

**Effort To Improve Student Achievement In Learning
Through The Development Of Function Composition Method Of
Discussion On The Approach To Contextual Teaching And Learning
(CTL) In Class XI IPA 1
Salatiga Christian Senior High School 1**

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Abstract

Learning mathematics in class XI IPA 1 Salatiga Christian Senior High School 1 needs to be improved because teachers are still learning that involves using the lecture method and mechanistic approach. Models of learning causes students to be passive in the learning process and do not understand the concept of the material being taught. As a result, many students lack an understanding of mathematical concepts in depth so that the average value achieved was still below the value of KKM is 70 and still below the overall limit of 75%, i.e. 54%. To improve student learning outcomes, improvements are needed learning math is to use the Contextual Learning Teaching approach for developing methods of discussion in learning about the composition of functions. The purpose of this research is to improve student learning outcomes through this method, especially the composition of functions. This type of research is Action Research Class consisting of 2 cycles. The results of Cycle 1 is the average value reached 73.2 and 77.4% achieved a complete limit cycle and the second is the average value reached 81.6 and 93.5% reached the limit to prove that a complete discussion on the method of approach, CTL can Improving student outcomes and activities.

Keywords: Action Research class, Discussion Method, Contextual Teaching and Learning Approach, Composition Function.

I. INTRODUCTION

Mathematics is a subject which is considered a subject that is difficult to understand so that the resulting interest, motivation, enthusiasm and creativity of students in the domain and the understanding of mathematics is very low. These conditions also apply to a class XI student IPA-1 Salatiga Christian High School 1, where they are considered as students who are more intelligent, that they achieved better results than students who are in class IPS , but in reality, they continue to think that mathematics is a subject that is difficult to be understood. Preview this opinion can be seen from the learning outcomes achieved in which the student learning outcomes is still under KKM, namely 70, with a limit of completeness is below 75%, 54% ie. In addition to low student learning outcomes, another problem encountered is that students

lack an understanding of mathematical concepts in depth in which students simply memorize and understand the formula, but did not learn the concept of the formula. To improve the learning and skills and student activities, efforts are needed to improve teaching methods and mathematical models used by the teacher.

Discussion as a method of learning is a process that involves two or more participants to interact to exchange opinions, and or maintain their opinion in solving the problem so that we get agreement among them. Learning using discussion teaching method that are interactive (Gagné and Briggs 1979: 251). When one of the students spoke, the other students who are part of the group is active listening. Who speaks first and so was the response, not be arranged in advance. There are three types of appropriate learning objectives through the use of discussion methods: (1) mastery learning materials, (2) the establishment and modification of attitudes, and (3) problem solving (Gall and Gall, Department of Education, 1983: 28). The problem for discussion is a teaching method that produces a lot of alternative solutions to the problems and issues that contain a lot of variables. A number of alternative or variable and can provoke children think. Therefore, the issue for discussion that the solution does not require children to think, for example, only requires children to memorize, then the problem is not suitable for discussion. This method is basically the same active discussion with the discussion method is usually only difference is the implementation technique.

Contextual Teaching and Learning (CTL) assists students in meeting content standards by applying knowledge to their current and future lives as family members, citizens, and workers. Effective use of CTL : emphasizes problem-solving; recognizes the need for teaching and learning to occur in multiple contexts; teaches students to become self-regulated learners; anchors teaching in students' diverse life contexts; encourages students to learn from each other in interdependent groups, and; employs authentic assessment (The Ohio State University, 1999).

This method is commonly used in active discussion Contextual Teaching and

Learning (CTL). CTL is the concept of learning that help teachers to link between what is taught with real world situations students and encourage students to make connections between the knowledge possessed by the application in their lives as family members and society (U.S. Department of Education, 2001). The problem occurs when students are not able to identify what knowledge is needed to address problems outside the context in which he studied. It is believed that when students are taught in a context similar to the situation where they must apply the information, a greater opportunity to transfer learning to occur (Schell & Black, 1997).

CTL is defined as the conception of teaching and learning that helps teachers relate subject matter content to real world situations (United States Department of Education Office of Vocational and Adult Education, 2001). Berns and Erickson (2001) further describes the contextual learning as an innovative learning process that helps students connect the content they are learning the life context in which content can be used. Problem solving, independent learning, teaching and anchored in the context of the lives of diverse students, learning from each other and together, authentic assessment, and use a variety of contexts such as home, community, and work sites, has identified the practices of contextual teaching and learning (Sears & Hersh, 1998). In this context, students have to understand what is the significance of learning, its benefits, the State of what they are and how to achieve it. As a result, students will realize that what they learn is useful later as his life that would make their position as myself who need provision that is useful for later life and students will strive to achieve. The teachers in the contextual learning task is to help students achieve their goals, i.e., increased number of teachers is strategy rather than inform. They only manage the classroom teacher as a team that works together to find something new for students. Based on this study, the purpose of determining the increase in student performance through the development of methods of analysis of the context in the approach Teachig learning (CTL) for Class XI IPA 1 students of Salatiga Christian High School 1.

