



The Effectiveness of using Spreadsheet Learning Media to Increase Student Learning Outcomes at SMAN 1 Sumbawa Besar

***Jonny Zulkarnaen, Umar, Roni Hartono**

Innovation Management Study Program, Sumbawa University of Technology, Indonesia

*Corresponding Author e-mail: jonnyzulkarnaen86@guru.sma.learning.id

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Abstract

A good learning process must begin with planning in advance. in the learning process it must be done as attractively as possible so that students are motivated and enthusiastic to learn, The transition from the conventional learning process to digital learning provides a significant change, while the purpose of the study is to determine the extent to which the implementation and effectiveness of using spreadsheet learning media in improving student learning outcomes and to find out how much increase in student learning outcomes after learning using spreadsheet learning media. The type of research used is a mixed method with an experimental approach. The data collection technique used is a survey technique, with interview instruments, questionnaires and documentation. from the significance of the table that is 0.05. So that the pretest and posttest value data are normally distributed. To determine the difference in the results of the pretest and posttest, it was continued with a paired sample T test using the SPSS version 22.0 program with a calculated significance value of 0.000 and to see the effectiveness of using spreadsheet learning media, a statistical test was carried out using the N Gain score test. The results of the study found that the use of spreadsheet learning media was effective in improving learning outcomes with a percent N-Gain score of 47% which was in the medium category (quite effective).

Keywords: Effectiveness, learning media, spreadsheets, learning outcomes

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INTRODUCTION

Education is actually a planned effort by humans to create an atmosphere of learning and learning so that students actively develop the potential that exists within themselves to have the power of spiritual intelligence, religion, noble character, self-control, personality, and skills needed by themselves, society, nation and state. (Jannah, 2013; Risdianto, 2019; Safinah, 2019) .

Humans as social beings are basically living creatures, of course, they are required to be able to develop properly on the power of thought, physical and even psychological that is in them. To get an optimal development, of course, a knowledge and knowledge are needed which will later underlie the realization of this. The knowledge and knowledge that is obtained from an education, therefore the government seriously develops methods, content and objectives to produce human resources quality (Rohida, 2018; Safitri & Sos, 2019; Tanu, 2017) . Actually, the cause of the low quality of education in Indonesia is the problem of the effectiveness and efficiency of the standard of teaching itself. This also means that the components in education also play an important role, one of which is educators (Abi Hamid et al., 2020; Kristiawan et al., 2019; Megalia, 2011) . Other problems faced by the world of education in Indonesia is the low achievement of students, this can be caused by several factors that influence it, this can be in the form of environmental, social and economic factors. (Anzar & Mardhatillah., 2017; Maesaroh, 2013; Nurdyansyah & Fitriyani, 2018)

In the learning process carried out in schools, it must be made as attractive as possible so that students are motivated and eager to learn. The more varied the teaching and learning process carried out by the teacher, the easier it will be for students to accept the subject matter. The learning media used can have a big effect on students' learning motivation. Switch. The use of digital media will be more attractive than conventional media. A good learning process must begin with planning first accompanied by the use of learning media that can help the learning process. The learning media used serves to clarify the meaning of the message or information conveyed so that it can achieve learning objectives with the expected results (Firmadani, 2020). In the learning process that has been carried out at SMAN 1 Sumbawa Besar, especially in economics lessons, they still use conventional methods which according to researchers are very inefficient both in terms of energy and time. This greatly affects the value of students who do not reach the expected minimum completeness criteria. The learning outcomes obtained are often used as a barometer to find out how far students have mastered the material that has been taught. In order to improve learning outcomes, it can be done by using appropriate learning media for teachers and students, one of the learning media that is expected to provide solutions in improving student learning outcomes is the use of *spreadsheet media*. *Microsoft Office Excel* is a *spreadsheet* program that is easy to use because of its reliability, Excel is often used for various forms of processing statistical data, technical engineering data (*engineering*), in the fields of trade, scientific research, and others. Using *Microsoft Excel* to display calculations in economics learning, especially calculations in working papers, will feel more effective and efficient because users can easily edit the numbers in the column when corrections occur, and easily perform a lot of calculations through formulas. In accordance with the background described above, the authors took the research title "Effectiveness of using *spreadsheet learning media* to improve student learning outcomes at SMAN 1 Sumbawa Besar"

