

THE EFFECT OF USE VIDEO IN THE MODEL OF GUIDED INQUIRY LEARNING ON TRAVELING WAVES AND SOUND WAVES MATERIALS IN CLASS XI SMA NEGERI 7 SIJUNJUNG

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ABSTRACT

The many technological discoveries of the 21st century require the world of education to adapt quickly. Based on curriculum 2013's competence standards. Then it requires reinforcement of a scientific approach to add in learning. But in the fact remains that the learning model demands the 2013 curriculum and the 21st-century technology-based learning medium is not fully finish. Researchers have attempted to study using video as a learning medium in guided inquiry learning to look at the impact on learning participants. The kind of research being done is a quasi-experiment research design with the randomized research group one design. The population in this research are all public high school seniors registered in 2020/2021. Samples from this research are XI MIPA 1 as experiment class and XI MIPA 2 as control class. The research instrument consists of posttest and performance assessment sheets. The data on this research is analyzed using a two average descriptive analysis and testing similarities at definite point 0,05 for the competence of students made up of knowledge and skill. Studies have concluded that there is an influence that means use the video in guided inquiry learning to traveling wave and sound waves in XI SMA Negeri 7 Sijunjung. It is supported by has data analysis on each knowledge and skill competence with two averages found th> ttable. At the competence knowledge, $4,824 > 2,002$ and at skill competence $4,098 > 2,002$ who are in the Ho rejection area means there are different results for the competence of knowledge and student' skills.

Keywords : 21st-century, traveling waves, sound waves, guided inquiry, 2013 curriculum



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I. INTRODUCTION

Education is a necessity in ménage, invent, and increase human's quality. Education now is characterized by 21st-Century education. 21st-Century education is a century in which information is widespread and growing. (1) 2013 curriculum graduates standards, the target of learning that includes reinforcement and development in each competence attitudes, knowledge and skill on every educational unit. Each competency has different value acquisitions. Attitude competence is evaluated through activities of appreciation and implementing. (2) Knowledge competencies are assessed through activities of recollect, understand, apply, analyze, evaluate, and create. Skill competence is assessed through activities of observing, give the questions, experiment and presenting. According to the competence standards of the 2013 curriculum, it is necessary to strengthen the scientific approach to apply in learning. Scientific approach is learning that encourages students to be better able to understand, ask, experiment, and presentation. (3) To achieve learning through a scientific approach, a contributing factor in the learning process include those of the learning model and the media learning. 2013 curriculum focuses on the use of three learning models based on education No 103, one of the recommended learning is guided inquiry learning.

Guided inquiry learning is a learning model that involves a student's ability to search and investigate things systematically, logically, and critically so that the student can personally formulate his or her findings. Guided inquiry learning is must students to be more active and participate in the learning process since the incubation is accompanied by a learning model aimed at requiring students to find and solve the problems. (4) According to Brydon Lamb's concept humans learn 83% through sight, 11% through by hearing, 3,5% through by nose, 1,5% by sensitive, and 1% by taste. (5) This suggests that learners are more understanding a lesson through sight. Based on this fact, researchers are interested in using video as learning to support the application of guided inquiry learning. The Video present more interesting than books, pictures, and audio media. This can be seen from the effectiveness of video use in terms of time, the speed of delivery of messages and the appeal of video. The video used in the teaching process has many benefits of showing objects that are normal and cannot be directly observed. Video can capture a process correctly and can be viewed over and over again. (6)

Physics is a subject devoted to understanding the concepts that focuses on the process of building knowledge through invention., presentation,and systematic and governed by a specific rules. (7) Physics is based on the very nature of physics, which is that students need to understand facts, theories, principles, laws, and procedures and can apply them in their daily lives. (8) Based on technology-based learning and learning media to support the fact learning process that takes place in the field is not all expect by the 2013 curriculum. Many physics teachers are on the learning process despite the repeated changes of the curriculum. SMA Negeri 7 Sijunjung is one of the used 2013 curriculum executioners school, but the 2013 curriculum demands are not fully executed. The process of scientific learning remains to be seen in the learning process still applies to the discussion and speech systems and most students only as listeners in the learning process.

