



THE COMPARISON OF STUDENTS LEARNING RESULT BASED ON LEARNING BY MEDIA AND LEARNING BY VIDEO IN ALJEBRA CONCEPT

Ully Muzakir¹

STKIP Bina Bangsa Getsempena, Indonesia

ully@bbg.ac.id

Mik Salmina²

STKIP Bina Bangsa Getsempena, Indonesia

Ahmad Nasriadi³

STKIP Bina Bangsa Getsempena, Indonesia

Fitriati⁴

STKIP Bina Bangsa Getsempena, Indonesia

Intan Kemala Sari⁵

STKIP Bina Bangsa Getsempena, Indonesia

intankemalasari00@gmail.com

Rahmatullah⁶

STKIP Bina Bangsa Getsempena, Indonesia

Ramazana⁷

STKIP Bina Bangsa Getsempena, Indonesia

Abstract

SMP Negeri 8 Banda Aceh has SPLDV learning media facilities and learning resources which are quite good, but the use of existing media and learning resources has not been utilized optimally which has an impact on student learning outcomes in mathematics. This study aims to determine what media is appropriate to use to motivate students in learning and increase student enthusiasm in learning. The research design used was True Experimental Design. The instrument used in data collection was a math comprehension test question. The application used to design video media is the SREEN O'MATIC. After the data was collected, it was analyzed using the T-Test. Based on the research results

Calculated T-Value is 2.70 and T-Table Value is 1.70, this means is H_1 accepted, so that H_0 is rejected at a significant level $\alpha = 0.05$, it can be concluded that the teaching aids are better than video in SMP Negeri 8 Banda Aceh.

Keywords: *Comparison of Students Learning, Media and Learning, Aljebra Concept*

A. Introduction

Education is one of the main routes in an effort to prepare the younger generation to welcome and face the increasingly competitive times. As one of the main efforts, this education must be carried out as well as possible. The implementation of quality education is something that cannot be negotiated, because the ultimate goal of national education in general is to increase quality human resources (HR). One of the quality human resources can be produced through mastery of mathematics (Mirrunnisa, 2019).

SMP Negeri 8 Banda Aceh has SPLDV learning media facilities and learning resources which are quite good, but the use of existing media and learning resources has not been utilized optimally which has an impact on student learning outcomes.

Education also aims "to develop the potential of students so that they become human beings who believe in and have devotion to God Almighty, have noble character, are knowledgeable, capable, creative, independent and become democratic and responsible citizens of the State" (Djahir, 2017).

The existence of learning media as a tool in the learning process is a fact that cannot be denied. Teachers as messengers have great importance to facilitate their duties in conveying messages or learning materials to students. The teacher also realizes that without the media, the learning material will be difficult for students to digest and understand, especially the learning material that must be delivered is classified as complicated and complex. Ali says "For this reason, the use of media absolutely must be done so that the material can reach students effectively and efficiently" (Ali, 2010).

In understanding abstract mathematical concepts, students need props such as concrete objects (real) as an intermediary or visualization. In learning mathematics, the use of teaching aids can also increase student motivation. Djahir said that the function of teaching aids in mathematics learning is to create a flexible and effective learning situation, not just accessories. With the integrated teaching aids of learning content and objectives, motivating students to be happy learning mathematics, to accelerate students in understanding mathematics material, as a bridge to make students think abstractly, the design of teaching aids can be used individually or in groups (Djahir, 2017).

It is necessary to know that students studying in class are in a development process, so the ability of students to something will vary, as well as in understanding mathematical concepts. Thus, the teaching and learning activities can encourage their interest in carrying out learning activities optimally and can produce learning outcomes as expected. Media as a mathematics learning aid to achieve predetermined learning objectives. More specifically, media are concrete objects that are models of mathematical ideas and concrete objects for solving mathematics, both in the form of videos and learning props.

