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The Influence of Using Sparkol Videoscribe's Learning Media to Increase Science Literacy On Pressure Concept

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Abstract. This research related to determining the influence of using Sparkol videoscribe's learning media to increase students' science literacy. The research was conducted on one of junior high schools at Cilegon City in years of academy 2017/2018. The research method was Pre-Experimental Designs (non-designs), with One Group Pretest-Posttest Design. The sample of this research consisted of 30 students from 2nd grade. The instrument used was science literacy tests. The results of this study showed an increase in students' science literacy based on the pre-test with average score of 10.33 and the post-test with average score was 16.63. N-gain value (increase in value after learning) students' literacy skills showed the significant result on 0.74 which is high category, with the results of paired t-test obtained significance value of 0.00 < 0.05, H₀ is rejected. Based on the results of the study, it can be concluded that the use of Sparkol videoscribe's learning media influences the increase of science literacy.

INTRODUCTION

The development of science and technology requires the existence of creative and innovative learning media to support the learning process. This is important as one of efforts to achieve educational goals to develop human potential to be more critical thinking, innovative, creative [1]. The Organization for Economic Cooperation and Development (OECD) periodically conducts the Program for International Student Assessment (PISA) every three years. One aspect that was assessed in this program was scientific literacy. PISA 2015 ranks of Indonesian student was at 62 out of 70 countries participated, with a score of 403 in a lower category. Students have a good scientific literacy if they have three competencies, namely (1) Explaining phenomena scientifically, (2) Evaluating and designing scientific investigations, and (3) Interpreting data and evidence scientifically [2].

Science generally studies natural phenomena that are often encountered in the environment [3]. In science learning, students are expected to understand the phenomena, so that the way of thinking students are not only fixated on mathematical formulas. The results of observation showed that students were less enthusiastic when they were learning science, so it makes them difficult to understand science concept. This is because the science learning process has not used a variety of learning media, only using textbooks. Therefore, innovation is needed in learning. One of the innovations that can be done is through the use of learning media.

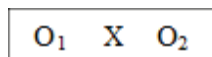
Media is an intermediary form that is used to convey the message/idea or material from the sender to the receiver [4]. One of learning media is Sparkol VideoScribe which is in animated video form, consisting of images arranged into videos. Sparkol VideoScribe is able to present a mix of interesting images, sounds, and designs in learning content to attract students' attention and interest in learning process. In the learning process that uses Sparkol VideoScribe as learning media, students give more attention to the learning presented by teacher because they feel interested in content presented. Besides that, Sparkol VideoScribe is able to increase students' enthusiasm to pay attention science learning

[5]. VideoScribe media can illustrate complex concepts in learning process, increase student' interest and motivation, so that their critical thinking skills increase to higher category [6]. Study of VideoScribe as learning media was conducted by Pratiwi in Physics education [7], Yusnia in department of PG PAUD [8], Nurrohmah et.al, in Mathematic education [9], and Riyanto in Biology education [10].

Sparkol Videoscribe is very suitable as a science learning media because it is able to change abstract things into concrete or complex things more simple [11]. Sparkol Videoscribe media can be used in the pressure concept in science learning, because the application of pressure concept is applied in daily life, for example hydraulic, dam construction, chicken claw foundation, etc. Based on this background, this study aims to determine the Influence of using Sparkol VideoScribe's Learning Media to Increase Scientific Literacy on Pressure Concept.

METHOD

The method used was Pre-Experimental, the design form used is One Group Pretest-Posttest Design [12].



Note:

O_1 = Pretest

X = Treatment

O_2 = Posttest

This study was conducted at SMPN 3 Cilegon in the second semester of academic year 2017/2018 with 30 students of class VIII. The instruments used in this study is scientific literacy test instruments with 20 multiple-choice questions. Researchers used N-gain test developed by Hake in Kaniawati [13] with the following formula :

$$\langle g \rangle = \frac{S_{post} - S_{pre}}{S_{max} - S_{pre}} \quad (1)$$

Note

$\langle g \rangle$ = Gain value

S_{post} = Post-test score

S_{pre} = Pretest score

S_{max} = Maximum score

RESULT AND DISCUSSION

The pretest was conducted to determine initial knowledge of students in answering scientific literacy questions on pressure concept. While Posttest to determine final outcome of scientific literacy knowledge of students after receiving treatment in learning science using Videoscribe Sparkol as a media. Pretest and posttest results and n-gain values can be seen in Table 1.

TABEL 1. Increased of Student's Scientific Literacy

Tes	Score				$\langle g \rangle$	Category
	Ideal	Min.	Max.	Average		
Pretsest	20	7	13	10.33	0.74	High
Posttest	20	14	19	16.63		

Table 1 shows that there was an increase in scientific literacy of students after receiving treatment in science learning using Sparkol Videoscribe as a learning media. The increased in scientific literacy can be seen from the post-test average score of 16.33 were higher than pretest average score of 10.33, or normalized gain value of 0.70 which is included in the high category.

