ANALYISIS OF HOTS INDICATOR ON SENIOR HIGH SCHOOLS PHYSICS EXAM QUESTIONS IN WEST PASAMAN DISTRICT

UNDERGRADUATE THESIS

Submitted As One of The Requirement to Get a Degree Bachelor of Education

By

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17033160/2017

PHYSICS EDUCATION STUDY PROGRAM

DEPARTMENT OF PHYSICS

FACULTY OF MATHEMATICS AND NATURAL SCIENCE

UNIVERSITAS NEGERI PADANG

2021

UNDERGRADUATE THESIS APPROVAL

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Padang, 26 August 2021

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STATEMENT

I hereby declare that:

1. My scientificwork, the final project is in the form of a undergraduate thesis with the title: "Analysis Of HOTS Indicator on Senior High Schools Physics Exam Question in Wets Pasaman District" is my original work.
2. This paper is purely my own ideas, formulations and research, without the help of other parties, except the supervisor.
3. In this paper, there is no work or opinion that has been written or published by other people, unless in writing it is clearly stated as a reference in the manuscript by mentioning the author and being included in the literature.
4. I have made this statement in truth and if there are deviations in this statement, I am willing to accept academic sanctions in the form of revocation of the titles that have been obtained because of this paper, as well as other sanctions in accordance with the norms and provisions of the applicable law.

Padang, August 26 2021

Who made the statement,

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ABSTRACT

Sonia Nur Riza. 2021."Analysis of HOTS Indicators on Physics Problems for Senior High Schools in West Pasaman District." Thesis: Physics Education Study Program, Faculty of Mathematics and Natural Sciences, Padang State University.

Education is the most critical foundation for human life. In every process of educational development, the curriculum will continue to experience changes. In the 2013 curriculum, teachers are expected to provide learning using the High Order Thinking Skills (HOTS) indicator. HOTS has four indicators, namely problem solving, decision-making skills, critical thinking, and creative thinking. Students need to be trained in higher-order thinking by giving them questions that have HOTS indicators that can be used to improve the higher-order thinking of students. The results of the initial observations. The questions are used as a test for students. It is known that in high-level thinking students are still low based on the 2018 National Examination in West Pasaman District. Therefore, an analysis of the HOTS indicator was carried out on physics questions at Senior High Schools (SMA) in West Pasaman District.

This research is descriptive research with a qualitative approach. The population of this study is all the 2018 and 2019 SMAN Physics UTS and UAS Questions used by 13 SMANs in West Pasaman District. A sampling of SMAN schools as many as six schools was carried out using a proportionate stratified random sampling technique. The data in this study were taken using an analytical instrument of question presentation and data collection techniques through documentation studies.

Based on the research that has been done, it can be concluded that the analysis was carried out on the availability of HOTS on physics questions at SMAN class X, XI and XII in 2018/2019 and 2019/2020 in semesters 1 and 2 related to the availability of HOTS obtained the results of the analysis that the questions that got the percentage the indicator on the highest HOTS component is SMAN 1 Pasaman and those in the less available HOTS category are SMAN 1 Ranah Batahan. The indicators that are often used are problem-solving in the category of formulating problems, analyzing problems, collecting results, and determining solutions. And what is never used is creative thinking with the categories of fluency, flexibility, novelty, and originality, the questions in UTS and UAS are still dominated by questions with a C3 cognitive level. Thus, the availability of LOTS, MOTS, and HOTS questions has not been balanced.

Keywords: Analysis, Indicator HOTS, Question UTS and UAS

ACKNOWLEDGEMENT

Alhamdulillahhirobbil'alamin, Praise and gratitude the authors say for the grace and grace of Allah SWT, who has made it easier and gave way so that the writer can complete the research entitled "Analysis of HOTS Indicators on Physics Problems at Senior High Schools in West Pasaman District."

This thesis was prepared as one of the requirements for obtaining a Bachelor of Education degree at the Department of Physics, Faculty of Mathematics and Natural Sciences, Padang State University. This thesis can be appropriately completed thanks to the moral and material assistance from various parties. Therefore, on this occasion, the author would like to:

1. Mrs. Dra. Yenni Davina, M.Si, is a supervisor who has sincerely motivated the author in carrying out research and guiding from planning, implementation to reporting this thesis.

