to make a positive contribution and provide an alternative model of mathematics learning, so that if it is used it will be an effective solution by all parties, namely: Teachers, students and schools

METHOD

The method in this study is an experimental method, because there is manipulation of treatment, with one class learning using the Contextual Teaching Learning (CTL) approach and another class learning the discovery approach. At the beginning and finally the second class learning is given a test, so the research design is as follows:

$$A \; O \; X1 \; O$$
$$A \; O \; X2 \; O$$

The population in this study were all grade X students of SMAN I Batujaya-Karawang in the academic year 2011/2012. The sample is taken 2 classes randomly, where one class is an experimental class, and the other class is the control class. The samples in this study are class X.3 and class X.4 as the control class. While the instrument in this study is a set of test questions in the form of solving contextual teaching and learning which consists of 5 questions with the subject of a system of linear equations and squares of two variables. After that, in order to have empirical validity, the questions are tested and then the validity, reliability, distinguishing power and difficulty index are calculated.

RESULTS AND DISCUSSION

Table 1. Test of Normality

Grup Model	$\overline{X}$	S	N	KS	P	Interpretation
Research	66,84	9,686	38	0,116	$> 0,150$	Normality
CTL	66,84	9,686	38	0,116	$> 0,150$	Normality

Based on the table 1, it can be seen that the group of students whose learning uses Contextual Teaching and Learning and the discovery approach obtain the same value, namely P-Value> 0.15 or P> 0.05 thus the sample comes from a normally distributed population.

Table 2. Homogeneity Test Variance Initial Test Score

Group Of Model	S	N	Test F		Interpretation
			F hit	P	
Research	3,858	38	0,75	0,406	Homogeneity
CTL	4,440	38			

Table 2 shows that the assumptions of the two groups have homogeneous variance fulfilled, because by using the F Test, a P-value of 0.406 is obtained. Because P> 0.05, which means that Ho is accepted. This means that the variance of the two groups is homogeneous

Table 3. Significant Test of Differences in Initial Score

Group Of Model	$\overline{X}$	S	N	Test t	Interpretation
				ThitP	
Research	66,86	9,69	38	0,007	H_o rejected
CTL	60,1	11,5	38		

Based on the calculation results in the table 3 shows that P <0.05 this means that Ho is rejected. Thus it was concluded that the initial abilities or initial learning outcomes of students in the two experimental groups contained differences.

Table 4. Gain Data Normality Test

Group Of Model	$\overline{X}$	S	N	KS	P	Interpretation
Research	6,447	4,637	38	0,226	0,010	Normality
CTL	9,474	7,240	38	0,155	0,030	Normality

Based on the table 4 it can be seen that the group of students who obtained the learning method of discovery and Contextual Teaching And Learning (CTL) is the same ie P-Value> 0.150 or P> 0.05 thus the sample is normally distributed.

Table 5. Homogeneity of variance in data gain

Group Of Model	S	N	Test F		Interpretation
			F hit	P	
Research	1,813	38	0,71	0,313	Homogeniety
CTL	2,150	38			

Table 5 shows that the assumptions of the two groups have a homogeneous variance met, because it can use the F Test, obtained P-Value of 0.313. Because P> 0.05, which means that Ho is accepted. This means that the variance of the two groups is homogeneous

Table 6. Significant Test Difference in Average Data Gain

Group Of Model	$\overline{X}$	S	N	Test t		Interpretation
				Thit	P	
Research	2,83	1,81	38	-2,19	0,032	rejected
CTL	3,84	2,15	38			

Based on the calculation results in the table 6 shows that P <0.05 this means that Ho is rejected. Thus it was concluded that there were differences in problem solving abilities between students who used the Contextual Teaching And Learning (CTL) approach with the discovery approach or in other words the hypothesis was accepted.

CONCLUSION

From the results of the above study data obtained results from the normality test in all classes (experimental class and control class) are normally distributed. Based on the calculation of the homogeneity variance test obtained data that shows that both variances are homogeneous. Because all the data both the preliminary test and the final test of the two classes (experimental class and control class) are accepted or in other words have homogeneity. Based on the average difference test Ho is accepted so the authors conclude there is no difference in problem solving abilities between students who use learning Contextual Teaching And Learning (CTL) approach and discovery approach.

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