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Article

Analysis of Junior High School Students Ability in Working on HOTS Problem Points on Vibration and Wave MaterialZelda Akhirmaini^{1*}, Milla Rulisa², Fitri Anita³, Raudhatul Jannah⁴, Ahmad Walid⁵^{1,2,3,4} Program Studi Tadris Ilmu Pengetahuan Alam Universitas Fatmawati Sukarno Bengkulu, Indonesia⁵ Universitas Bengkulu, Indonesia*Corresponding Address: zeldaakhirmaini@gmail.com**Article Info**

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Keywords:High-level thinking skill,
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High-level thinking skills are not only established in the cognitive aspect but are able to improve the skills and effective aspects of students. One of the things that is applied to improve the ability to think at a high level is to submit tests for HOTS (Higher Order Thinking Skills) problem, Given to students to know how much students are able to do and solve problems not only completing but students are required to understand the problems given. This research used quantitative derivative research design. The data was analyzed using descriptive percentages. Calculate the individual grade of each student of grade VIII A Junior High School 05 Bengkulu City. The results showed that the ability of students of class VIII A Junior High School 05 Kota Bengkulu in working on HOTS problem items on vibration and wave material was in a very low category with a total average of 24.90 of the HOTS issues given. This means that students of class VIII A Junior High School 05 Bengkulu City have not been able to work on HOTS problems on vibration and wave material.

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INTRODUCTION

Related to the issue of educational development at the international level. Curriculum 2013 is designed with perfecting. The assessment models in 2013 adjusted the international standard assessment models that are expected to help students to improve high-level thinking skills. But in fact, it hasn't worked out well. In the monitoring of EHB (evaluation of learning outcomes surveillance and coaching that has been done by the Directorate of Coaching, most teachers target in compiling points of cendrung problem only measuring low thinking skills (Low Order Thinking) (Gais & Afriansyah, 2018). At a high-level thinking students will tend to use logic rather than just remembering and memorizing formulas, while students will master concepts and be able to solve more complex problems. (Dinda Amalia & Windia Hadi, 2020).

Based on the results of a survey conducted by pisa in 2015, student learning results are still relatively low, ranking 63rd out of 69 countries evaluated. Indonesian students are still very low in mastery of materials and still very difficult in answering questions that require reasoning. Therefore in the curriculum 2013 revision 2017, in the defense it is expected that students are not only equipped with low-level thinking skills (Low Order Thinking) but it is also able to involve the ability to reason and analytical in solving everyday problems. In the 2013 curriculum began to be developed about HOTS types, problems with HOTS types that demand the ability to think critically, logically, reflectively, metacognitively, and creatively. (Mahmudah, 2018)

High-level thinking ability (HOTS) is the student's ability to think, be creative, analyze, and then be able to solve a problem. High-level thinking skills will make students analyze or manipulate previous info so that it is not like before. Thus students are expected to be able to master the concepts obtained, create new ideas, and ideas and then work together in solving a problem faced. High-level thinking skills are not only in the cognitive aspect but are able to improve the skills aspect and effective students. One of the things that is applied to improve high-level thinking skills is to submit a test of HOTS (Higher Order Thinking Skills), given to students so that it is known how much students are able to do and solve problems not only completing but students are required to understand the problems given (Intan et al., 2020)

Problems with the HOTS type train students to think in the level of analysis and evaluation. At the national exam in 2018 has been given the HOTS type about 10%, but in fact not a few of the learners still find it difficult to solve HOTS problems, On May 8, 2018, the Ministry of Education and Culture informed as many as 40% of students have difficulty in answering questions that require high reasoning (HOTS). The ministry plans to increase the portion of HOTS questions for junior and high school national examinations for next year. The difficulty is because there are some mistakes made by students in solving problems. Mistakes that students make in the work of problems need to be analyzed, so the results of the analysis can be used by teachers as material to provide better understanding to students. (Mahmudah, 2018)

The ability to solve problems can be obtained by students by often solving problems and problem solving in education is also needed to change the way students think to be more critical and creative in solving a problem, for that students need to be given questions that can trigger student thinking to be more critical and creative by giving questions higher order thinking skills (HOTS). HOTS is a thought process of a person who is not only able to memorize but is able to interpret a problem that requires analysis, creative ideas, associations to draw conclusions from new information obtained, while the purpose of HOTS is to help students improve the ability to analyze or understand a problem that is more critical and creative in obtaining the final result.