Sparkol Videoscribe which used as a learning media makes students get a better understanding of conceptual on pressure concept. Students were given an explanation of pressure concept as well as examples of its application in daily life, for example, application of Pascal's law on hydraulic that is capable to lifting cars. Besides that, Sparkol Videoscribe's learning media can make the pressure concept more simple and easy to understand. Accordancing to the functions and uses of learning media, it can make concrete and difficult concepts to explain directly to students. By using the media, the students will have the better understanding in abstracts content and they can master their teaching goals better [14]. Sparkol Videoscribe's learning media also makes students doing more activities such as observing, demonstrating, not just listening to the teacher's description.

Scientific literacy skills consist of three aspects, namely (1) Explaining phenomena scientifically, (2) Evaluating and designing scientific investigations, and (3) Interpreting data and evidence scientifically [2]. Figure 1 shows an increase in student's scientific literacy for each aspect of scientific literacy.

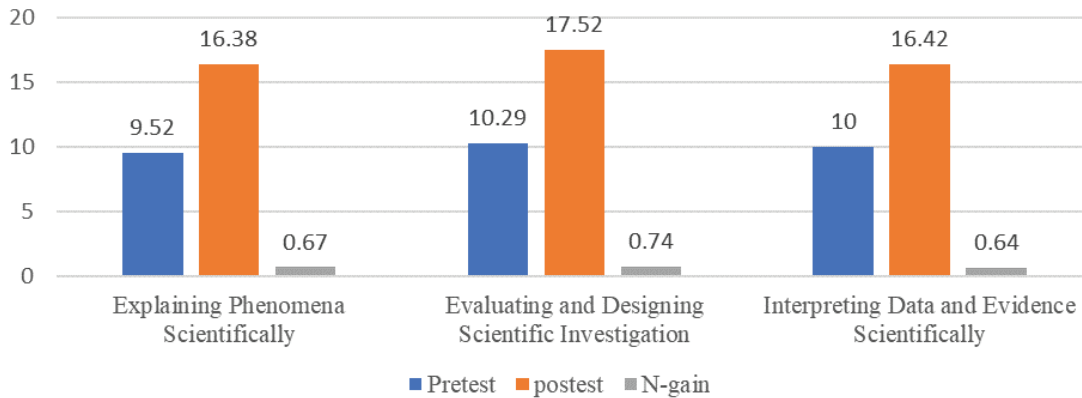


FIGURE 1. Diagram of Pretest Posttest Average Scores and N-gain for Each Scientific Literacy Aspect

Figure 1 shows an increase of student's scientific literacy in ability aspect to explain phenomena scientifically, it can be seen from posttest score of 16.38 were higher than pretest score of 9.54, with a normalized gain value of 0.67 which is included in the medium category. Student's ability to explain phenomena scientifically means the ability to provide an explanation of natural phenomena, technology, and their implications for society [2]. Figure 1 also shows an increase of student's scientific literacy in evaluating and designing scientific investigations, it can be seen from posttest scores of 17.52 were higher than pretest score of 10.29, with a normalized gain value of 0.74 which is included in the high category. The ability to evaluate and design scientific investigations is the ability to identify and describe data obtained through observations and experiments, both in the laboratory or in the field, leading to an explanatory hypothesis that allows predictions to be tested [2].

The last aspect is interpreting data and evidence scientifically also increasing, it can be seen from posttest scores of 16.42 were higher than pretest score of 10.00, with a normalized gain value of 0.64 which is included in the medium category. The ability to interpret data and evidence scientifically is the ability to analyze and evaluate data, to draw appropriate scientific conclusions based on the evidence and facts obtained [2]. To see the influences of Sparkol Videoscribe's learning media on student's scientific literacy, statistical tests were performed as shown in Table 2.

TABEL 2. Result of Paired t-Test

Data	T	Sig. (-tailed)	Conclusion
Pretest	-20,648	,000	There is a significant difference
Posttest			

Based on t-test result is obtained data with a t value of -20,648 and a sig (2-tailed) 0,000 <0,05. It means that there is a significant influence of using Sparkol Videoscribe's learning media on student's scientific literacy.

CONCLUSION

Based on the results of this study it can be concluded that there is influence of Sparkol Videoscribe's learning media to increasing scientific literacy on pressure concept. It can be seen from N-gain value obtained of 0.74 in the high category. Increasing scientific literacy can also be seen from increasing of scientific literacy aspect, namely (1) Ability to explain phenomena scientifically, which have increased with n-gain value of 0.64 in medium category (2) Ability to evaluate and design scientific investigations, which have increased with n-gain of 0.74 in high category, and (3) Ability to interpret data and evidence scientifically which have increased with n-gain value of 0.64 in medium category. The results of paired t-test also showed a significant value of <a value of 0.00 <0.05, so it can be concluded that there was an influence of using Sparkol Videoscribe's learning media on student's scientific literacy in pressure concept. This is show sparkol videoscribe's learning media is needed to develop for the others physics concepts, e.g. atom concept, solar system, etc.

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