METHOD

Research on the effectiveness of using spreadsheet learning media to improve student learning outcomes in economics lessons at SMAN 1 Sumbawa Besar for the academic year 2021/2022, which is located at Jalan Garuda No. 1 – Sumbawa Besar – Tel. (0371) 21723– Fax (0371) 21723. This research was conducted from May to June 2022. Assuming that researchers will observe changes that occur before the application of the use of *spreadsheet learning media* and after the use of *spreadsheet* learning media in the learning process. In this research, the researcher uses a combination research type, namely research that combines two forms of research between quantitative research and qualitative research. (Mulyadi, 2011). *Mixed method* is also referred to as a methodology that provides philosophical assumptions in indicating the direction of data collection and data analysis as well as a combination of quantitative and qualitative approaches through several phases of the research process. The combination method strategy used in this study is a sequence of qualitative and quantitative analysis. In this research, qualitative research is used as the primary method, while quantitative research is the secondary method.

This study uses an experimental approach, research with an experimental approach is a study that seeks to find the effect of certain variables on other variables under tightly controlled conditions. (Jaedun, 2011) in this case the researcher wants to see the efficiency of the learning process using the conventional method, namely recording financial statements in a line ledger during the learning process in the classroom compared to when learning has used *spreadsheet learning media* during the teaching and learning process.

The population in this study were 105 students of class XI IPS SMA N 1 Sumbawa Besar. The method taken to determine the sampling in this study is to use *purposive sampling* .. to determine the number of samples to be taken the researcher using the Slovin formula which is a formula or formula to calculate the minimum sample size if the behavior of a population is not known with certainty (Yuliza et al., 2020).

$$n = \frac{N}{(1 + Ne^2)}$$

Information:

n : minimum number of samples

N : many samples in the population

e: fault tolerance limit (error)

So the calculation is:

$$n = \frac{N}{(1 + Ne^2)}$$

$$n = \frac{105}{(1 + 105 \cdot 0,1^2)}$$

n = 51,2 then rounded up to 51 students as respondents.

Based on the results of calculations using the Slovin formula, the number of samples used in this study were 51 respondents. With b above the error tolerance used is 10% = 0.01 . in this study the data is divided into two types of data , namely:

1) Primary data,

Primary data (primary data) is data that is collected by an individual/organization directly from the object under study and for the benefit of the study concerned which can be in the form of interviews, observations (Helmi, 2021) . Primary data in this study is data obtained from observations and interviews.

2) Secondary Data,

Secondary data (secondary data) is data obtained/collected and put together by previous studies or published by various other agencies. Usually indirect sources are in the form of documentation data and official archives (Helmi, 2021) .

The data collection instruments are as follows:

1. Interview

An interview is a conversation that takes place between interviewers (interviewer) who asks the question and the interviewee (interviewer) who gives the answer (Recruiting et al., 2016) . Interviews to find out information about the respondent's personal, feelings, opinions, assumptions, activities, motivations, and goals The type of interview used in this study is an open interview.

2. Questionnaire

Table 1: Grid of the learning effectiveness questionnaire instrument

Variable	Indicator	Item number	Amount
Effective use of learning media	Learning Media	1,2,3,4,5	5
	Learning methods	6,7,8,9,10	5
	Use of time	11,12,13,14,15	5
	Student behavior	16,17,18,19,20	5
	Materials/teaching materials	21,22,23,24,25	5
	Study facilities	26,27,28,29,30	5

Table 2: Interpretation of Effectiveness Categories

Range	Category
0 – 24	Very Less Effective
25 – 48	Less effective
49 – 72	Effective enough
73 – 96	Effective
97 – 120	Very effective

3. Documentation

Documentation is a data collection technique that records all events that occur during the research. Documentation in this study can be in the form of a list of grades, student conditions, school conditions. notes, photos. Based on the documentation data from the pre-test and post-test results, students are said to be complete if they have met the KKM (minimum completeness criteria).