Bloom's taxonomy revision reveals that the ability to think at a higher level involves the ability to analyze, validate the characteristics of HOTS problems as follows: (1) Measuring high-level thinking skills, (2) Contextual problem-based, (3) Using diverse problem forms. As for the steps of preparing the HOTS problem, namely; (a) Analyze basic competencies that can be made HOTS problems, (b) Arrange the grid of questions, (c) Choose an interesting and contextual stimulus, (d) Create a guide to the answer key.

Students' ability can be known from the results of testing, self-testing is done using measuring instruments / instruments form tests and non tests good measuring instruments will produce good data, teachers can know the ability of students exactly if the measuring instrument used is a good measuring tool. A test can be said to be good if it meets five requirements, namely: validity, reliability objectivity, practicability, and economical\). In addition to being valid and reliable, the test is said to be good if the differentiating power, difficulty level and analysis of the cheater. (Widhiyani et al., 2019)

Based on the description above, researchers are interested in analyzing the ability of junior high school students of 05 Bengkulu City in working on HOTS problem points on vibration and wave material.

METHODS

This research uses descriptive research methods with quantitative. (Jayusman & Shavab, 2020) Sudaryono (2016:12-13) Descriptive research is shown to describe a state or phenomenon as it is. In this study did not manifest or give certain treatments to the object of the study, all activities or events went as is. Descriptive research can relate to specific cases or a fairly large population. In transcribed research can be used quantitative approach, qualitative approach, qualitative narrative depiction of the state. The current study is called a descriptive study. In this study, researchers used a quantitative approach to get the actual data. The sampling technique used in this study is purposive sampling which is a technique of determining samples with certain considerations. Then the data collection technique in this study was obtained through measurements using research instruments in the form of tests on vibrational and wave matter. Data obtained from the results / student answer sheet about the ability of students to do HOTS problems on vibration and wave material in junior high school students N 05 Bengkulu City class VIII A, the problem used is a matter of multiple choice. The number of problems consists of 25 questions. The data is analyzed using descriptive percentages. Calculate the individual grades of each student of class VIII A Junior High School N 05 Bengkulu City. Calculate the mean to find out the average grade of students from each student of class VIII A Junior High School N 05 Bengkulu City. Using the mean formula as it should.

RESULTS AND DISCUSSION

Data on the ability of students of Junior High School of 05 Kota Bengkulu in working on HOTS problem points on vibration and wave material.

Based on research on the ability of students to work on HOTS problem points on vibration and wave material obtained the following data:

Table 1. Student ability data to master HOTS problem details

No	Student's name	Correct number	scores	Criterion
1.	NNN	10	40	R
2.	AA	4	16	SR
3.	MFA	6	24	SR
4.	MJH	8	32	SR
5.	DZ	8	32	SR
6.	BRA	7	28	SR
7.	AW	14	56	C
8.	AAB	3	12	SR
9.	KDF	10	40	R
10.	EDF	11	44	R
11.	ADN	13	52	R
12.	CRD	7	28	SR
13.	CES	11	44	R
14.	FF	6	24	SR
15.	PTQ	11	44	R
16.	DPT	8	32	SR
SUM		137	548	
Average		8,56	24,90	SR (very low)

Based on the data above, it was obtained a graph of the suspension of HOTS questions on vibrational and Waves as follows:

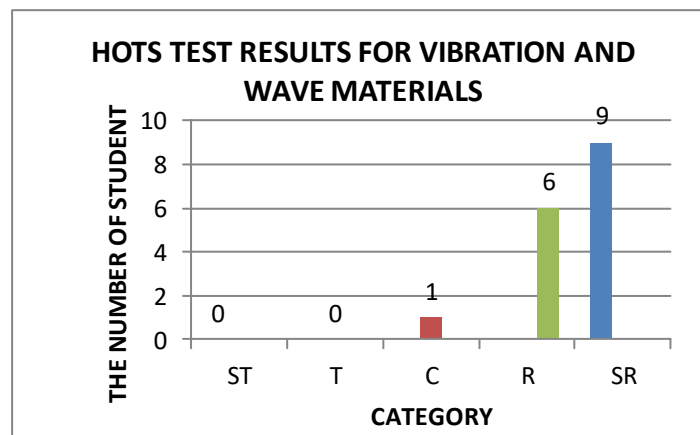


Figure 1. HOTS Question Suspension Graphic on Matari Vibrations and Waves

Based on the results of the data that has been explained above, it can be known the ability of students in doing HOTS problem items on vibration material and wave class VIII A junior high school of 05 Bengkulu City based on the average problem.

