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The Influence of Using Learning Modules on Students' Cognitive Learning Outcomes in Educational Management

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ABSTRACT

Learners are the main and most important resource in the process of formal education. The existence of students is not just meeting their needs but is part of the quality of educational institutions. This means that quality student management is needed for these educational institutions so that students can grow and develop according to their physical condition and intellectual intelligence. Most students face many difficulties in solving problems given by the teacher, even though the information is clear and complete, while the teacher faced difficulties in educating participants to find ways to solve problems well. To be able to solve the problem properly, several things are necessarily considered including time spent on problem-solving, lesson planning, and learning resources needed. Thus expected application of the Somatic Auditory Visualization Intellectual learning model (SAVI). combined with teaching aids will further add to the variety of learning models that are more interesting, increase the activity and cooperation of students and improve students' problem-solving abilities.

Keywords: *Educational Management; Learning Modules; Cognitive Learning; formal education and teaching materials*

1. INTRODUCTION

In the current era of globalization, the development of information and communication technology is increasing rapidly and has penetrated various aspects of human life, including in the world of education in various countries including Indonesia. Every aspect of human life is influenced by advanced technology ranging from politics, economics, law, culture, art , even the world of education. Advances in information and communication technology also have an impact on the world of education. The influence of information and communication technology has an impact on innovations in developing teaching materials that are more interesting and communicative. Especially with the use of the internet, a teacher can find or develop teaching materials other than the teaching materials provided by the school. In teaching and learning activities, teachers are required to be able to present learning material optimally. Therefore, creativity and new ideas are needed to develop ways of presenting lessons at school. The creativity in question is the ability of a teacher to choose the right methods, approaches, and media in presenting material. In addition, teachers must also have the right learning strategy, to Having that strategy is having to master learning media techniques.

The use of teaching materials by utilizing technology can have a positive impact on student learning outcomes because learning will be student-centered so that the teacher is no longer a source of learning but a facilitator and students will more easily access and absorb learning material.

The learning process in schools still applies the lecture method in providing conceptual understanding to students. Teachers are still reluctant to use teaching aids or use school laboratories. This situation causes learning to be less interesting so that students are less motivated in learning. Learning that occurs often only relies on printed books as learning materials. According to Daryanto (2011) media is classified into seven, namely: objects to be demonstrated, verbal communication, print media, still images, motion pictures, sound films, and learning machines. In learning outcomes, there are three domains, one of which is the cognitive domain. Gunawan and Palupi (2015) said that the revised cognitive bloom taxonomy includes six categories, namely remember, understand, apply, analyze, evaluate, and create.

One alternative to overcome the problem is learning with modules. Modules are one of the learning media that must be designed in such a way with certain characteristics. The lesson module is expected to be one of the efforts

to solve the problem first. This problem must be thought of and answered by students when learning, so that this activity allows student learning outcomes to develop and increase.

2. . STUDY OF LITERATURE

2.1. Modules

Modules according to Suprawoto (2009: 2) are learning tools in written or printed form that are arranged systematically in learning materials, methods, learning objectives based on basic competencies and competency productivity indicators, instructions for self-instructional activities, and providing opportunities for students to test themselves through the exercises presented in the module.

The characteristic module according to Anwar (2010: 1) is

1) Self-instructional, students are able to teach themselves, do not depend on other parties,

2) Independent, all learning material from one competency unit studied is contained in one complete module,

3) Stand alone, the developed module does not have to be used together with other media,

4) Adaptive, superior modules have high adaptive power towards developmental science and technology,

5) User friendly, the selected module also meets the rules of being familiar or familiar with the user,

6) Consistency, consistency in the use of fonts, spacing, and layout.

Hamdani (2011: 219) suggests several definitions of modules, namely as follows:

a. Modules are learning tools or facilities that contain materials, methods, limitations of learning materials, instructions for learning activities, exercises, and evaluation methods that are designed systematically and attractively.

b. Modules are learning tools that are arranged according to the learning needs of the subject for the purposes of a particular learning process containing the competencies to be achieved. Modules can be used for independent study, students are given the opportunity to practice and do tests on their own.

