

**ANALYSIS OF LEARNING IMPLEMENTATION PHYSICS IN
SENIOR HIGH SCHOOL IN PADANG CITY RELATED TO
STUDENTS' HIGHER-ORDER THINKING SKILLS (HOTS)
ABILITY**

UNDERGRADUATE THESIS

Submitted as one of the Requirements to Get a Degree Bachelor of Education



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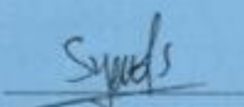


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LEARNING IN SENIOR HIGH SCHOOL IN PADANG CITY
RELATED TO HIGHER-ORDER THINKING SKILLS (HOTS)
OF STUDENTS**

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STATEMENT

I hereby declare that:

1. My scientific work, the final project is in the form of a thesis with the title “Analysis of Learning Implementation Physics in Senior High School in Padang City Related to Students’ Higher Order Thinking Skills (HOTS) Ability”, is my original work.
2. This paper is purely my ideas, formulations, and research, without the help of other parties, except the supervisor.
3. In this paper, no work or opinion has been written or published by other people, unless it is stated as a reference in the manuscripts by mentioning the author and being included in the literature.
4. I made this statement in truth. If there are deviations in this statement, I am willing to accept academic sanctions in the form of revocation of the title obtained because of this paper and other sanctions following provisions of the applicable law.

Padang, August 24th 2022
Who made the statement



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ABSTRACT

Tiwi Novalia Syahari, 2022: “Analysis of Learning Implementation Physics in Senior High School in Padang City Related to Students’ Higher Order Thinking Skills (HOTS) Ability”

This research aims to analyze the implementation of physics learning related to students' higher-order thinking skills and abilities. This type of research is descriptive with a qualitative approach. The population in this research were all students of senior high school in Padang City majoring in Mathematics and Natural Sciences with 4 schools as samples. The sampling technique used proportionate stratified random sampling with research instruments, namely interviews, analysis of the Learning Implementation Plan (RPP) document prepared by the teacher, observations of teachers teaching in class, student self-assessment questionnaire sheets teacher self-assessment. The results showed that the lesson plans used by state high school teachers in the city of Padang already conform with the standard of the learning process. The implementation of HOTS-oriented learning by the teacher has been implemented. The self-assessment of teachers and students in the implementation of HOTS-oriented learning has been able to carry out learning well. Based on these data, it can be concluded that the conformity of the standard learning process and HOTS orientation in the implementation of physics learning by teachers when teaching in class has been implemented.

Keywords: HOTS; Physics; Implementation of learning

INSCRIPTION

I thank Allah SWT. The sprinkling of Your love and compassion has given me strength, provided me with knowledge, and introduced me to love. Thanks to the grace and ease that you have given, finally this simple thesis can be completed. Shalawat and salam are bestowed on the Prophet Muhammad SWA. I dedicate this simple work to the people I love and care about very much.

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Hopefully, all the guidance, help, and attention that has been given to the Author will be a good deed and get a reply from Allah SWT. The Author realizes that in this thesis report, there are still shortcomings and weaknesses. Therefore, the writer expects suggestions to improve this Thesis. Hopefully, this Thesis is useful for readers.

Padang, 4 December 2022

Author

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CHAPTER 1

INTRODUCTION

A. Background of The Research Problem

In industrialization 4.0 in the era of globalization and 21st-century competition, it requires the ability of Human Resources to have high quality. Anticipating these demands, education is designed to improve high-quality performance through the development of a 21st-century curriculum in the learning process. The focus of development is carried out on the ability to think because humans as living beings always process and have methods in their activities. One of the activities carried out by humans that is relevant to the method is thinking. Thinking is a common activity that is identical to learning that occurs in school. To achieve the goal well, the teacher is expected to provide activities that support the learning process. Teaching how to think is one of the duties of a teacher in this activity. The results of the learning process can be assessed as achievements.