As for students who are at the level of ability to do hots problem items on vibrational material and waves in the very high category is 0 students. Students who acquire the Higher category are 0 students. Students who obtained the category Enough as many as 1 student named AW. Students who obtained the Low category were obtained as many as six students named NNN, KDF, EDF, ADN, CES, and PTQ. The rest of the sr category was obtained by 9 students named AA, MFA, MJH, DZ, BRA, AAB, CRD, FF, DFT.

Based on the average total score of HOTS problems in vibration material and waves of students of SMPN 05 Bengkulu City are in the very low category has not been able to work on the details of HOTS problems in the vibrational and wave matari based on the data that has been obtained.

In this discussion will be discussed about the results of the analysis that has been done by researchers. What is the ability of students to do the details of HOTS on vibration and wave material in class VIII A SMPN 05 City Bengkulu in the obtained of the tests compiled based on HOTS questions that analyze, evaluate, and create. The number of hots in vibration and wave material consists of 25 questions. The form of the problem used in the test of the ability to do the details of hots problems is multiple choice. City Bengkulu in the obtained of the tests compiled based on HOTS problems that analyze, evaluate, and create The number of hots in vibration and wave material consists of 25 questions. The form of the problem used in the test of the ability to do the details of hots problems is multiple choice. The test was conducted one stage to capture the data required on October 25, 2021.

After conducting research using tests of students' ability to do hots problems on vibration and wave material, then the test results are processed quantitatively to find exact numbers related to students' ability to work on hots problem items in vibration and wave material. Hots problem analyzes, evaluates, creates the highest student value of 0, in a very high category no student succeeds in doing HOTS problems with very high grades. The high grade of yiatu 0 students also means that no student succeeds also at this level. In addition, there is 1 student who gets a score of 56.00 with enough category, 6 students Scored 40.00-52.00 with low category, 9 students got a score of 12.00-32.00. The average obtained from the overall students of class VIII ASMPN 05 Kota Bengkulu in the matter of analyzing 24.90 with a very low category.

From the hots problem on vibration and wave material, obtained the average score of students of class VIII A SMPN 05 Kota Bengkulu from the results of the sum of the average score of HOTS soal which is 24.90 with a very low category. Overall, the ability of students to work on hots problem items in vibrational and wave material is very low or not yet able. This is because the rat averages 24.90 in very low categories

With a description or description of the ability of students to do the details of HOTS on vibration and wave material in class VIII A SMPN 05 Bengkulu City, should motivate teachers to further improve Students' ability to work on HOTS problems, especially in vibration and wave material. Teachers can provide training in the form of HOTS questions continuously so that students are trained and accustomed in doing hots problems so that students can support their ability to think high. Doing hots problems so that students can support their ability to think high. Hots issues are needed especially in the 2013 curriculum that is for students to think high levels. For this reason, the role of teachers is very important in supporting high-level thinking skills so that learning goals can be achieved properly. Because there is still a very low ability of students in doing HOTS problem points on vibration and wave material, it is expected that with the teacher to improve it, the student's ability increases and better. (Intan et al., 2020)

CONCLUSION

Based on the discussion of the results of research and data analysis can be concluded that the ability of students of class VIII A SMPN 05 Kota Bengkulu in working on hots problem points on vibration and wave material is at a low very category with a total average of 24.90 from the HOTS questions given. In the HOTS Problem analyzes, evaluates, creates the highest student value of 0, in a very high category no student succeeds in doing HOTS problems with very high grades. Addition, there is 1 student who gets a score of 56.00 with enough category, 6 students get a score of 40.00-52.00 with a low category, 9 students get a score of 12.00-32.00. The average obtained from the overall students of class VIII ASMPN 05 Kota Bengkulu in the matter of analyzing 24.90 with a very low category.

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