Based on observations and interviews of researchers with one of the mathematics teachers at SMP Negeri 8 Banda Aceh, there are several problems regarding the SPLDV material that must be resolved to improve the quality of learning in class. Among them is that after participating in the SPLDV learning, most students forget about the mathematics subject matter that has been studied, this is known when the teacher asks again the mathematics subject matter that has been studied after or before the learning takes place. Then the learning in the classroom is felt by students to be boring, this is known from the methods or strategies used by the teacher when teaching on SPLDV material.

From the explanation above, in teaching a teacher must create learning that makes it easy and enjoyable for students, including by using media because in the SPLDV material students are more motivated by using media, both video media or visual aids. In the learning process on SPLDV material, which media is appropriate to use to arouse student motivation in learning?

B. Method

This type of research is quantitative research with an experimental approach. The research design used in this research is True Experimental Design. True Experimental Design proposes two forms of design, in this study were taken only Posstest Control Design. In this design, there are two groups each selected randomly.

Sugiono states "the sample is part of the number and characteristics of the population". (Sugiyono, 2010) In this research, the samples used were 30 students of class VIII / 6 and 30 students of class VIII / 7. While the objects in the study were test questions and student worksheets.

The instrument used for data collection in this study was a test of mathematics students' understanding of the SPLDV material as many as 5 essay questions. This test

question is taken from student books, researchers also use learning media in the form of videos and learning aids designed by the researcher. The application used to design the video is the SREEN O'MATIC application.

The data analysis techniques are as follows:

1. Tabulation of data

The collected data is then processed using appropriate statistics to test the comparison of student learning outcomes. To create a distributive table of data frequencies that have been obtained from the research results, tabulated into a frequency distribution list. Determine (I, 2019):

- The Range, determine the range or gap between the highest and the lowest scores.
- Number of classes, calculated using a formula :

$$\text{Number of classes} = 3,3 + \log n \quad (1)$$

where "n" represents a lot of data

- Length of class interval (P), calculated using a formula :

$$P = \frac{\text{Range}}{\text{Number of Classes}} \quad (2)$$

2. Mean variance and standard deviation

To calculate the mean using the formula (I, 2019):

$$\bar{X} = \frac{\sum fixi}{\sum fi} \quad (3)$$

Where,

\bar{X} = mean

fi = The frequency of a class interval

xi = The middle value of a set of ordered data (Median)

To measure the value of variance can use a formula (I, 2019):

$$S^2 = \frac{n \sum fixi^2 - \sum (fixi)^2}{n(n-1)} \quad (4)$$

Where,

n = the amount of data

3. Tabulation of student learning outcomes data

The data obtained were analyzed using the T-test at the significant level $\alpha = 0,05$ and degrees of freedom = $(n1 + n2-2)$. The formula used is (I, 2019).

a. Normality test

The normality test is carried out to determine whether the data tested is normal or not using the chi-square test at the significant level $\alpha = 0,05$ and degrees of freedom $(K-1)$ (I, 2019).

Ho: normally distributed data

$$\phi^2 = 0$$

H1: The data are not normally distributed

$$\phi^2 \neq 0$$

$$\alpha = 0,05$$

Criteria for rejected (I, 2019) : "Reject H_0 if calculated $X^2 \geq X^2$ table value with $\alpha = 0.05$ ".

$$X^2 = \sum_{i=1}^k \frac{(O_i - E_i)^2}{E_i} \quad (5)$$

Where,

X^2 = Chi-Square

O_i = Observational Statistics

E_i = expected frequency

K = the amount of data

b. Testing the hypothesis

Ho: $\mu_2 = \mu_1$ student learning outcomes using learning aids are the same as student learning outcomes using learning videos. H1: $\mu_2 > \mu_1$ student learning outcomes using teaching aids media are better than student learning outcomes using learning videos.