Developing the ability of students to improve the quality of Indonesian education is a function of the teacher. Teachers as educators have a very important role in determining the success of students so that the quality of education in schools increases. Law Number 20 of 2003 concerning the National Education System states that education is a conscious and planned effort to realize the active learning process of students so that they can develop their potential to become human beings who believe and fear God The Almighty, has a noble character, is healthy, knowledgeable, capable, creative, independent, and becomes a democratic and responsible citizen. In

Law Number 14 of 2005 concerning teachers and lecturers, it is stated that there is a mandate for the guidance and development of the teaching profession as the actualization of the teaching profession ((Kementerian Pendidikan dan Kebudayaan , 2005).

The learning process in educational units that comply with the provisions needs to be integrated. Strengthening Character Education is the implementation of the 2013 Curriculum. Integration is not an additional plan, but a unit for educating and learning for all education actors in the education unit. According to Law Number 87 of 2017 concerning Strengthening Character Education, it is stated that character education is an educational movement under the responsibility of the education unit to strengthen the character of students.

The government has targeted five competencies by applying HOTS (higher order thinking skills) to students who are attached to the national exam as an evaluation system and are 21st-century skills. These competencies are the ability to work together (collaboration), self-confidence (confidence), thinking highly (critical thinking), creative and innovative (creative and innovative), and communication skills. Higher-order thinking skills applied in Indonesia are still low based on PISA (Program for International Student Assessment) and TIMSS (Trends in International Mathematics and Science Study) rankings compared to other countries. PISA conducted research with literacy subjects in the fields of reading, mathematics, and science in 2019. In this study, PISA used a group of questions with the HOTS category. Results of Indonesia in the field of reading ranked 74th, mathematics ranked 73rd and science ranked 71st

stout of a total of 79 countries. Based on this, it can be concluded that the HOTS ability of Indonesian children is still low.

According to Koballa and Chiapetta, physics is part of science which is a collection (a body of knowledge), a way of thinking (a way of thinking), a way of investigating the universe, and interactions. with technology and social (it's interaction with technology and society). According to Mundilarto, physics is a science that understands the natural rules that are so beautiful and neatly can be described mathematically. Learning physics can lead students to develop their thinking. Because learning physics includes phenomena from simple to complex problems. This makes students must have thinking skills. Level thinking skills or also called Higher Order Thinking Skills (HOTS).

The purpose of learning physics is to improve students' thinking skills so that they are not only capable and skilled in psychomotor and cognitive, but also able to support systematic, objective, and creative thinking. The physics learning process that is not by the nature of physics learning does not provide opportunities for students to be actively involved in scientific processes, science process skills, and lack of training in HOTS skills. The achievement of objectives in learning physics is not determined by mere concepts but is more directed at the effects of learning accompaniment, one of which is HOTS.

Based on Bloom's Taxonomy, HOTS is education reform. Because there are some types of learning require more cognitive processing than others, but also have more general benefits. HOTS involves complex judging skills such as critical thinking

and problem-solving. In Bloom's Taxonomy, other skills, namely: analysis, evaluation, and synthesis skills are higher levels of thinking, which require different lessons and teaching methods than just learning facts and concepts.

In achieving the desired physics learning objectives, it is necessary to have good learning planning. This is directly proportional to Permendikbud Number 65 of 2013 concerning standard processes which state that every educator is obliged to prepare a complete and systematic learning implementation plan so that learning takes place interactively, inspiring, fun, challenging, efficiently, motivating students to be active, and providing space sufficient for the initiative, creativity, and independent the talents, interests, and physical and psychological development of students (Kementerian Pendidikan dan Kebudayaan, 2013). Based on the statement, it can be concluded that learning planning has an important role in the learning process and is an important factor to achieve learning objectives.

Efforts made by the government to improve the quality of human resources, in the 2013 Curriculum have not been in ideal conditions. This fact is found in the initial studies that have been carried out. There are three initial studies, namely the use of learning models in lesson plans, the availability of HOTS components in learning devices in terms of the use of worksheets, and the ability of students' HOTS in solving the 2020 UTBK questions.