II. RESEARCH METHOD

This research is the Classroom Action Research with the model proposed by Kemmis & McTaggart and consists of two cycles where each cycle consists of four sequential stages of planning, action, observation, and reflection. The study subjects were the students selected in class XI IPA 1 Salatiga Christian High School 1, amounting to 32 students.

A cycle is considered successful if the results of research on the cycle of classroom action research has met minimum criteria for completeness set the school. If it does not reach the minimum criteria for completeness then there is repetition in the same cycle. Implementation of the discussion using the criteria of students scored at least 70 and the average value of 70. If a student scores at least 70 and the average value of 70 or more then the result of learning process to a higher stage in the cycle of stabilization, but if less than that then the learning process is repeated for the next cycle. As the tasks can be solved optimally, and students work on tasks. Student success at the highest level of evaluation will measure student success in a loop. The results of the bait is fast dikomparasikan discussion with a written evaluation of the relationship with the students. Data collected on the basis of written test, and observation. Tests are written in the form of assessment sheets given to students to know the results of cognitive research and observations were made at the study site, the activities of each student, and implementation of learning.

The procedure of this research for each cycle can be seen in the following table: :

C y c l e	Cycle Stages			
	Planning	Action	Observation	Reflection
1	a. Discussions with teacher to select tutors of each group of 8 students who	First time (2x45 minutes) a. Apperception: <ul style="list-style-type: none"> • Greetings and attendance. • Remembering the material in the understanding of the role 	a. Learning Process : <ul style="list-style-type: none"> • Before explaining the types of 	a. Interactive b. Overall teaching and learning process is

	<p>selected the highest math scores.</p> <p>b. The researchers make learning about specific properties that can be owned by functions and the examples, and operations are applied to functions, as well as to identify areas of origin (domain).</p> <p>c. The researchers make learning media that will be used.</p>	<p>of the class X and other types of special functions.</p> <ul style="list-style-type: none"> Explains the purpose of learning. <p>b. Core activities :</p> <ul style="list-style-type: none"> Students explained to provide material teacher on special properties that can be owned by roles and provide examples. Students are given an examples question by the teacher. Teacher divide students into groups to carry out active discussions. Teacher leading the course of the game. <p>c. Final Activity :</p> <ul style="list-style-type: none"> Students are given about the evaluation to determine the level of understanding of individual students. Students create a summary of the function, the specific functions, and the similarity of the two functions. Students and teacher to reflect. Students are given the task of the specific functions and the similarity of the two functions. Students are given information about the topics to be discussed at the next time. <p>Second time (2x45 minutes)</p> <p>a. Apperception :</p> <ul style="list-style-type: none"> Greetings and attendance. Remembering the material about the types of specific functions and the similarity of 	<p>functions that students must first be explained briefly about the domain, codomain, and a variety of materials so that when the teacher mentioned 'domain' said the teacher and students understand the meaning.</p> <ul style="list-style-type: none"> When explaining about the domain of $g(x)\sqrt{x^2 - 9}$ It is necessary to explain how to find the number with a reminder of the limits on the concept of root and the concept of inequality. Students are still afraid and ashamed to answer frequently asked questions about light. 	<p>performing well.</p> <p>c. Students are already active in discussions.</p> <p>d. Students have not been able to present the results of group discussions with both.</p> <p>e. The average value reached 73.2 and 77.4% achieved a complete limit cycle.</p>
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		<p>the two functions.</p> <ul style="list-style-type: none"> • Discuss the homework. • Explains the purpose of learning. <p>b. Core activities :</p> <ul style="list-style-type: none"> • Students explained to provide material for the teacher feature, how to determine the origin of depending on the applied results of its activities, and provide examples. • Students are given an examples question by the teacher. • Teacher divide students into groups to carry out active discussions. • Teacher leading the course of the game. <p>c. Final activity :</p> <ul style="list-style-type: none"> • Students are given about the evaluation to determine the level of understanding of individual students. • Students create a summary of operations applied to functions and how to determine the origin of the function of the operation is applied. • Students and teacher to reflect. • Students are given homework for operations applies to functions and identify the origin of the functions of the research results of the work. • Students are given information about the topics to be discussed at the next time. 	<ul style="list-style-type: none"> • Teacher forgot to deliver the learning objectives. <p>b. Process of discussion :</p> <ul style="list-style-type: none"> • Each tutor group is still awkward to guide his friend. • Overall the students had discussions with both. <p>c. Process of Presentation :</p> <ul style="list-style-type: none"> • Students still have difficulty in presenting the results of group work. 	
2	a. Researchers to	First time (2x45 minutes)	a. Learning	a. Interactive.

