



Analysis of Students' Understanding of Adapted Topic using The WhatsApp Group (WAG), Learning Video, and Assisted Module

Desy Merisa ✉, Atep Sujana, and Wahyu Sopandi

Elementary Education Program, School of Postgraduate Studies UPI, Bandung, Indonesia

✉ desymerisa02@upi.edu, atepsujana@upi.edu, wsopandi@upi.edu

Abstract: This study aims to determine the extent of students' understanding of online learning by using instructional videos and WAG assisted modules. The method used in this study is a pre-experimental method with one group pretest-posttest design. The research subjects were sixth-grade students in a public school in Bandung who were selected by purposive sampling technique. The data analysis used in this research is descriptive quantitative. The instrument used to explore the conceptual understanding was a test with two tiers of 20 questions. The first level questions are in the form of multiple choices with four choices to determine the answer, while the second level questions ask for reasons for choosing the answers on the first level. The research findings show that after implementing online learning using instructional videos and modules, students' understanding has increased quite significantly as indicated by the n-gain value from the low category to the high category. Analysis of the level of understanding of students shows changes towards the better at each level.

Keywords: learning videos, modules, WhatsApp groups, student understanding.

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INTRODUCTION

Science is a subject that is directly related to life. This is by the opinion of Samatowa (in Nahdi, Yonanda, & Agustin, 2018) who says that science is a subject that discusses natural phenomena based on the results of experiments and observations made by humans. Science is one of the subjects given to elementary school students. Science learning aims to help students, master, understand several science facts and concepts regarding natural phenomena and can apply them in everyday life that can develop and instill scientific attitudes in students (Nahdi, Yonanda, Agustin, 2018). Students' understanding of concepts has an important role, therefore this ability must be improved. The concept of understanding is a person's ability to understand a certain concept. Concept understanding is a thought process carried out by individuals to truly understand an object or event Arends (in Arista & Kuswanto, 2018). Concept understanding involves mastering content where knowledge can be generated and built through many relationships between existing and previous knowledge and transferred through procedural

reconstruction (Donevska-Todorova in Mutambara, Tendere, & Chagwiza, 2020). Students have difficulty in understanding science concepts. This is due to the nature of abstract scientific concepts (Buber & Coban, Ozdemir, Coramik, & Urek, 2020) and the teaching methods and techniques are not sufficient to teach these abstract concepts (Buber & Coban, 2017) because of the quality of the learning process applied by a teacher is one of the important factors in determining the success of the student learning process (Sukaesih & Sutrisno, 2016). In a pandemic like now, learning must be carried out online. A teacher must work harder to prepare teaching materials for use in online classes so that quality science learning can be maintained. Good teaching materials will be able to support good teaching and learning activities as well. Teaching materials that will be delivered by the teacher can be conveyed through teaching materials. Teaching materials or learning materials are all things that are curriculum content that must be mastered by students with basic competencies to achieve the competency standards of each subject in certain



educational units (Syofyan et al, 2020). Another definition of teaching material is any form of material or material that is systematically arranged which is used to assist teachers or instructors in carrying out teaching and learning activities to create an environment or atmosphere that allows students to learn Aditia, (in Asrizal, Festiyed, & Sumarmin, 2017). The teaching materials used in this research are video lessons and modules. Instructional videos are very helpful in teaching and learning activities, especially during a pandemic like now. This is in line with research conducted by Budiyo, 2009 (in Erniwati, Eso, & Rahmia, 2014) that computers can be used for learning as an audio-visual learning medium because it makes students more motivated and happier to learn so that it has an impact on increasing results. student learning. In line with this, relevant research has been conducted by Saptariana (2013) which suggests that practicum videos are an alternative to electronic learning that can contain insights and knowledge about learning material. With this video, it can make students learn independently and can spur students to understand the concepts of physics. In addition to the learning videos, the existence of the module helps the teaching and learning process in a pandemic period. With the module, students can learn independently. This is important because not all students are accompanied by parents during learning. Modules prepared by the teacher based on the essential basic competencies issued by the ministry of education, make it easier for students to understand the concept of the material presented. The results of the research by Budaeng, Ayu, & Pratiwi (2017) state that the scaffolding-based integrated science module has met the criteria of excellent quality and is suitable for use as a science teaching material. Based on the description above, this study aims to analyze students'

understanding of the adaptation topic using learning videos and WAG assisted modules. This problem is described in the following research questions: (1) How to increase students' understanding of the adaptation topic using learning videos and WhatsApp group assisted modules? (2) What is the level of students' understanding of the adaptation topic using video lessons and modules assisted by the WhatsApp group? This research can provide information about online learning practices to increase the understanding of concepts.