According to Nasution (2010: 205) a module is a complete unit that stands alone and consists of a series of lessons arranged to help students achieve a number of goals. Meanwhile, according to Prastowo (2010: 106) a module is a teaching material that is arranged in an integrated manner with a language that easily understood by students. So that they can learn on their own with help or guidance from the teacher. With the module students can also measure their own level of mastery of the material being taught.

2.2 Learning Outcomes

In learning activities, the success of teaching and learning activities can be measured from the learning outcomes achieved by students. Learning outcomes can be explained by understanding the two words that make it up, namely "results" and "learning". The definition of results indicates an acquisition as a result of carrying out an activity or process that results in a functional change in input.

Hamalik (2012: 30) says that, learning outcomes are when someone has learned there will be a change in behavior in that person, for example from not knowing to knowing, and not understanding to understanding. Learning outcomes according to Hamalik (2012: 159) Learning outcomes refer to learning achievement, while learning achievement is an indicator of the existence and degree of change in student behavior.

Sulistyaningsih (2011: 13) argues that every teacher has a desire to be able to improve the learning outcomes of the students he mentors. Therefore, the teacher must have a relationship with students that can occur through the teaching and learning process. Each teaching and learning process success is measured by how far the learning outcomes achieved.

Based on the opinion above, it can be concluded that learning outcomes are the achievement of a predetermined learning goal and an achievement that indicates a change in student behavior after the learning process is carried out. Student learning outcomes also become material for teacher evaluation to improve the learning process

There are several factors that influence learning outcomes. Sudjana (2013: 39) suggests "there are two factors that influence learning outcomes, namely internal factors and external factors or environmental factors. Factors that come from within students, especially the abilities they have. The ability factor of students has a very large influence on the learning outcomes achieved, in addition to the ability factors possessed by students there are also other factors, such as attitudes and study habits, learning motivation, interest, perseverance, social economy, physical and psychological factors.

2.3 Students' Cognitive Learning Outcomes

Cognitive comes from the word cognitive. Say cognitive itself "comes from the word cognition which the root is knowing, means knowing. Cognition (cognition) in a broad sense is the acquisition, arrangement, and use of knowledge". Subsequent developments, said cognitive become popular as a domain or domain psychological results of human learning which includes behavior mentality associated with understanding processing, information, consideration, solving problems, beliefs and intentions. Psychiatric realm which is centered in the brain is also associated with volition (conation) and feelings (affective) that are related with the realm of taste. So all efforts are concerned Brain activity is included in the cognitive domain.

Cognitive learning outcomes are learning outcomes which has to do with memory, the ability to think or intellectual. In this realm, learning outcomes consist of: seven hierarchical levels. Seventh result cognitive learning includes knowledge, understanding, application, analysis, synthesis, evaluation and creativity. So what is meant by cognitive learning outcomes is all that related to reason. The seven aspects or levels of the thinking process starting from the lowest level up to the highest level. Based on these it is known that the purpose of the cognitive aspect is oriented towards thinking skills that include abilities a simpler intellectual that is remembering to on the ability to solve demanding problems students to connect and combine several ideas, ideas, methods or procedures learned to solve problems. Based on the statement above can concluded that cognitive learning outcomes are results learning that includes mental activities or activities the brain, which is related to memory, thinking or intellectual abilities.

2.3 Educational Management

Definition of Education Management What is education management? The definition of Education Management in general is a process of planning, compiling, implementing, and supervising, in managing all resources in the form of human, money, material, method, machine, market, time, and information, to achieve goals effectively and efficiently in the field education.

Education management in a business or company is carried out directly by the education manager to realize the implementation of educational activities that are on target. Educational Management According to Experts

Several experts have explained the meaning of management in the field of education, including:

1. Syarif (1976:7)

According to Syarif, the notion of education management is all joint efforts to utilize "personnel and material" resources effectively and efficiently to support the achievement of education.

2. Sutisna (1979:2-3)

According to Sutisna, the notion of management in the field of education is the whole "process" that makes appropriate personnel and material resources available and effective for achieving common goals in the field of education.