	<p>design things to learn about the composition of functions, composition of functions on the real number system that includes the composition of the functions of the constituent components, and determine areas of origin (domain) of the composition of functions.</p> <p>b. The researchers make learning media that will be used.</p>	<p>a. Apperception :</p> <ul style="list-style-type: none"> • Greetings and attendance. • Remembering the material operations applied to functions and how to determine the origin of the function of the applied operational results. • Discuss the homework. • Explains the purpose of learning. <p>b. Core activities :</p> <ul style="list-style-type: none"> • Students are given an explanation for the provision of materials by teachers in understanding the composition of functions, composition of functions on the real number system that includes the value of the function of the composition of components, determine the function of the formula given function, and give examples. • Students are given an examples question by the teacher. • Teacher divide students into groups to carry out active discussions. • Teacher leading the course of the game. <p>c. Final Activity :</p> <ul style="list-style-type: none"> • Students are given about the evaluation to determine the level of understanding of individual students. • The students make a summary to understand the composition of the functions, composition of functions in the system of real numbers, which includes 	<p>Process :</p> <ul style="list-style-type: none"> • Teacher are too long to discuss the homework. • Students had the courage to answer to frequently asked questions about light. <p>b. Process of Discussion :</p> <ul style="list-style-type: none"> • Each tutor group was able to guide his friend with a good. • Overall the students had discussions with both. <p>c. Process of Presentation :</p> <ul style="list-style-type: none"> • Students presented the results of his group was able to work well 	<p>b. Overall teaching and learning process is performing well.</p> <p>c. Students are already active in discussions.</p> <p>d. The average value reached 81.6 and 93.5%.</p>
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		<p>the value of the function of the composition of its constituent components.</p> <ul style="list-style-type: none"> • Students and teacher to reflect. • Students are given homework to understand the composition of the functions, composition of functions on the real number system, which includes the cost depending on the composition of its components component. • Students are given information about the topics to be discussed at the next time. <p>Second time (1x45 minutes)</p> <p>a. Apperception :</p> <ul style="list-style-type: none"> • Greetings and attendance. • Remembering the material in the understanding of the composition of the functions, composition of functions in the system of real numbers, which includes the value of the function of the composition of its constituent components. • Discuss the homework. • Explains the purpose of learning. <p>b. Core activity :</p> <ul style="list-style-type: none"> • Students are given an explanation for the provision of materials by teachers in determining areas of origin (domain) of the composition of functions and provide examples. • Students are given an examples question by the 		
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		<p>teacher.</p> <ul style="list-style-type: none"> • Teacher divide students into groups to carry out active discussions. • Teacher leading the course of the game. <p>c. Final activity :</p> <ul style="list-style-type: none"> • Students are given about the evaluation to determine the level of understanding of individual students. • Students create a summary to determine the area of origin (domain) of the composition of functions. • Students and teacher to reflect. • Students are given homework to identify areas of origin (domain) from the membership functions. • Students are given information about the topics to be discussed at the next time. 		
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Active discussions Description: The teacher divides the students into 8 groups, then teachers featuring four questions on the PowerPoint slides. Each group is required to complete one of four questions. Groups that have completed one about having the opportunity to throw that question to another group. After the allotted time for discussion, the group threw a matter of choosing one person can be representative of a particular group of material to present answers to the questions thrown.

III. RESULT

Before studying the class action is being carried out, researchers conducted observations and data collection through discussions with teachers of mathematics in class XI IPA which amounts to a 32 students. This basic knowledge you need to know that the research can be according to what researchers, it is true that this class must be taken in accordance with what will be studied by researchers is to develop the discussion on the method of Teachig Contextual learning (CTL) to increase the activity of students in the material composition of functions. Based on discussions conducted by the researchers found that in teaching, teachers still

use the conventional way of teaching the teacher as a center of learning and teaching material composition of the functions are taught using the lecture method.

