IMPACT OF SAVI APPROACH TO IMPROVE STUDENT ACHIEVEMENT ON TEN GRADE STUDENTS AT SMA NEGERI 1 AIR JOMAN

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ABSTRACT

This study aims to investigate the impact from application of SAVI (Somatic, auditory, visual and intellectual) approach to improve student's mathematics achievement on volume and distance of three dimension material. Quasi experimental method was used in the study. The population of the study were ten grade students of SMA Negeri 1 Air Joman. The samples of this study were 60 students which divided into two groups, experiment group and control group. The 30 students in experimental class were given SAVI approach and 30 students in control class were given conventional approach. The data were collected using a set of test and a set of questionnaire. A set of test was used to measure student's achievement in learning volume and distance and a set of questionnaire was used to measured student's attitude toward learning by SAVI approach. Both instruments were validated by expert. Software SPSS was used to analyze the data. The result of this study are: (1) students' achievement after treatment given is higher than before treatment given both by SAVI approach and conventional approach; (2) the improvement of students' achievement in SAVI class is better than students' achievement in conventional class on the subtopic of volume and distance in grade X; (3) students attitude toward mathematics generally show a positive attitude.

Keyword : SAVI approach, conventional approach.

INTRODUCTION

Application of method or learning approach that viewed according to characteristics of students will avoid boredom and create a comfortable and fun atmosphere in learning process. Teacher can use some learning approach to achieve learning goals and improving student learning outcome. One alternative approach to learning that can be applied student achievement is SAVI (somatic, auditory, visual, and intellectual) approach.

SAVI is a learning approach that emphasize that learning should make use all of the senses of student. SAVI is a short term of Somatic means learning by moving and doing; Auditory means learning by listening, speaking, presentation, argumentation, expression and respond; Visualization means learning must use eye sense through observation, drawing, demonstrating, reading, using the media and props; while Intellectual means learning by solving problems that free and brooding (minds-on). Through SAVI approach, students can learn mathematics with an optimal intellectual activity and all the senses are combined in a learning process. So it can create a fun learning, student-centered, and actively involve students in order for them to develop their potential well by ability, interest, learning styles,

experience has, and can improve academic achievement.

From result of interviews with some mathematics teachers of SMA Negeri 1 Air Joman, especially for grade 10 there are some material that difficult to teach. The subject of three dimensions was the hard one. Many of students cannot achieve the basic competencies of the material. The difficulty in teaching these subject due to the high of criteria and indicators to be achieved by students, unavailability of visual aids that are needed to realized the three dimensions subjects and learning approach which not suitable with the subject while teachers used to teach all mathematics material conventionally. In this study, the researcher investigate that whether SAVI approach can improve student achievement and to obtain information about students' attitudes toward mathematics learning using SAVI. Also this study can provide additional knowledge about mathematics learning and serve as one of the inputs to select and develop appropriate alternative learning approach for improving student achievement and makes students get a different learning experience than usual. Teachers gain experience of other learning activities. So, they can create better learning activities.

METHOD

This study was conducted in SMA Negeri 1 Air Joman of 10th grade students. A quasi experiment nonequivalent pretest-post test control group design was used. Sixty students was involved in this study, and they were divided into two groups, namely the control group and the treatment group. The students in treatment group learned three dimension topics used SAVI approach and the control group learned same topic using conventional methods. After the teaching and learning process ended, the students from control class were interviewed to know their attitude toward SAVI approach. The data was collected using a test of Mathematics learning achievement and a questionnaire of student's attitude toward SAVI. The test instrument were validated by expert. In the pre-test, analysis variance test using Kolmogrov-Smirnov test for normality and Levene test for homogeneity test. With $\alpha = 0.05$, sample come from normal distributed population and homogeneous.

Method of hypothesis testing used is the independent sample t-test (t-test). This study uses t-test s it aims to test whether any difference in the effect of a treatment (factor) on the dependent variable. In this study there are on independent variable studied its effect on the dependent variable, namely teaching approach. Where the dependent variable in this study is student achievement. Normalized gain or gain index is used in this study to determine the improvement in student achievement. The criteria of gain levels, according to Hake are presented in the following table:

Table 1. Criteria of Normalized gain

G	Description
$g > 0.7$	High
$0.3 < g \leq 0.7$	Medium
$g \leq 0.3$	Low

Questionnaire given to students for the purpose to know the student's responses toward learning mathematics using SAVI approach and to manage the data obtained from questionnaire is used Likert scale. To conduct the t-test in this study, t-test using SPSS software with the hypothesis s follows:

$$H_0 : \mu_1 = \mu_2$$
$$H_1 : \mu_1 > \mu_2$$

$$H_0 \text{ accepted if } \quad -t_{\alpha/2} < t_{calculate} < t_{\alpha/2}$$

For Experimental group:

H_0 : SAVI approach cannot improve student achievement on the subtopic of volume and distance in grade X

H_1 : SAVI approach can improve student achievement on the subtopic of volume and distance in grade X

For Control group:

H_0 : Conventional approach cannot improve student achievement on the subtopic of volume and distance in grade X

H_1 : Conventional approach can improve student achievement on the subtopic of volume and distance in grade X

For gain index or normalized gain on improvement in student achievement with the t-test used the following hypotheses with description:

H_0 : The average improvement of Index gain in experimental group (SAVI approach) is not better than the control group (Conventional approach)

H_1 : The average improvement of Index gain in experimental group (SAVI approach) is better than the control group (Conventional approach)