Analysis technique is an attempt to explain and compile the data that has been entered, this is to fulfill valid, correct and complete research. In this study, the data obtained from interviews, observations and documentation were then poured in the form of a description that was compiled according to a predetermined writing systematic framework . The data analysis that has been carried out in this study used two approaches, namely a qualitative approach and a quantitative approach, qualitative data obtained from data reduction, data display and conclusion drawn/verification. Data reduction is the process of assessing, focusing attention, simplification patterns, abstracting and transforming rough data that emerges from written notes in the field. This process continues throughout the research, even before the data is actually collected as can be seen from the research framework, study problems and the data collection approach chosen by the researcher. Reducing data by means of strict selection of data, summaries or brief data descriptions and classifying them in a broader pattern. This qualitative data analysis is intended to answer the formulation of the problem regarding the opinion of the respondents, namely the students of class XI IPS SMAN 1 Sumbawa Besar regarding the implementation of the use of *spreadsheet learning media* in the teaching and learning process in schools. Meanwhile, quantitative data will be analyzed using a comparative data analysis technique (T-test) where this technique is used to test hypotheses regarding whether there is a difference between the variables studied, if there is a difference whether the difference is significant or does not have a significant effect. For this reason, the researcher uses SPSS 22 software . With independent sample T-test analysis, in principle, the purpose of the two-sample test is to find out whether there is a difference in the mean (mean) between the two populations by looking at the average of the two samples. If the results show the data If t is not normal, it will be tested using Wilkxon, then to see the effectiveness of using spreadsheet learning media, a statistical test will be carried out using the N Gain score test. With the formula:

$$\% \text{ N-Gain Score} = \frac{[\text{Posttest Score} - \text{Pretest Score}]}{[\text{Ideal Score} - \text{Pretest Score}]} \times 100\%$$

RESULTS AND DISCUSSION

This research was conducted at SMAN 1 Sumbawa Besar. SMAN 1 Sumbawa Besar is one of the public schools that was established on July 11, 1959 in Sumbawa Regency. The location of SMAN 1 Sumbawa Besar is very strategic, because it is in the middle of the city which is surrounded by public facilities owned by the Sumbawa Regency Government. This study involved 51 respondents who were students of class XI IPS. Table 3. explained that the majority of respondents' gender in this study were male as much as 55% and the rest were female.

Table 3. Gender of Research Respondents

Gender	Frequency (person)	Percentage (%)
Man	28	55
Woman	23	45
Total		

(Source: Primary Data, 2022).

Table 4: Distribution of Respondents Pre-test and Post-test scores

Rating Items	Number of Respondents	Score Lowest	The highest score	Percentage of Passing KKM	Average
Pre test scores	51	30	88	13.7	65
Post test scores	51	78	90	86.3	83.47

(Source: Primary Data, 2022).

Table 4 shows that the average pre-test score obtained by the respondents was 65, while after getting the learning process using *spreadsheet learning media*, the average score increased 83.47. The interviews conducted in this study were intended to dig deeper into the opinions of students as respondents in using learning media, namely *spreadsheets*. Interviews were conducted after the treatment process for providing economic learning using *spreadsheets* took place. Interviews were conducted on 9 randomly selected students. The interview aspect emphasizes questions about deepening and how to teach teachers related to *spreadsheets*, then followed by the obstacles and benefits felt by students in using this learning media. The quantitative data obtained in this study are student learning outcomes data in the form of pretest and posttest related to the use of *spreadsheet media*. The normality test used in this study is the Kolmogorov Smirnov test because the number of samples is more than 50 respondents. The following are the results of the normality test of the Pre-test and Post-test data that were tested using the SPSS version 22.0 application:

Table 5: Normality Test Results

Test Items	Value Significance	Meaning of Test results
Pretest Score	0.060	Normal
Posttest Score	0.200	Normal

(Source: Processed Primary Data, 2022)

The results of the interpretation of the normality test using the Kolmogorov Smirnov test show that the calculated significance value is more than the table significance, which is 0.05. Thus, the Pretest and Posttest value data in this study are normally distributed. So to determine the difference in the results of the Pre-test and Post-test, it may be continued with a paired T-test because the data is normally distributed. Based on the tests carried out, the value of the paired T test is obtained as follows,

Table 6: Paired T-Test Results

Value items	N	Value t count	Value of Sig. Count (2 tailed)
Pretest and Posttest	51	-11.16	0.000

(Source: Processed Primary Data, 2022)

The calculated significance value in Table 6 is 0.000, when compared with the table significance value (0.05) then it is known that there is a difference between the Pre-test and Post-test values of the respondents. This shows that there is an increase in the value before using the spreadsheet media and after using the media.

