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STRATEGY *E-LEARNING* FACILITATES STUDENT CONCEPT UNDERSTANDING ON HEAT MATERIAL AND ITS TRANSFER DURING THE COVID-19 PANDEMIC

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Abstract. This study aims to analyze e-learning strategies to facilitate students' understanding of the concept of heat and its transfer in 11th class during the COVID-19 pandemic. This research method uses a qualitative descriptive method. The subjects in this study were students of Public High School 2 of Teluk Keramat, totaling 28 students. This research instrument uses interview guidelines for teachers and students, and documentation of the results of students' conceptual understanding tests. From this research, it can be concluded that the e-learning strategy that has been used does not make it easier for students to understand the concept well. This is evidenced from the results of teacher and student interviews and the results of understanding the concepts obtained are low where there are 61% of students at the level of concept understanding and it is also proven based on each indicator, namely interpreting 35.71%, exemplifying 83.93%, classifying 85.71%, summarized 42.86%, concluded 0.00%, compared 62.50%, and explained 60.71%.

Keywords: Strategy E-Learning; Concept Understanding; Heat and Its Transfer

I. INTRODUCTION

Concept understanding is an important basis and stage in a series of Physics learning (Hendra et al., 2017). Students are said to understand if they can construct meaning from learning messages, whether spoken, written or graphic (Anderson & Krathwohl, 2010). The cognitive process that is based on transferability and emphasized in school is understanding. If students cannot understand the concept, then the student will have learning difficulties. Thus, students are expected to understand the concept well.

Based on the results of interviews conducted at Public High School 2 of Teluk Keramat before the COVID-19 pandemic, namely during face-to-face learning, it was found that there was a low understanding of students' concepts. The problem with the low understanding of students' concepts is that the learning process is only teacher-centered and does not provide opportunities for students to develop their thinking skills so that students only memorize, remember and collect a lot of information without being

required to understand and relate this information to everyday life. Afifah, 2019). According to Khoirunnisa & Linuwih (2020) also stated the low understanding of student concepts because many students think that Physics is a difficult subject to learn because it is abstract and too many mathematical formulas are used. This causes a lack of student attention and interest in Physics subjects aimed at students who are less active in asking questions and do not have a sense of curiosity or curiosity about the learning materials taught by the teacher so that students do not understand the content of Physics learning materials, especially heat material and its transfer.

The material of heat and its transfer is focused on in this study because this material is related to other materials and is considered important to be mastered by students in terms of understanding the concept. This research has limited funds and time, where one material focus is chosen, namely heat and its transfer. Mastery of understanding the concept of heat material and its transfer is also influenced by the selection of appropriate learning strategies.

Learning strategies are several alternative models, methods, ways of organizing teaching and learning activities which are general patterns that must be followed by teachers and students to achieve predetermined instructional goals (Nurdyansyah & Toyiba, 2016). During the COVID-19 pandemic, teachers are required to conduct distance learning (e-learning). This aims to be able to break the chain of the spread of COVID-19 which requires schools to be able to learn from home (Setiaji et al., 2020).

Learning strategies E-learning can be defined distance learning (Mulyadi, 2017). Learning strategies E-learning media that utilize technology support in the form of computers and the internet, so students can access learning from anywhere (Mulyadi, 2017). In addition, according to Arifin & Herman (Yucel, 2006) states that e-learning allow students to plan and direct their own learning process, so that each student takes responsibility or learns according to their own awareness and can make it easier for students to improve their learning experience. .

Based on this research, researchers are interested in researching understanding concepts using e-learning entitled "E-Learning Facilitate Students' Concept Understanding on Heat and Transfer Materials for 11th Class During the COVID-19 Pandemic". With this research is expected to provide a description of the results obtained.

II. METHODS

The type of research conducted is descriptive qualitative research method. The technique used in sampling is purposive sampling, where purposive sampling is a sampling technique with certain considerations (Sugiyono, 2016). In taking this sample, it was chosen based on the results of interviews with Physics subject teachers that students in 11th Class who were selected as samples had good Physics academic scores compared to other classes and there were 28 students. The object in this study is an e-learning that can facilitate students' understanding of the concept of heat and its transfer in 11th Class during the COVID-19 pandemic.

The data collection instruments used in this study were interview guidelines for teachers and students, and documentation of the results of students' conceptual understanding tests. Furthermore, the data validity test in qualitative research includes tests including: credibility test, transferability test, dependability test, and conformity test (Soendari T., 2009).

Data analysis is the process of systematically searching and compiling data obtained from interviews, field notes, and documentation (Sugiyono, 2016). The data analysis technique used consists of three streams of activities that occur simultaneously, namely data reduction (Data Reduction), data presentation (Data Display), and conclusion drawing (Verification) (Sugiyono, 2016)

To determine the high and low percentage of students' understanding of mathematical concepts the researcher uses references that can facilitate researchers and others in interpreting the findings as follows:

Table 1 Conversion of the Percentage of Students' Concept Understanding Ability.

Percentage Obtained	Category
Score < 55%	Low
55% Score < 75%	Medium
Score 75%	High

III. RESULT AND DISCUSSION

Data collection was carried out online for students and teachers, with 28 students in one of the SMA Negeri Teluk Keramat Villages. Data retrieval conducted online was a concept understanding test and interviews.

From the results of teacher interviews, it can be concluded that by applying the e-learning according to the Physics teacher, it is likely to be less successful. This is because by implementing *e-learning* students cannot understand the material, where the material is abstract so that students do not understand and their curiosity becomes less and less about the material. According to Badrudin *et al* (2020) stated that online distance learning (e-learning) is also seen as less effective and less than optimal from the aspect of achieving the quality of learning as well as the quality of mastery and deepening of teaching materials, especially by students. There are several obstacles experienced by teachers and students in carrying out online learning or using *e-learning* namely the limitations of online facilities or media, limited quotas, and some still stuttering on learning technology (Badrudin *et al.*, 2020)

The test of understanding the concept of heat material and its transfer obtained the level of category understanding of students' concepts in table 2 as follows.