$\alpha = 0,05$

$$t = \frac{(\bar{x}_1 + \bar{x}_2) - \mu_0}{sp \sqrt{\frac{1}{n_1} + \frac{1}{n_2}}}, \text{ for F homogeneous} \quad (6)$$

$$t = \frac{(\bar{x}_1 + \bar{x}_2) - \mu_0}{sp \sqrt{\frac{s^2_1}{n_1} + \frac{s^2_2}{n_2}}}, \text{ for F not homogeneous} \quad (7)$$

Where,

\bar{x} = Mean

s = standard deviation

n = the amount of data

C. Discussion

1. Frequency distribution

Tabel 1. Frequency distribution of video media student posttest values

Value	F_i	%	x_i	x_i^2	$F_i \cdot x_i$	$f_i \cdot x_i^2$
0 - 11	21	72%	5,5	30,25	115,5	635,25
12 - 23	1	3%	17,5	306,25	17,5	306,25
24 - 35	4	14%	29,5	870,25	118	3481
36 - 47	1	3%	41,5	1722,25	41,5	1722,25
48 - 59	1	3%	53,5	2862,25	53,5	2862,25
60 - 71	1	3%	65,5	4290,25	65,5	4290,25
Σ	29	100%	213	10081,5	411,5	13297,3

$$S_1^2 = 266,36$$

$$S_1 = 16,32 \text{ (standard deviation)}$$

Tabel 2. Frequency distribution of student posttest values using learning aids media

Value	F_i	%	x_i	x_i^2	$F_i \cdot x_i$	$f_i \cdot x_i^2$
2 - 15	16	55,17%	8,5	72,25	136	1156
16 - 29	1	3,45%	22,5	506,3	22,5	506,25
30 - 43	4	13,79%	36,5	1332	146	5329
44 - 57	0	0,00%	50,5	2550	0	0
58 - 71	3	10,34%	64,5	4160	193,5	12480,8
72 - 85	5	17,24%	78,5	6162	392,5	30811,3
Σ	29	100%	261	14784	890,5	50283,3

$$S_2^2 = 819,24$$

$$S_2 = 28,62 \text{ (standard deviation)}$$

2. Hypothesis test

The statistic used to test the hypothesis is the t-test. The hypothesis formulation to be tested is as follows:

H_0 : $\mu_2 = \mu_1$ student learning outcomes using teaching aids media are the same as student learning outcomes using learning videos.

H_1 : $\mu_2 > \mu_1$ student learning outcomes using media tools are better than student learning outcomes using instructional videos.

$$\alpha=0,05$$

The test criteria are in accordance with the one-party test rules, namely the right side, the test criteria are obtained from the student t distribution with degrees of freedom = $n - 1$, so reject H_0 if $t\text{-count} > t\text{-table}$ and accept H_0 in other cases.

Based on the results of the calculation, the $t\text{-count } 2,70 > t\text{-table } 1,70$, which means H_1 is accepted and $H_0: \mu_2 = \mu_1$ is rejected, so it can be proven that the average score of students based on learning aids media is better than video media.

D. Conclusion

Based on the results of data processing student learning outcomes in video-based learning and teaching aids on SPLDV material at SMP Negeri 8 Banda Aceh, it is proven that student learning outcomes using learning aids are better than video. This can be seen in the results of data processing which were analyzed statistically by using the T test at a significant level of $\alpha = 0.05$ with 28 degrees of freedom obtained $t\text{-count } 2.70$ and $t\text{-table } 1.70$. This shows that $t\text{-count} > t\text{-table}$ is $2.70 > 1.70$ so that the alternative hypothesis (H_1) is accepted and $H_0: \mu_2 = \mu_1$ is rejected. From these results it can be concluded that student learning outcomes based on teaching aids are better than video based on SPLDV material.

The results of this study are in accordance with the initial hypothesis that student learning outcomes based on teaching aids are better than video-based student learning outcomes on SPLDV material at SMP Negeri 8 Banda Aceh. This is indicated by the results of data processing using statistical analysis T test, H_1 is accepted. Thus H_0 is rejected. In addition, the difference is also shown where the average results of video-based students are lower than those based on teaching aids. This further strengthens the hypothesis that student learning outcomes based on teaching aids are better than video-based student learning outcomes on SPLDV material at SMPN 8 Banda Aceh.

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