2. Mrs. Fanny Rahmatina Rahim, S.Pd., M.Pd as Academic Advisor lecturer and examiner lecturer and Mrs. SilviYulia Sari, S.Pd, M.Pd, as examiner lecturer who has sincerely motivated the authors in carrying out research and guiding from planning, implementation, to reporting this thesis. And who has given time, energy, thoughts and suggestions, and input for the smooth completion of this thesis.

3. Wahyuni Satria Dewi, S.Pd., M.Pd and Ibu Wahyu Satria Dewi, S.Pd., M.Pd as validator lecturers who have provided time, energy, thoughts and suggestions, and input for the smooth completion of this thesis.

4. Mrs. Dr. Ratnawulan, M. Si, as Head of the Physics Department, FMIPA UNP

5. Mr. and Mrs. Lecturer Staff of the Department of Physics, Faculty of Mathematics and Natural Sciences, UNP, provided the writer during the lectures until the end of writing this thesis.

6. Administrative staff of the Department of Physics, Faculty of Mathematics and Natural Sciences, UNP, who has helped the author during the lectures and writing of this thesis.

7. Friends of the research team who always support and strengthen each other during the writing of the thesis.

8. All parties who have assisted in the preparation and completion of this thesis report.

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 helpful for readers.

Padang, August 26 2021

Author

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CHAPTER I
INTRODUCTION

A. Background of Research Problem

Education is the most critical foundation for human life. In every process of educational development, the curriculum will continue to experience changes. This is marked by the rapid advancement of technology and information.

The purpose of education will be achieved if the implementation is by government regulations. One of them is following the provisions of student assessment that the government has set. The evaluation of students can be seen using various assessment techniques such as tests, observations, individual or group assignments, and other forms by the characteristics of the competence and level of development of students (Salamah, 2018: 274). The ideal assessment, according to Permendikbud No. 23 of 2016 (Permendikbud, 2016: 5-6), is an assessment of learning outcomes by educators carried out in the form of tests, observations, assignments, or other necessary documents. To measure and determine the achievement of student competencies, improve the learning process by compiling reports on the progress of daily learning outcomes, mid-semester, end of the semester, end of the year, and grade promotion. Assessment of learning outcomes by the government is carried out in the form of a national exam.

Assessment needs to be carried out to measure the extent of the competencies that have been achieved by students in the learning process, wherein the 2013 curriculum,

assessment is regulated in Permendikbud Number 66 of 2013 (Permendikbud, 2013: 6) concerning Educational Assessment Standards including authentic assessment, self-assessment, assessment-based portfolio, daily test, mid-semester test, final test, competency level exam, competency level quality test, national exam, and school/madrasah exams. This assessment assesses learning outcomes carried out by educators, education units, and the government. The government has made many efforts to ensure the quality of education, one of which is the national examination activity. The National Examination is held to measure and assess achievement.

The National Examination (UN), according to Permendikbud number 5 of 2015 article 1 paragraph 5, the UN is an activity of measuring and assessing the achievement of graduate competencies nationally in certain subjects. The usefulness of the results of the National Examination (UN) according to Permendikbud number 5 of 2015 article 21 paragraph 1 is as follows: (1) We are mapping the quality of education programs and units. (2) Consideration of selection to enter the next level of education. (3) Considerations in fostering and providing assistance to academic units in their efforts to improve the quality of education.

The results of the study conducted by researchers by collecting the UN scores of students in West PasamanDistrict and then analyzing the exam results, it is known that the level of understanding of concepts and learning outcomes of Physics students is still not optimal. Where students' ability to answer questions has not been used to encourage students to think at a high level, High Order Thinking Skills (HOTS) to the maximum, by the demands of the 2013 curriculum, namely higher-order thinking skills

or also called Higher Order Thinking Skills (HOTS). Based on the Revised Bloom's Taxonomy of Anderson & Krathwohl, the domain of higher-order thinking includes the skills of analyzing, evaluating, and creating.

HOTS, through science, has critical thinking skills, creative thinking, problem-solving, and decision-making abilities (Desy Eka Wahyuni, 2015). These four skills will not be separated from the development of capabilities that require continuous practice. HOTS can be trained on students. Teaching HOTS requires student-centered learning, educators who can master HOTS-oriented learning and evaluation or assessment by the demands of the 2013 curriculum, namely questions that train students to have higher-order thinking skills.

In terms of ability, students can only answer questions in the Lower Order Thinking Skills (LOTS) category and questions in the Middle Order Thinking Skills (MOST) category. This can be seen based on the results of the analysis of the national examination in the West PasamanDistrict, where the researcher took samples from several different schools. This school was born according to the high school category to the low school category based on the 2018 National Examination results.