Table 2 Classification Level Category Concept Understanding

Score Range	Understanding Ability	Number of Students
Score < 55%	Low	17
55% Score < 75%	Medium	10
Score ≥ 75%	High	1

Table 2 shows that 17 students belong to the low concept understanding group with a level of 61%, 10 students belong to the medium concept understanding group with a level of 36%, and 1 student belongs to the high concept understanding group with a level of 4%. The presentation of the student level percentages is presented in the following figure 1 chart.

Percentage of Students' Concept Understanding Level

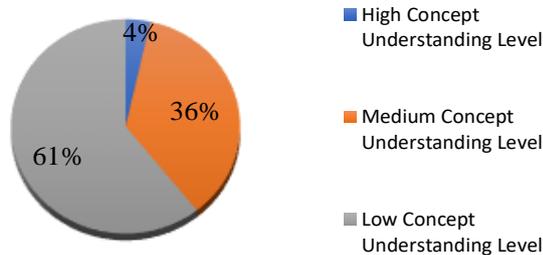


Figure 1 Conceptual Understanding Level Chart

Based on the picture in chart 1 which shows that students' understanding of concepts is still low because students only tend to memorize Physics theories and formulas without understanding the material that the teacher has conveyed so that students think Physics lessons are difficult (Riwanto *et al.*, 2019).

Furthermore, based on the per-indicator interpreting it reaches 35.71%, the indicator exemplifies 83.93%, the indicator classifies 85.71%, the indicator summarizes 42.86%, the indicator concludes 0.00%, compares 62.50%, and the indicator explains 60, 71%. The students' conceptual understanding ability per indicator is presented in Figure 2 as follows.

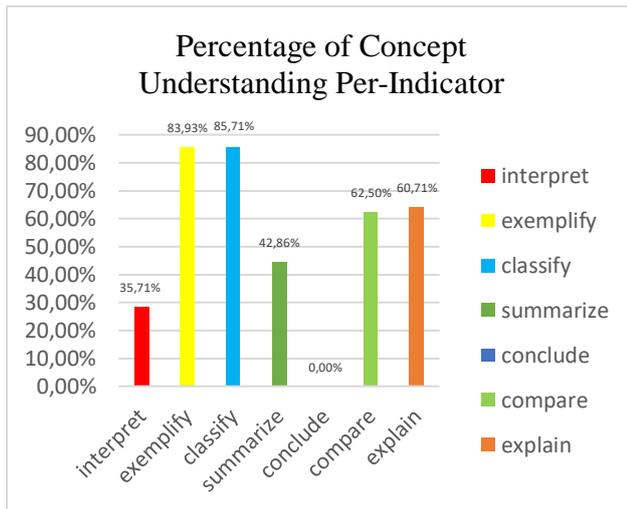


Figure 2 Chart of Per-Indicator Concept Understanding Percentage

From all the students who were the research subjects, several people were taken to be interviewed. 3 students were selected to present the analysis of concept understanding data. The consideration of the selection of interview subjects is based on the level of understanding of students' concepts in the low, medium, and high level categories. The following

names of subjects who will be used as sources in interviews can be seen in table 3 below.

Table 3 List of Interview Subject

Names Name	Level of Concept Understanding	Initial
HAIP	High	R1
DA	Medium	R2
P	Low	R3

Then based on the results of the interview, it was found that students with a high level of concept understanding category did not experience difficulties in the online learning process. This is because online learning makes him more flexible in learning, where online learning can be done anywhere and can repeat missing material. Meanwhile, from the results of interviews with students who have medium and low level categories, they experience difficulties in the online learning process. One of the difficulties is in achieving the learning objectives. This is because in delivering the material the teacher only provides material in ppt and pdf form, after that they are asked to study independently at their respective homes without any explanation of the material from the teacher and provide a question that the teacher has not explained. One of the materials used in this study is heat and its displacement, where this material is abstract so it requires a deeper understanding.

The success of students in understanding the concepts of Physics material which is considered difficult by them depends on the learning process they are doing. One way that can help students develop their understanding skills is through providing problems related to everyday life (Sayekti, 2019). Based on research conducted by (Afifah, 2019) there are factors that are considered to affect students' low conceptual understanding, namely: the learning process directs students to memorize information, remember and collect a lot of information without being required to understand the information and relate it to everyday life so that factors This is the cause of students having difficulty in understanding the concept of Physics material and applying it through practice questions that the teacher gives.

IV. CONCLUSIONS

Based on teacher interviews using e-learning strategies, it was stated that students could not understand the abstract heat and transfer material so that students did not understand and their curiosity was reduced.

Based on the category level of high concept understanding, students do not experience difficulties. This is because online learning makes him more flexible in learning, where online learning can be done anywhere and can repeat material that is left behind.

Based on the category level of medium and low concept understanding, students experience difficulties in the online learning process. One of the difficulties is in achieving the learning objectives. This is because in delivering the material the teacher only provides material in ppt and pdf form, after that they are asked to study independently at home without any explanation of the material from the teacher and provide a question that the teacher has not explained.

The factor that causes the low understanding of students' concepts is the learning process directs students to memorize information, remember and collect a lot of information without being required to understand information and relate it to everyday life so that this factor causes students to have difficulty understanding the concepts of Physics material and applying it through practice questions that the teacher gives.

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