The use of method speaking information tends to memorize only by the students without the thought process, the method of speaking is simply the transferring of the teachers mind to the student without comprehension the student being scientific. (9) In addition, the medium of learning used is still a textbook source and learning medium while the 2013 curriculum demand of learning especially on physics subjects require models and learning media that enable the student to be active, innovative, creative, and independent by scientific approach. According to the results of the midterm exam T.P 2020/2021 only 22% students from grade XI completed. Based on exposure, researchers are attracted to doing research using video as learning in the guided inquiry learning to see the results of student study.

II. METHOD

The research to investigate the effect of the use of videos in incubating learning guided inquiry on traveling waves and sound waves materials in grade XI SMA Negeri 7 Sijunjung. The kind of research used was an *quisy-experiment* with a randomized control group only design. The Research used as in table 1.

Table 1 randomized control group only design

Group	Treatment	Posttest
Experiment	X	Y
Control	-	Y

Source : Sugiono,2014:76

The Research population is all students SMA Negeri 7 Sijunjung enrolled in the school year. Samples from this research are XI MIPA 1 as experiment class and XI MIPA 2 as control class. The steps taken to determine a sample on this research:1)Will be collecting data on physics midterm two-class MIPA 2)Analyzing the score of the midterm results by calculating the average score and the deviation standard 3)The normality test, homogeneity test, and class average similarly test 4)Then could be confused, control classes and experiment classes

Sugiono said everything set forth by research to be studied and thus gained information on the subject is variable. (10) Free variables in this research are the use of videos in guided inquiry learning and Variables bound in this study are the result of learning participants in knowledge and skill competence. The Control variable in this research is teachers who teachers the same class, the number of hours used, and the lesson material and the number of issues to be tested. The research instrument consists of posttest and performance assessment sheets. The data on this research is analyzed using a two average descriptive analysis and testing similarities at definite point 0,05 for the competence of students made up of knowledge and skill. Studies have concluded that there is an influence that means use the video in guided inquiry learning to travel wave and sound waves in XI SMA Negeri 7 Sijunjung. It is supported by has data analysis on each knowledge and skill competence with two averages found $t_{th} > t_{table}$.

III. RESULTS AND DISCUSSION

A. Description of data

1. Knowledge Competence

The assessment of students learning results on knowledge competence is obtained from a final test (posttest) with a question of multiple choice of 40 items of matter for each. The 40 items used are posttest issues with the initial number of 50 items. Results for statistical parameters can be seen in table 2 :

Table. 2 Results posttest experiment and control class

Class	N	Score		(\bar{X})	S	S ²
		max	min			
Experiment	30	90	70	81,08	6,49	42,10
Control	29	90	65	73,92	8,47	71,66

Information :

N : Many students

Max : Score Maximum

Min : Score Minimum

(\bar{X}) : Average

S : Standard Deviation

S : Variance

Based on table 2 it seems that the average student in the experiment class is higher than the control class. The Average class of students in experiment class 81,08 and control class 73,92. The Standard deviation of the experiment class was smaller than the control class. Variance experiment class is smaller control class, which means the knowledge competence control class is more diverse than the experiment class.

2. Skill Competence

The assessment of students learning results on skill competence during the learning activity which is experiment and activity student during the learning process. On test assessment for traveling wave used Melde experiment and for sound wave are organ pipeline experiment using a simulation phet. . Results for statistical parameters can be seen on table 3

Table 3 Skill assessment experiment and control class

Class	N	Score		(\bar{X})	S	S ²
		max	min			
Experiment	30	87	73,5	84,70	4,01	16,11
Control	29	85,5	72	89,98	4,18	17,53

Information :

N : Many students

Max : Score Maximum

Min : Score Minimum

(\bar{X}) : Average

S : Standard Deviation

S : Variance

Based on table 3 it seems that the average student in the experiment class is higher than the control class. The Average class of students in experiment class 73,5 and control class 72. The Standard deviation of the experiment class was small than the control class. Variance experiment class is smaller than the control class, which means the skill competence control class is more diverse than the experiment class.