Then the researchers implementing PTK in class XI IPA 1 Salatiga Christian High School 1 with the following schedule :

Cycle	Day/date	Topics	Objectives
1	Wednesday, 2 March 2011	<ol style="list-style-type: none"> 1. Referring to the material on the understanding of the functions of the class X and other special functions . 2. Understand the specific nature of which may have a function : <ol style="list-style-type: none"> a. Injective b. Surjective c. Bijective 	<ol style="list-style-type: none"> 1. Students can recall the material on understanding the relation and function . 2. Students can understand the special nature of which may have a function that is a injective, surjective, or bijective function.
	Monday, 21 March 2011	<ol style="list-style-type: none"> 1. Understand the operation of the operation is applied to the function. 2. Determine the origin domain of the function of the operating results of the applied. 	<ol style="list-style-type: none"> 1. Students can understand the operation of the operation is applied to the function. 2. Students can determine the origin of the function of the operating results of the applied.
2	Wednesday, 23 March 2011	<ol style="list-style-type: none"> 1. Understand the sense of the composition of functions. 2. Explaining the composition of functions on the real number system that includes the value of the function of the composition of the constituent components. 	<ol style="list-style-type: none"> 1. Students can understand the meaning of the composition and functions are able to explain the composition of functions on the real number

			system that includes the value of the function of the composition of the constituent components.
	Friday, 25 March 2011	1. Determine the origin domain of the composition function.	1. Students can determine the origin of the composition function .

1. Results of Pre-Cycle, Cycle 1, and Cycle 2

The results of pre-cycle students learn math class XI IPA 1 1 Salatiga Christian High School is less satisfactory. A total of 14 students or 46% have not been studied in depth. While 17 other students or 54% have reached the exhaustiveness of learning. From these data suggest that the amount of the percentage of students who reach the full limit is still below 75%. The average value of 68.7 class, the highest value is 100, and the lowest score is 40.

At the end of cycle 1, the teacher gave a final test on the material properties owned by the special functions and operations applied to functions as well as determine areas of origin (domain). From these tests yield an average value of 73.2 class with 77.4% completeness.

While at the end of the meeting cycle 2, the teacher gave the final test of understanding the composition of functions, composition of functions on the real number system that includes the value of the function of the composition of the constituent components, and determine areas of origin (domain) of the composition of functions. From these tests yield an average value of 81.6 with 93.5% completeness.

2. Results of The Activity, Social Aspects, and Affective Aspects of Student

The success of learning is not only seen from the learning outcomes of students in achieving KKM, but the condition of the students for active learning that includes students' skills in questioning and active students during discussions and presentations in front of the class can also be taken into account..

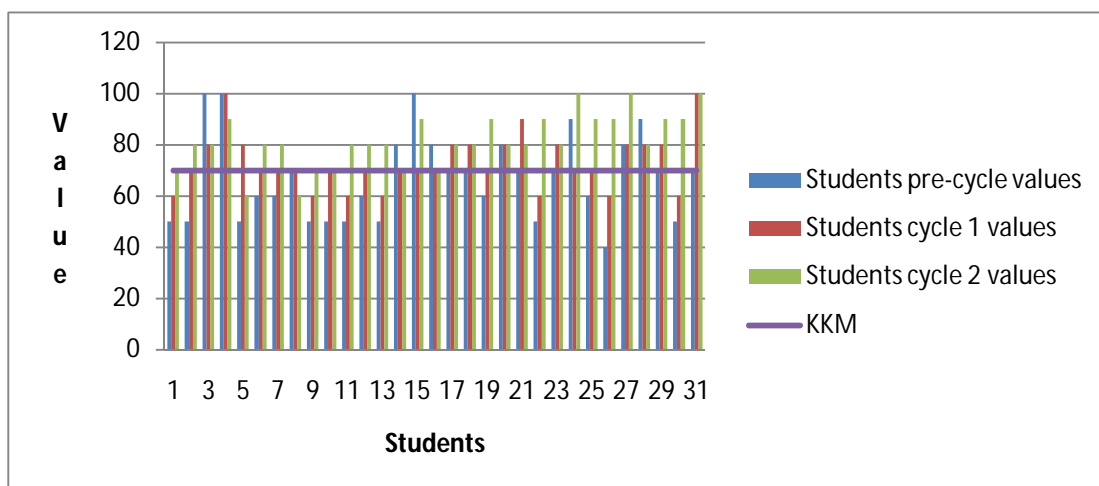
After having given the improvement in cycle 1 and cycle 2 of the non-cognitive

aspects of learning, the improvement of the results can be seen in the following way :

- a. By using the development of discussions on the method Teachig Contextual Learning (CTL), students are more active in the learning process.
- b. In the group, they were active and the growing sense of cooperation to find the problem, which was given to a teacher.
- c. In cycle 1 students did not grow up ability and willingness to ask, but tend to doubt but in the second cycle students are more enthusiastic in asking.