The first fact is the use of learning models in lesson plans at Senior High School Padang City. The learning models that are widely used by teachers in lesson plans are discovery learning, problem-based learning, and cooperative learning. Teachers rarely

use other models such as guided inquiry project-based learning in learning because the learning model takes a very long time. Researchers also conducted interviews with several teachers in schools regarding the implementation of learning activities. The implementation of learning activities is in by what the teacher planned. However, it is not known whether the learning activities used are by the standard of the learning implementation process based on Permendikbud Number 22 of 2016 and the implementation of each syntax in the planned learning activities.

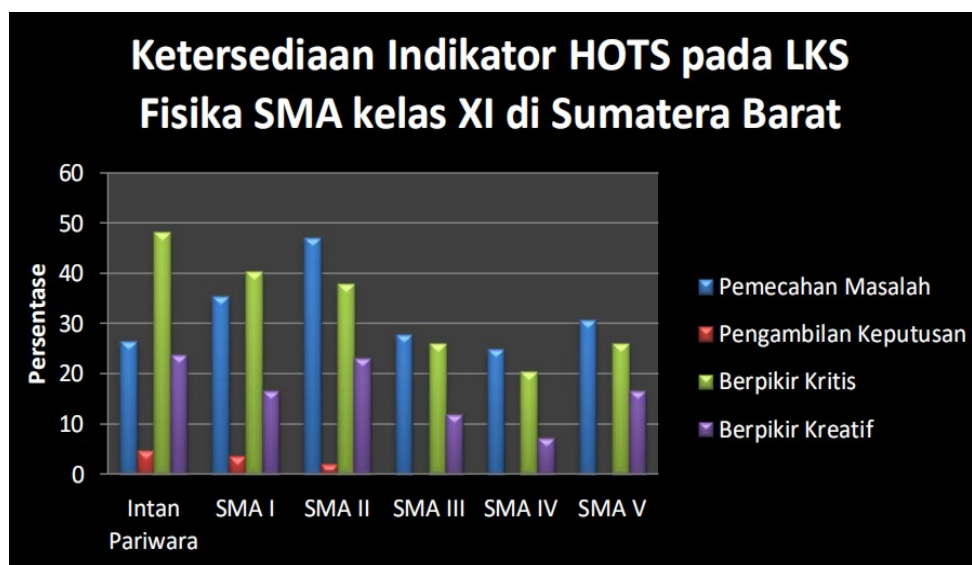


Figure 1. Availability of HOTS Indicators on LKS
(Syafrialdi, Sari, Darvina, & Dewi, 2020)

The second fact relates to the availability of the HOTS component in the Physics worksheet of SMA class XI in West Sumatra. Based on the graph in Figure 1. it can be seen that the availability of the HOTS component in worksheet Intanpariwara has a score of 25.77%; SHS I 28.8%; SHS II 27.5%; SHS III 24.60%, SHS IV 19.69%

and SHS V 24.75%. It can be concluded that the availability of the HOTS LKS physics component for SMA grade XI in West Sumatra is categorized as low.

Table 1. UTBK 2021 SMAN scores in Padang City that are in the Top 1000 Schools

No	School Name	UTBK Scores	National Ranking	Province Ranking
1.	SHS 1 PADANG	572,067	105	4
2.	SHS 10 PADANG	566,571	136	5
3.	SHS 3 PADANG	530,817	515	12
4.	SHS 2 PADANG	529,713	539	14
5.	SHS 4 PADANG	514,187	929	28

(Lembaga Tes Masuk Perguruan Tinggi, 2021)