METHOD

This study provides treatment to one class as an experimental group without using a control group. Previously, the group was given a pretest and finally given a posttest. Thus, the method used is pre-experiment with a one-group pretest-posttest design (Cresswell, 2010). The research subjects were grade VI students at a public elementary school in Bandung City in the 2020-2021 school year. The sample was not randomly selected using a purposive sampling technique (Creswell, 2010). The experimental class consisted of 32 students, with 18 male students and 14 female students. Data regarding student understanding is obtained through tests that refer to the indicators of understanding as suggested by Saglam-Arslan & Devecioglu (2010) which consists of defining, utilizing, applying, and exemplifying each part of theoretical knowledge. There are 20 test questions given in the form of two tiers. The first level questions are in the form of multiple choices with four choices to determine the answer, while the second level questions ask for reasons for choosing the answers on the first level. Furthermore, the test results were analyzed descriptively using n-gain and a percentage for each level of understanding.

Table 1. Level of Understanding

Level	Interpretation	Assessment Criteria	Score
<i>Sound Understanding</i>	The responses load all levels correctly	Correct answer -right reason	3
<i>Partial Understanding</i>	The response contains the correct components, but not all	Correct answer -partly right reason Wrong answer -right reason	2



Level	Interpretation	Assessment Criteria	Score
<i>Specific Misconception</i>	Responses indicate an understanding of the concept, but also contain misconceptions	Correct answer –the wrong reason	1
		Correct answer –no reason	1
		Wrong answer –partly right reason	1
<i>No Understanding</i>	Unreasonable or wrong response	Wrong answer –the wrong reason	0
		Wrong answer – no reason	0

Source: Demircioglu & Selcuk (2016)

RESULT AND DISCUSSION

The students' mean and n-gain understanding are presented in the following table.

Table 2. Mean and n-gain understanding

Test	Mean	n-gain
<i>Pretest</i>	37,7	
<i>Posttest</i>	83,3	0,74

Based on Table 1, it can be seen that the student's n-gain of 0.74 is in the high category. Thus, the increase in student understanding increased significantly through the use of videos and modules delivered through the WhatsApp group.

Students Understanding Level

The percentage of students' understanding of adaptation topics through the use of videos and modules based on their level is presented in the following table.

Table 3. Students Understanding Level

Level	Test	Question Items																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
SU	<i>Pre</i>	36	25	0	0	22	22	0	0	17	5,6	0	0	8,3	5,6	0	0	31	25	2,8	0
	<i>Post</i>	97	83	78	36	92	86	44	22	100	89	39	28	86	36	33	31	100	67	36	25
PU	<i>Pre</i>	22	19	28	22	33	17	11	8,3	39	31	14	14	0	44	22	22	22	19	25	22
	<i>Post</i>	2,8	14	22	50	8,3	14	56	69	0	11	61	64	14	64	61	56	0	33	64	56
SM	<i>Pre</i>	42	39	44	42	42	44	53	47	36	50	42	42	5,6	28	53	44	39	42	44	42
	<i>Post</i>	0	2,8	0	14	0	0	0	8,3	0	0	0	8,3	0	0	5,6	14	0	0	0	19
NU	<i>Pre</i>	0	17	28	36	2,8	17	36	44	8,3	14	44	44	86	22	25	33	8,3	14	28	36
	<i>Post</i>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 3 summarizes the conceptual understanding level data obtained from the pretest and posttest. Students' understanding of the sound understanding level and partial understanding increased after the implementation of learning using videos and modules. A different thing happened at the specific level of misconception and no understanding which had decreased. Thus, it shows that the implementation of learning using videos and modules can increase student understanding towards a better level. Student understanding has increased after the implementation of online learning using videos and modules assisted by the WhatsApp group. The increase that occurred was also quite significant, as indicated by the n-gain value which was in the high category. The increase in student understanding occurs because of the use of video in the form of audiovisuals like a

teacher explaining directly, making it easier for students to understand. Thus, videos can make students learn independently and can spur students to understand concepts. This is in line with the findings of Saptariana (2013) which states that practicum videos are an alternative to electronic learning that can contain insights and knowledge about learning material. The instructional video is also equipped with modules compiled by the teacher referring to the competencies that students must master. The module contains essential materials with concise, concise, and clear content. This makes it easier for students to understand the concept of the material presented (Budaeng, Ayu, & Pratiwi, 2017). Besides, the module also contains core material that is relatively short and more specific by the learning objectives because it is made by the teacher according to the characteristics and abilities of each student (Lasmiyati & Harta, 2014).



Analysis of students' level of understanding shows changes towards the better at each level. Research findings indicate that after learning there are still misconceptions among students. Thus, learning using videos and modules does not necessarily eliminate but only reduces misconceptions. These results are also in line with several studies related to understanding, such as those conducted by Demircioğlu & Selcuk (2016) which showed that students' understanding was increasing in a better direction but there were still misconceptions.

CONCLUSION

The research findings illustrate that overall student understanding has increased after the implementation of learning using instructional videos and modules. Students' understanding which was originally in the low category became high after implementation. The level of understanding of students also changes for the better at each level. However, there are still misconceptions on several item questions but the percentage is very low. Thus, it can be concluded that learning using instructional videos and modules can improve student understanding and reduce misconceptions.

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