3. Djam'an Satori (1980:4)

According to Djam'an Satori, the notion of education management is the whole process of cooperation by utilizing all available and appropriate personnel and material sources to achieve the educational goals that have been set effectively and efficiently.

4. Made Pidarta (1988:4)

According to Made Pidarta, the notion of education management is the activity of integrating various educational sources so that they are concentrated in an effort to achieve predetermined educational goals.

2.4 Research Hypothesis

Based on the study of the theory and framework that has been described, the formulation of the hypothesis in this study is:

H_0 : there is no difference in the results of the pretest and posttest scores between the control and experimental classes that use the module on science learning outcomes

H_a : there are differences in the results of the pretest and posttest scores between the control and experimental classes that use the module on science learning outcomes

3. RESEARCH METHODS

3.1 Approach/Type of Research

The method used in this study was a quasi-experimental design (Quasi-Experimental Design) during the experiment, students were research objects who continued to attend lessons in class as usual and the selection of research objects was not done randomly. Sugiyono (2013; 116) the research design used in this study is (Non Equivalent Control Group Design) is a study using a control class and an experimental class. In the cognitive domain research design, there is a pretest before learning is given treatment and a posttest after learning is given treatment, the experimental class was given treatment using a module, while the control class used printed books or worksheets that were commonly used by subject teachers.

$$O_1\ X_1\ O_2$$

$$O_3 X_2\ O_4$$

Figure 1. Non equivalent control group pretest-pottest design

Information:

O_1 : pretest in the experimental class

O_2 : posttest in the experimental class

O_3 : pretest in the control class

O_4 : posttest on the control class

X_1 : learning using modules

X_2 : learning using printed books and worksheets that are commonly used by schools

3.2 Research procedure

The procedures in this study include: the research preparation stage, the research implementation stage, and the experiment (treatment step).

1. Research Preparation Stage

   a. Observational survey of research locations.

   b. Determine the experimental material.

   c. Determine the experimental group

   d. Manage permits

   e. Instrument trials, validity and reliability testing.

2. Research Implementation Stage

3.3 Population and Sample

3.3.1. Research Population

The population is a group of research subjects that are used as data sources in a study. Sugiyono (2013: 117) suggests that "the population is a generalization area consisting of subjects/objects that have certain qualities and characteristics determined by researchers to be studied and then conclusions". Then the population in this study were students of SMA Negeri 1 Teupah Selatan class X semester 2 (even) which totaled 2 classes with 21 students in each class.

3.2.2. Research Sample

The sample is part of the population, the process of collecting data from the sample can occur if the research is carried out directly and this part is considered to represent the characteristics of the entire population.

The sampling technique in this study used a non-probability sampling design with the convenience sampling type. The control class was the class that did not receive treatment, while the experimental class was the class that received treatment in the form of learning using modules.

3.4. Data analysis technique

3.4.1. Instrument Analysis

1. Validity Test

Testing the validity of the instrument in this study used the product moment correlation equation proposed by Pearson with the equation:

$$r_{xy} = \frac{N\sum XY - (\sum X)(\sum Y)}{\sqrt{\{N\sum X^2 - (\sum X)^2\}\{N\sum Y^2 - (\sum Y)^2\}}}$$

Information:

r_{xy} = Correlation coefficient denotes Validity

X = item score questions

Y = total score

n = number of samples

The test criteria are that the instrument is declared valid if the correlation between items with a total score of more than 0.3 and the instrument will be declared invalid if the correlation between items with a total score of less than 0.3. If $r_{count} > r_{table}$ $\alpha = 0.05$ then the correlation coefficient is significant.

And it can be seen the validity criteria, namely:

0.80-1.00 Very High

0.60-0.80 High

0.40-0.60 Enough

0.20-0.40 Low

0.00-0.20 Very Low

4. RESEARCH RESULTS

This study aims to determine the effect of the use of learning modules on students' cognitive learning outcomes. This research was conducted in class X SMA Negeri 1 Teupah Selatan, which consisted of 2 classes with 21 students in each class.