The third fact, in Table 1. can be seen that the UTBK score of 16 SHS in Padang City which is included in the top 1000 schools is 5 schools. The first school of SMAN 1 Padang received a UTBK score of 572,067 with a national rank of 105 and a provincial rank of 4. The second school of SHS 10 Padang obtained a UTBK score of 566,571 with a national rank of 136 and a provincial rank of 5. The third school of SHS 3 Padang obtained a UTBK score of 530,817 with a national ranking of 515 and a provincial ranking of 12. The fourth school of SMAN 2 Padang received a UTBK score of 529,713 with a national rank of 539 and a provincial rank of 14. The fifth school of SHS 4 Padang obtained a UTBK score of 514,187 with a national rank of 929 and a provincial ranking of 28. It can be concluded that the SHS in Padang is in the top 1000 with the highest score being SHS 1 Padang. Meanwhile, the lowest score is SHS 4 Padang. So there are 11 high schools in Padang City that are not in the top

1000 schools. According to Lewy, the criteria for HOTS ability are still in the low category, which can be seen in Table 2.

Table 2. Criteria for Higher Order Thinking Skills (HOTS)

Percentage %	HOTS ability level of students
76 – 100	High
51 – 75	Medium
26 – 50	Low
0 - 25	Very low

(Lewy, Zulkardi, & Aisyah, 2009)

Padang City is the capital city of West Sumatra Province which got an average Physics UN score of 50.10 in 2019 while the average score of the Physics UN in West Sumatra was 47.24, so the City of Padang was categorized as having a high Physics UN score average. However, if viewed based on Table 2. The criteria for the HOTS ability of SHS students in Padang City are categorized as low. High-level thinking that has not been maximally taught in schools causes students to be less able to solve problems creatively and innovatively. This, of course, has not met the demands of the 2013 curriculum.

The goal of the National Education system that implements the 2013 revised 2017 curriculum has not been realized properly. Because the habit of higher-order thinking is still relatively low in the learning process at school. Researchers also have not found any research related to analyzing the implementation of physics learning in State Senior High Schools in Padang City. The researcher will conduct

further research, namely analyzing the implementation of physics learning related to students' HOTS abilities with the title “**Analysis of Learning Implementation Physics In Senior High School In Padang City Related to Students’ Higher-Order Thinking Skills (HOTS) Ability**”.

B. Identification of The Problem

In the description of the background, several problems occur. Focus on the research problem more clearly, the researcher identified several problems including,

1. The implementation of the lesson plan is not yet known by the standard process of Permendikbud 22 of 2016 and the implementation of activities for each syntax in the learning model.
2. The teaching materials used have low availability of HOTS indicators.
3. The HOTS ability of students is still low in terms of UTBK scores.

C. Limitation of The Problem

The limitation of the problem is carried out by researchers based on the identification of the problems that have been described. The problem boundaries are described so that the research is more focused and directed, the problem limitations in this study include:

1. The learning implementation analyzed is the implementation of grade XI SHS throughout the city of Padang in 2021/2022 even during the term academic year.

2. The Higher Order Thinking Skills (HOTS) of students are analyzed based on the HOTS learning concept in the HOTS learning e-book published by Permendikbud which includes the concept of higher-order thinking as a transfer of knowledge, critical and creative thinking, and problem-solving. The 4C skill competencies are creativity, critical thinking, collaboration, communication, and a scientific approach.

D. Formulation of The Research

Based on the research problems that have been described, the problems to be studied can be formulated. The formulation of the problem in the research is "How is the implementation of physics learning at SHS Padang City related to The Students' Higher Order Thinking Skills (HOTS) abilities?".

E. Purpose of The Research

Based on the formulation of the problem that has been described, it can be seen the purpose of the research. The purpose of the study was to determine the implementation of physics learning at SHS Padang City related to the students' HOTS abilities.

F. The benefit of the Research

After conducting research, it is hoped that the research results can be useful for:

1. For researchers, it is useful to increase knowledge and experience as prospective teachers regarding the implementation of learning that can facilitate students' HOTS abilities.

2. For teachers, it is useful for consideration in improving students' HOTS ability facilities in the implementation of learning.
3. For students, it is useful to train, develop and measure higher-order thinking skills.
4. For other researchers, it is useful as a reference for conducting research in the future.