RESULT

The improvement data on student achievement is obtained from the score of pretest and post-test. The data of pretest and post-test of experimental group and control group on sub topic Volume and Distance are tested by used independent t-test with using SPSS. And the result of analysis on Achievement score of two groups are described below:

Table 2. Independent T Test Achievement Score of Experimental group and Control group

Group	$t_{calculate}$	df	Sig.(2-tailed)	Decision
Experimental	12.963	58	0	H_0 rejected
Control	9.152	58	0	H_0 rejected

Based on the table above, by used = 0.05, for experimental group H_0 is rejected. It means that SAVI approach can improve students achievement on subtopic of volume and distance in grade X. For control group, H_0 is rejected which means conventional approach can improve student achievement on subtopic volume and distance in grade X. Because of two groups can improve student achievement, this study also

want to know whichapproaches can improve better. Therefore, the gain index analysis was conducted to determine the improvement quality of student achievement in two groups. The following table is a descriptive statistical analysis of the data gain index from experimental group
and control group.

Table 3. Result of Gain Index from Achievement Score of Experimental group and Control group

Group	N	mean	G (Index Gain)	Criteria	Maximum Gain	Minimum Gain
Experimental	30	43	0.72	High	66	26
Control	30	31.2	0.53	Medium	59	14

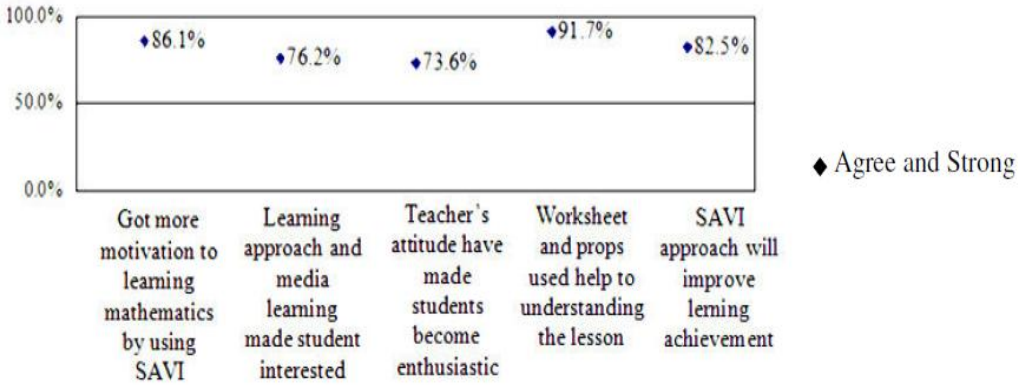
Based on these data, the average of index gain in experimental group and control group had quite far difference. Where the average of student achievement improvement on experimental group is higher than on control group. Experimental group which used SAVI approach had high criteria for index gain that indicate improvement of student achievement in experimental class is high. However, for more details and to see if SAVI approach is better to improve student achievement than conventional approach, the study tested hypotheses based on the result of the improvement student achievement as seen from pretest and post-test for each group. By using independent t-test data obtained as shown in table below:

Table 3. Result of 2-tailed test with Independent t Test

$t_{calculate}$	Df	Sig. (2-tailed)	Decision
3.281	58	0.002	H_0 rejected

Based on the table above, H_0 rejected which means the average improvement of gain index in experimental group is better than the control group. Therefore can be conclude that the improvement of student achievement in experimental group that used SAVI approach is better than improvement of student achievement in control class that used conventional approach. From the analysis of the questionnaire that given to students about student's attitude toward learning mathematics by SAVI approach, the result are presented below:

Figure 1. Result about student's attitude toward SAVI approach



The result of the questionnaire survey indicated that 86.1% of students are motivated by SAVI approach and 76.2% of them fell interested with the learning approach and media used in the learning process. Only 8.3% students who didn't agree that worksheet andvisual aids can help them to understand the lesson. Also when came to the agreement that SAVI approach will improve their learning achievement, 82% students agree with that. According to this, student's attitude toward SAVI approach on learning mathematics shows a positive attitude.

DISCUSSION, CONCLUSIONS, AND RECOMMENDATION

In experimental group that using SAVI approach, the teacher provides some visual aids or props and worksheet that help students to understand the material by self. Although teacher gives explanation about the topic but with available of visual aids, students can realize the material and also the content of worksheet which help students found their knowledge about the topic and led them to be able to solve the problem. With emphasize to students activity which Combine their somatic, auditory, visual and intellectual activity, students construct their own knowledge and crate a pleasant atmosphere, attractive and effective learning.

Because of the reasons above and supported by the result of this study can be conclude that SAVI approach has impact to improve students achievement and the improvement of student achievement using SAVI approach is better than used conventional approach. Also students' attitude towards learning by SAVI approach are positive. Students feel SAVI approach is very interesting and attractive and most of them feel confident of getting a good mark or high achievement with the implementation of SAVI approach on subtopic of Volume and Distance. From this conclusion, it is recommended to teachers should adapt
different learning approaches to the material presented in teaching and learning activities. As example SAVI

(somatic, auditory, visual and intellectual) is appropriate approach when it is used on topic three dimension because this approach can help students to understand the topic and more active in the learning process. Applying SAVI approach as alternative way to use in learning process can improve student achievement especially on subtopic of volume and distance rather than using conventional approach To the next researcher is hoped to be better to do the study because of the weakness of this study is the visual aids used are very simple.

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