B. Data Analyze

A. Knowledge Competence

Data analysis on the competence of knowledge of students has been tested using normality test, homogeneity test, and two averages similarly. The test results are described in the following chart:

1). Normality test

Normality tests were used to see if the two-class distributed samples were normal. The normality test on this research used the lilifors test. The normal test results did get Lo and Lt at real level (σ) 0,05 for n=30 and n=29 in experiment and control class.

Table 4. Normality test results posttest from experiment and control class

Class	A	N	Lo	Lt	Category
Experiment	0,05	30	0,159	0,161	Normal
Control		29	0,109	0,165	Normal

Information :

A : Significant level

N : Many students

Lo : Lilifors Observation

Lt : Lilifors Table

Based on table 4 L_o experiment class of 0,159 while for a control class of 0,109 with 30 students participant for experiment class and 29 students for control class. L_t for experiment class 0,161 and for control class of 0,165. L_o higher than those of L_t , this means data in experiment class a normally distributed control class.

2). Homogeneity test

The homogeneity test was conducted to find out if the class sample came from a population that was homogeneous or not. Homogeneity test is done by comparing the F_h with F_{table} at DK 29 and 28 at experiment and control classes.

Table 5. Homogeneity test results posttest from experiment and control class

Class	N	S^2	F_h	F_{table}	category
Experiment	30	42,10	1,702	1,875	Homogen
Control	29	71,66			

Information:

N : Many students

S^2 : Variance

F_h ; Variance Observation

F_t : Variance Table

Based on table 5 the count F_h of 1,702 then F_{table} 1,875 at significant 0,05 . This means the data receiving area with $1,702 < 1,875$ which means both samples came from homogeneous variance.

3). Test of two average similarities

Based on the normality test and homogeneity test, the conclusion are that data from post-testing class experiment and control classes on traveling wave and sound wave materials has distribution normal and homogeneous variance .Then and researchers in turn conducted a hypothetical test using the t-test.

Table 6. t-test results posttest from experiment and control class

Class	N	(\bar{X})	S^2	Sg	Th	Ttable
Experiment	30	81,08	42,10	7,73	2,824	2,002
Control	29	73,92	71,66			

Information:

N : Many students

(\bar{X}) : Average

S^2 : Variance

Sg : Combined Average

Th : Hipotesis observation

Ttable : Hipotesis table

Based on table 6 showing of $T_h=2,824$ while $T_t=2,002$ Criteria H_0 accepted if $-T_{table} < T_h < T_{table}$ or $-2,002 < 2,824 < 2,002$. H_0 was rejected H_a received meant that there was a difference in the knowledge competence of both samples because of the treatment given which was the use of the video in the learning model guided inquiry to traveling waves and sound wave materials in class IX SMA Negeri 7 Sijunjung.

b. Skill Competence

Data analysis on the competence of skill of students has been tested using normality test, homogeneity test, and two averages similarly. This data comes from the result of a student immediate assessment made by two observers who are researchers and physics teachers at SMA Negeri 7 Sijunjung. Using the skill assessment table reference on the learners activity sheet and the learner's activity sheet during the learning process. The test results are described in the following chart:

1). Normality test

Normality tests were used to see if the two-class distributed samples were normal. The normality test on this research used the Lilifors test. The normal test results did get L_o and L_t at real level (σ) 0,05 for $n=30$ and $n=29$ in experiment and control class.

Table 7 Normality test results of the skill competence from experiment and control class

Class	A	N	L_o	L_t	Category
Experiment	0,05	30	0,142	0,161	Normal
Control		29	0,124	0,165	Normal

Information :

A : Significant level

N : Many students

L_o : Lilifors Observation

L_t : Lilifors Table

Based on table 7 L_o experiment class of 0,142 while for a control class of 0,124 with 30 students participant for experiment class and 29 students for control class. L_t for experiment class at 0,161 and for control class of 0,165. L_o higher than those of L_t , this means data in experiment class a normally distributed control class.