Table 1. Based on the data on the Physics UN scores of SMANs in West Pasaman Districti 2018

Question Type	Number of Question	Question Presentation	Percentage		
			SMAN 1 Pasaman	SMAN 1 Sungai Aur	SMAN 1 RanahBatahan
HOTS	6 soal	15 %	44 %	34%	35 %
MOST	27 soal	67,5 %	47%	43%	39 %
LOST	7 soal	17,5 %	47%	44%	42 %

(puspenjarkemendikbud)

From this data, it shows that the distribution of the 2018 National Examination questions is still low at the cognitive level, such as HOTS as many as six questions or 15%, MOTS as many as 27 questions or 67.5%, and LOTS as many as seven questions or 17.5%. Based on this data, it can be concluded that the percentage of students' ability to answer HOTS questions is still not optimal. It can be seen in the Table that the rate of answering the HOTS questions at SMAN 1 Pasaman is 44% in the low category, SMAN 1 Sungai Aur 34% in the low class, and SMAN 1 RanahBatahan 35% in the low sort. The questions made for the UN must require students to think critically; this is by the implementation of the 2013 Curriculum, which is expected to produce productive, creative, innovative, and effective human resources through strengthening the competence of attitudes, knowledge, and skills. Not only about the UN questions being tested, but the assessment instrument used must also be able to assess higher-

order thinking skills (HOTS) to test the analysis, synthesis, evaluation, and even creative processes (Kemendikbud, 2014: 87).

Related to the development of education at the international level, the 2013 Curriculum is designed with various improvements. Improvements were made to the content standards, namely reducing irrelevant material and deepening and expanding relevant material for students, and enriching students' needs to think critically and analytically by international standards. Other improvements were also made to the assessment standards by gradually adapting global standard assessment models. Assessment of learning outcomes is expected to help students improve higher-order thinking skills (HOTS). Higher-order thinking can encourage students to think broadly and deeply about the subject matter (Widana, 2017: 1).

Higher-order thinking skills or HOTS is a solution to catch up. To catch up, one must survive, where one must have high-level thinking skills to solve the problems at hand.

Based on observations from interviews conducted by several high school teachers in West Pasaman District, it can be concluded that teachers have implemented the 2013 curriculum in learning. Still, teachers have not applied to learn activities with HOTS-based questions. not active in the learning process because the queries are done by students who only use the HOTS indicator and are based on HOTS questions. Therefore students are less able to answer HOTS questions in the exam. In the

questions of the Final School Examination (UAS) of SMANs in West Pasaman District, the exam is carried out simultaneously with the making of questions carried out by a community, namely the Principal Work Meeting (MKKS), the goal of the community is to be more creative and innovative in organizing programs school education.

One of them is in making questions where the MKKS community will designate which schools will play a role in making UAS questions, and for the Mid-Semester Examination questions, they are made in each school. Now here, it will be seen that the ability of students to answer HOTS questions, whether students are accustomed to answering high-level thinking questions or not. The proof of the observation letter I attached in appendix 2 can be seen on page 93, and for observation, evidence can be seen in appendix 3 can be seen on page 94.

Students need to be trained in their thinking skills by giving them questions that have the HOTS type that can be used to improve the thinking skills of students. The questions are made by applying essential competencies that can be used to measure the higher-order thinking skills of students.

Considering the role of assessment that can be a motivation and challenge for improving the quality of educational competitiveness, the authors are interested in conducting are search entitled **"Analysis of HOTS Indicators on Senior High Schools Physics Exam Question in West Pasaman District."**

B. Identification of the Research Problems

Based on the background described in this research, it is necessary to identify the problem so that the research conducted has a clear focus. The identification of the issues in this study are:

1. Based on the analysis of the 2018 Physics UN questions, the percentage of students' abilities in answering HOTS questions is still relatively low
2. Students are not familiar with HOTS questions
3. The questions given to students have not been identified whether the questions are HOTS-based or not

C. Limitation and Scope of the Problem

Based on the background that has been stated, the formulation of the problem in this study is:

1. The HOTS questions analyzed are UTS and UAS class X, XI, and XII in 2018/2019 and 2019/2020 SMAN throughout West Pasaman District
2. The analysis was carried out to determine the availability of the HOTS component in the questions
3. HOTS analyzed include Revised Bloom's Taxonomy and 4 HOTS indicators