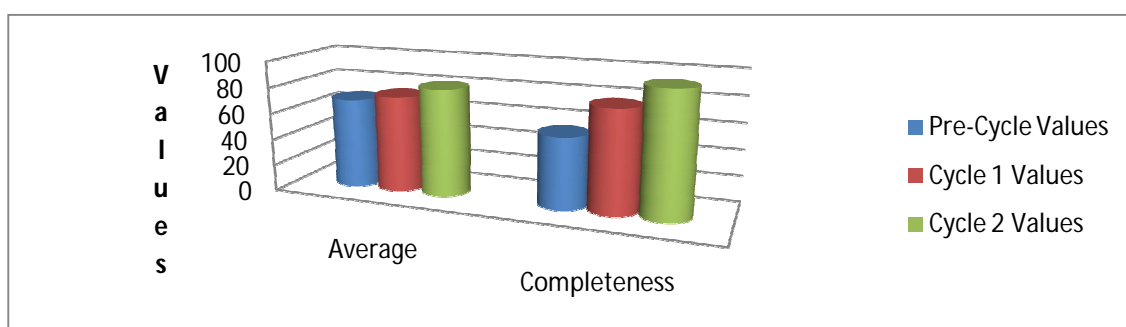
IV. DISCUSSION

Learning process with the development of a discussion about the method Teachig Contextual Learning (CTL) can be run in accordance with the expectations of researchers. Based on test scores pre-cycle, cycle 1 and cycle 2 can be seen an increase in student scores on each cycle. More details can be seen in the picture below.



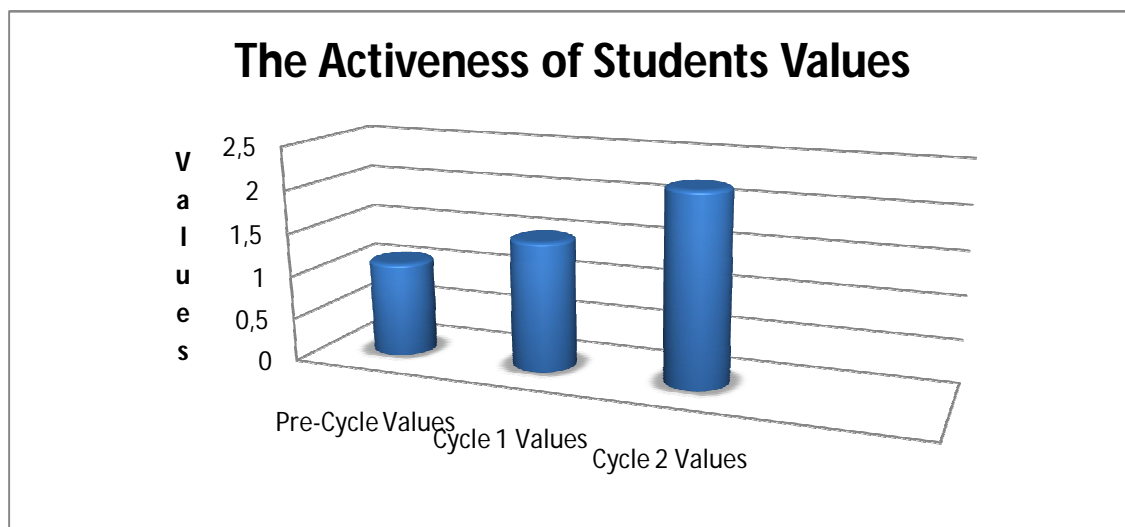
Can be seen that increasing the learning of mathematics can improve student learning outcomes on the cognitive aspects of student understanding and ability in the composition of the material function. It can be seen in the chart below :

Can be seen in the table above, the increase in the average value and completeness of



students in cycle 1 and cycle 2. This occurs because the cycle of pre-tend to be passive and less students enjoy lessons because teachers teach with the lecture method. In cycle 1 students are still adapting to new methods. Students have enjoyed the learning process, although students still awkward to ask. In cycle 2 students are able to adapt to new methods so that students can follow with a good learning process.

For conditions of students in solving problems and finding the results provided are also increased in cycle 2. Following the increased activity of students in the group by using the calculation :



V. CONCLUSION AND SUGGESTION

Based on this study can be concluded that the development of a discussion about the methods Teachig Contextual Learning (CTL) in studying the composition of functions can improve student achievement and activities of class XI IPA 1 Christian High School 1 High Salatiga academic year 2010/2011. From this study found the average value of 68.7 cycles of pre-class to the completeness of 54%, cycle 1 was 73.2 with 77.4% completeness, and Cycle 2 is 81.6 with 93.5% completeness.

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