Seeing the results of the previous T test which showed an increase in scores before and after using spreadsheet learning media, the statistical test was then continued with the N Gain Score test to see the effectiveness and percent effectiveness of using this learning media in economics learning in class XI at SMAN 1 Sumbawa Besar.

$$\% \text{ N-Gain Score} = \frac{[\text{Posttest Score} - \text{Pretest Score}]}{[\text{Ideal Score} - \text{Pretest Score}]} \times 100\%$$

Table 7 : Percent Value of N Gain Score

Value items	N	Minimum	Maximum	N Gain Score
Pretest and posttest	51	10	77.14	0.47

(Source: Processed Primary Data, 2022)

Based on the data in Table 7, it is known that the achievement of the N Gain Score for the effectiveness of using spreadsheet media in economics learning for students at SMAN 1 Sumbawa is 0.47. So that in this achievement the use of *spreadsheet media* is included in the **effective category** in improving student economic learning outcomes at SMAN 1 Sumbawa. Referring to the effectiveness category table for the achievement of the N-Gain Score as shown below is

Table 8 : Interpretation of N-Gain Score

Normalized Gain Value	Interpretation
$0.70 \leq g < 1.00$	Tall
$0.30 \leq g < 0.70$	Currently
$0.00 < g < 0.30$	Low
$g = 0.00$	No increase
$-1.00 \leq g < 0.00$	There is a decrease

Based on the results of the interpretation, it is known that the n-gain score in this study (value = 0.47) indicates that the *spreadsheet learning media* is effective in increasing the value of student learning outcomes in the medium category.

As a form of cross-checking the data, the assessment of effectiveness is not only done based on the value of the Pre-test and Post-test of learning outcomes. However, the distribution of questionnaires filled out by students was also carried out without intervention from the researcher. Aspects asked in the questionnaire include aspects of teaching methods, teaching materials/materials, time utilization, student behavior, and learning facilities. Based on the results of filling out the questionnaires filled out by students, the following results were obtained,

Table 9: Univariate Results of Assessment of the Effectiveness of Using Learning Media Based on Student Questionnaire Filling

	N	Min Value.	Max Value	Total value	Average
Total	51	70	120	4231	82.96

(Source: Processed Primary Data, 2022)

Table 10: Interpretation of Effectiveness Categories

Range	Category
0 – 24	Very Less Effective
25 – 48	Less effective
49 – 72	Effective enough
73 – 96	Effective
97 – 120	Very effective

The results of the interpretation of the total univariate assessment in the effectiveness category based on the student questionnaire obtained an average value of 82.96 which if associated with Table 10 this assessment is included in the effective category. This is in line with the results shown by the effectiveness value obtained in statistical testing on the assessment of pretest and posttest learning outcomes. So it can be concluded that the use of spreadsheet media is quite effective in improving the learning outcomes of class XI IPS students of SMAN 1 Sumbawa Besar.

CONCLUSION

Based on the results of the study it can be concluded that the implementation of the use of *spreadsheet learning media* in Economics lessons at SMAN 1 Sumbawa Besar went well according to the planning in the Learning Implementation Plan (RPP). The implementation includes the process of giving a pretest, the implementation of giving learning treatment using spreadsheet media for 3 limited face-to-face meetings in the Computer Laboratory, and the evaluation process using posttest assessment measurements. by showing the results of an increase in the number of students who passed as much as 86.3% In addition to measurements based on pretest and posttest, in this implementation an assessment process was also carried out with structured interview techniques, observation and filling out questionnaires by respondents.

Spreadsheet learning media is effective in improving the learning outcomes of class XI IPS students at SMA Negeri 1 Sumbawa Besar for the 2021/2022 academic year. The achievement of effectiveness is based on the N-Gain Score value of 0.47 (percent value of N-Gain Score = 47 %) which is in the moderate category (quite effective).

There is an increase in learning outcomes between before and after learning using *spreadsheet learning media* for students in class XI Social Studies at SMAN 1 Sumbawa Besar for the academic year 2021/2022. This is evidenced by the calculated significance value (0.00) which is smaller than the table significance value (0.05).

RECOMMENDATION

For research agencies, It is hoped that the results of this study can be input and consideration in policy making as well as a reference in learning in order to improve the quality and student learning outcomes. For further researchers, seeing that the effectiveness value obtained is still in the sufficient category, it is worth considering further research related to other factors other than learning media that affect the effectiveness in this learning. In addition, it can also be considered related to research conducted during a pandemic, so that it can be made in the form of a normal learning time variable. This can be presented in the form of comparative research in different learning time spans.

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