2). Homogeneity test

The homogeneity test was conducted to find out if the class sample came from a population that was homogeneous or not. Homogeneity test is done by comparing the F_h with F_{table} at DK 29 and 28 at experiment and control classes

Table 8. Homogeneity test results of skill competence from experiment and control class

Class	N	S^2	F_h	F_{table}	Category
Experiment	30	16,11	1,088	1,875	Homogen
Control	29	17,53			

Information:

N : Many students

S^2 :Variance

Fh ;Variance counting

Ft : Variance Table

Based on table 8 the count Fh of 1,088 then Ftable 1,875 at significant 0,05 . This means the data receiving area with $1,088 < 1,875$ which means both samples came from homogeneous variance.

3). Test of two average similarities

Based on the normally test homogeneity test performance on the students skill assessment results I was obtained that the data of both normally distributed samples and had homogenate variance for each of the items test. Then researchers in turn do make a hypothesis test of the research by used Uji-t. Test results are presented intable 9 below:

Table 9. t-test results skill competence from experiment and control class

Class	N	(\bar{X})	S2	Sg	Th	Ttable
Experiment	30	82,70	16,11	4,098	3,464	2,002
Control	29	79,98	17,53			

Information:

N : Many students

S^2 :Variance

Fh ;Variance Observation

Ft : Variance Table

Based on table 9 showing results skill competence students by getting results $Th=3,464$ while $Tt=2,002$ Criteria jo accepted Ho if $-Ttable < Th < Ttable$ or $-2,002 < 3,464 < 2,002$. Ho was rejected and Ha received meant that there was a difference in the skill competence of both samples because of the treatment given which was the use of the video in the learning model guided inquiry to traveling waves and sound wave materials in class IX SMA Negeri 7 Sijunjung.

DISCUSSION

Based on research conducted with 8 meetings for each KD, for KD 3.7 Travelling waves and KD 3.8 for Sound waves. In the experiment class using the video media in the incubation learning model is guided inquiry while dor the control class using the media image in the incubation learning model is guided inquiry. The video used in the research is a video download on Youtube and edited and combined to the traveling wave materials and sound waves based on the curriculum 2013 standard. While for the control class use media images adjusted to traveling waves materials and sound waves to support guided inquiry learning. To further maximize research, researchers make in LKPD (Learns's activity sheet) to guided inquiry assessment.

1. Knowledge Competence

From the results of the data analysis, there is a difference in students learning from the knowledge aspect between students who use video media in an incubating learning model and students who do not use video media in an incubating guided inquiry learning model. According to studies conducted by Yolanda's learning activities using the teaching, incubation required learning media, The learning media would make it easier for

teachers to communicate the messages from learning and make it easier for students to understand the material. (11) One type of learning media that is effective when combined with guided inquiry models is video media. Based on the posttest from both experimental and control classes, the test that uses the learning video in guided inquiry learning model's is shown higher than the control class that does not use the learning video in guided inquiry learning .

2. Skill Competence

From the results of the data analysis that video can be used as an alternative to support experimental activities that they feel are associated with an inhibitory factor. One of the benefits of using video as learning media incompetence skills is that they can vividly describe the process of learning physics. (12) For example in KD 3.7 on traveling waves, the media video illustrates how waves look and move so that learners can readily understand the process and shape of traveling waves and are already able to determine their characteristics. Then the KD 3.8 on the sound waves of the video media helps demonstrate processes and types of sound waves that cannot be explained using pictures or textbooks.

From the results of the data analysis, there is a difference between students learning from the skill aspect between those who use the video in a guided inquiry learning model and those who do not use the video in the guided inquiry learning model. This can be seen in the learning process students are more likely to be active in the learning process.

IV. CONCLUSION

The use of video in the guided inquiry learning model made a significant impact on the increased competence of class XI SMA Negeri 7 Sijunjung. The knowledge competence average in experiment class is 81,08 and in control, class is 73,92. The skill competence average in the experiment class is 84,70 and in the control class is 79,98. For the test of two average similarities in knowledge competence in the experiment and control class is $T_h > T_{table}$ is $4,824 > 2,002$, meaning there was a discrepancy between studying the experiment and control class. For the test of two average similarities in skill competence in the experiment and control class is $T_h > T_{table}$ is $4,098 > 2,002$, meaning there was a discrepancy between studying the experiment and control class. Based on the above exposure, the use of video in guided inquiry learning models is on traveling waves and sound waves can have a significant impact with increased student learning results in knowledge and skill competence.

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