In this sub-chapter, an overview of the results of the research that has been carried out will be described. The data described are the results of the pretest and posttest of the experimental class and the control class.

4.1 Description of Students' Concept Understanding Test

4.1.1.. Test Instrument Calibration

Validity Test

Calculation of the validity test in this study used the Anatest application version 4.0. The results of calculating the validity of the items in this study can be seen in the following table:

Table 1. Problem Validation Test Results

No. Question	Correllation	Criteria	Information
1	0,534	Enough	Valid
2	0,535	Enough	Valid
3	0,535	Enough	Valid
4	0,535	Enough	Valid

5	0,615	High	Valid
6	0,838	Very High	Valid
7	0,838	Very High	Valid
8	0,838	Very High	Valid
9	-0,053	-	Not Valid
10	0,029	Low	Not Valid
11	0,838	Very High	Valid
12	0,862	Very High	Valid
13	0,838	Very High	Valid
14	0,765	High	Valid
15	0,765	High	Valid
16	0,505	Enough	Valid
17	0,838	Very High	Valid
18	0,838	Very High	Valid
19	0,667	High	Valid
20	0,667	High	Valid
21	0,838	Very High	Valid
22	0,838	Very High	Valid
23	0,648	High	Valid
24	0,862	Very High	Valid
25	0,862	Very High	Valid
26	0,862	Very High	Valid
27	0,076	Very Low	Not Valid
28	-0,045	-	Not Valid
29	0,427	Enough	Valid
30	0,826	Very High	Valid
31	-0,024	-	Not Valid
32	0,422	Enough	Valid
33	0,422	Enough	Valid

4.1..2. Average Rating Description

The results of data processing for each class obtained the minimum value, maximum value, and average value as contained in the pretest posttest data summary in the experimental class and control class can be seen in the following table:

Table 2 Summary of Pretest-Posttest Data for Experiment Class and Control Class

Understanding the Concept	N	Maxsimum Value	Minimum Value	Average
Eksperimen Pretest	24	28	12	19,18
Eksperimen Postest	24	92	68	80,36
Control Pretest	24	28	12	18,91

Control Postest	24	52	28	39,09

Based on table 2, it is known that the pretest results for the experimental class obtained a maximum value of 28 and a minimum value of 12 with an average value of 19.18. The results of the experimental class posttest obtained the maximum value of 92 and the minimum value of 68 with an average value of 80.36. While the results of the control class pretest obtained the maximum value was 28 and the minimum value was 12 with an average value of 18.91. The posttest results for the control class obtained the maximum value of 52 and the minimum value of 28 with an average value of 39.09. Based on these data it can be seen that the average comparison of the results of the pretest and posttest in the experimental class is far greater than the results of the pretest and posttest in the control class. This shows the influence of learning using learning modules on students' cognitive learning outcomes.

The average, maximum, and minimum values of the pretest and posttest of the experimental class and the control class can be seen in graphical form in the graph below:

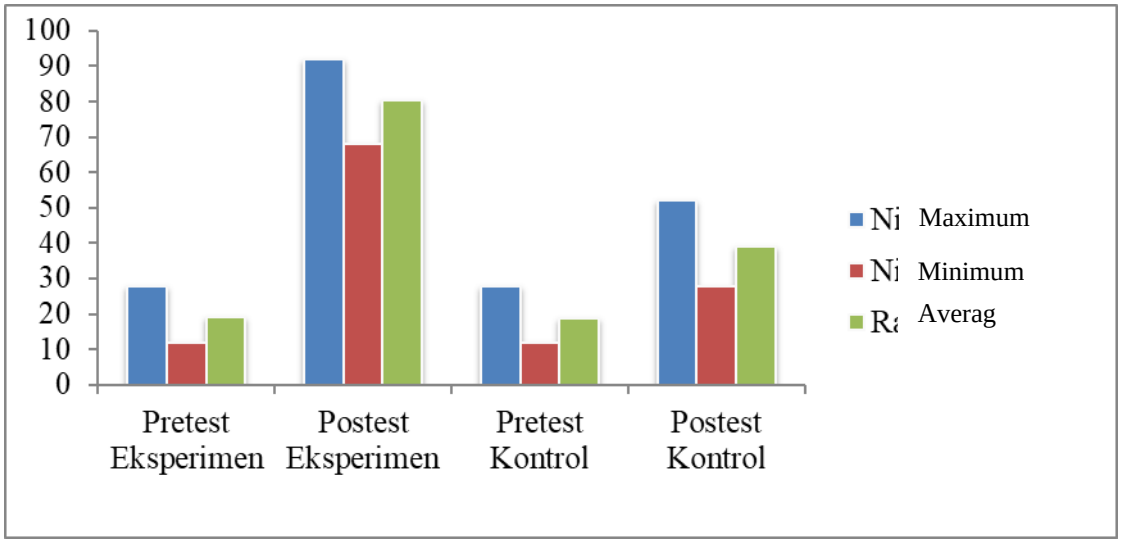

Figure 2. Graph of Average, Minimum, Maximum Pretest and Posttest Values of Experimental Class and Control Class

4.1..3. Prerequisite Test

1. Normality Test

The data normality test was carried out using the Shapiro Wilk test with the help of the SPSS version 20 application with a significance level of 0.05. After processing the data, the normality test results for students' cognitive learning outcomes can be seen in the following table:

Table 3 Normality Test Results

Studies Result	Shapiro Wilk		
	Statistic	Df	Sig
Pretest Eksperimen	0.166	22	0.094
Postest Eksperimen	0.194	22	0.071
Pretest Kontrol	0.172	22	0.070
Postest Kontrol	0.140	22	0.151

Based on table 3 it is known that the significance value in the data significance column for the pretest and posttest values for the experimental class and control class is greater than 0.05, so it can be said that the data is normally distributed.

2. Homogeneity Test

The homogeneity test was carried out using the Levene test with the help of the SPSS application with a significance level ≥ 0.05 to find out whether the subject was homogeneous or not. The results of the posttest homogeneity test of the

experimental class and the control class posttest on students' cognitive learning outcomes can be seen in the following table:

Table 4 Homogeneity Test Results

Levene Statistic	df 1	df 2	Sig
0.786	1	42	0.380

Based on table 4 it is known that the significance value of the experimental class posttest data and the control class posttest value is greater than 0.05, so it can be said that the value is homogeneous.

3. Test the Research Hypothesis

Hypothesis testing can be calculated using the t-test paired sample test, with the help of the SPSS program.

Table 5 Independent Paired Sample T-Test Test Results

		Levene's Test for Equality of Variances		t-test for Equality of Means		
		F	Sig.	t	Df	Sig. (2-tailed)
Hasil Belajar Siswa	Equal variances assumed	.786	.380	16.117	42	.000
	Equal variances not assumed			16.117	40.724	.000

At the output of the independent sample t test with SPSS version 20, a Sig (2-tailed) value of 0.000 is obtained. The Sig (2-tailed) value is 0.000 <0.05, so according to the basis of decision making in the independent sample t test it can be concluded that Ho is rejected and Ha is accepted, which means that there is an effect of the use of learning modules on students' cognitive learning outcomes.

5. CONCLUSION

Based on the research results obtained, it can be concluded that:

1. Based on hypothesis testing data using an independent sample t-test. A Sig (2-tailed) value of 0.000 is obtained. The Sig (2-tailed) value is 0.000 <0.05, so the test can be concluded that Ho is rejected and Ha is accepted, which means that there is an effect of the use of learning modules on students' cognitive learning outcomes in education management.

2. Based on the average value of student learning outcomes that were given treatment with learning modules (experimental class) obtained a pretest of 19.18 and a posttest of 80.36. As for the learning outcomes of students who only used worksheets and textbooks as usual (control class) the pretest was 18.91 and the posttest was 39.09. The difference in pretest and posttest values for the experimental class was 60.55, while the difference in pretest and posttest values for the control class was 11.18. It can be seen that the value for the control class is not too far/large between the pretest and posttest. However, in the experimental class, the difference in scores obtained between the pretest and posttest was far/large, proving that learning modules were more effectively used during learning than just using worksheets/textbooks.

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