D. Formulation of Research

Based on the background that has been stated, the formulation of the problem in this study is:

1. How are the HOTS indicators available on physics questions for class X, XI, and XII in 2018/2019 and 2019/2020 throughout West Pasaman District
2. How is the comparison of the HOTS indicators on physics questions for class X, XI, and XII in 2018/2019 and 2019/2020 throughout West Pasaman District

E. Research Obective

Following the formulation of the problem, the research objectives are:

1. To find out how the HOTS indicators are on physics questions for class X, XI, and XII in 2018/2019 and 2019/2020 throughout West Pasaman District
2. To find out how the HOTS indicator compares on physics questions for class X, XI, and XII in 2018/2019 and 2019/2020 throughout West Pasaman District

F. Research Research

In order to achieve the objectives of the research, it is hoped that the results of the research carried out by the researchers can be helpful for various parties, including:

1. For researchers to increase insight and experience later as prospective educators regarding Higher Order Thinking Skills (HOTS).
2. For teachers to see an increase in the quality of children in learning physics so that they can think at a high level.
3. For students, HOTS questions can be used as tools to train and develop their higher-order thinking skills
4. For other researchers, it is helpful as a reference in researching the future.

CHAPTER II

LITERATURE REVIEW

A. Analysis

The analysis is the decomposition of a material into its various parts and the study of aspects of itself and the relationship between elements to obtain the proper understanding and understanding of the meaning of the whole (Depdiknas, 2008: 60). Analysis can also be interpreted as investigating an event (writing, deed, etc.) to determine the actual situation (KBBI, 2008: 58).

In general, the analysis seeks to reveal various information behind the data presented in the media or text. Content analysis can be interpreted as a technique of collecting and analyzing the content of a text. "content" in this case can be in the form of words, meanings (meanings), pictures, symbols, ideas, themes, or several messages so that they can be communicated (Martono, 2011). And according to (Krippendorff 2004: 403), "Content analysis is indigenous to communication research and is potentially one of the most important research techniques in the social sciences and then the content analysis is a research technique for making replicable and valid inference from data to their context." This means that analysis can be interpreted as a communication activity, potential, to describe, examine, and carry out the process of solving an event to produce understanding, understanding, and those associated with it to obtain the actual situation.

In the Indonesian Dictionary, analysis is an investigation of an event (writing, deed, and so on) to find out the causes, how the case sits, and so on. The analysis is an attempt to break down a problem or focus of study into parts so that the arrangement of the forms of something described can be seen clearly. Therefore its meaning can be more clearly understood, or the problem is more clearly understood (Komariyah & Satori, 2014: 200). The analysis is defined as a form of investigation of events to find out the actual situation. The elaboration of a subject on the various parts and a study of the elements themselves and the relationship between the different features and the analysis of these parts to obtain a proper understanding and understanding of the meaning of the whole (Surayin, 2001).

Analysis refers to the ability to examine or describe a material or condition into more specific components or parts and to be able to understand the relationship between one region and another so that its structure and rules can be better understood (Sagala, 2017: 71). In qualitative research, data analysis is defined as a systematic process to determine the parts and interrelationships between the legs and the whole of the data that has been collected to produce a classification or typology. The results of data analysis in qualitative research are not in the form of numbers or not the significance of the relationship expressed by numbers, not distribution patterns, but categories or classifications or typologies.

Data analysis in qualitative research is an activity that produces a classification category or typology (Afrizal, 2016: 176). The analysis is carried out as an attempt to parse a problem or focus of study into parts so that the arrangement/order of the form

of something that is described is visible, so that something is more clearly understood or clearer and easier to understand and understand (Sugiyono, 2009). So it can be concluded that the analysis is a systematic decomposition of a focus of study in determining the parts, relationships between elements, and their relationships as a whole to obtain the proper understanding and understanding.

The steps in analyzing, according to (Sugiyono 2012), are as follows: 1) Collect essential data. 2) Checking the clarity and completeness of filling out the data collection instrument. 3) Carry out the identification and classification process of each statement in the data collection instrument based on the variables to be analyzed. 4) Perform tabulation or data recording activities into master Tables. 5) Testing the power quality by testing the validity of the instrument from data collection. 6) Presenting data in the form of frequency Tables or diagrams to make it easier to understand or analyze the characteristics of the data. 7) Draw Conclusions.

B. HOTS Indicator

According to (Desy Eka and Alimufi, 2015) said that Higher order thinking skills (HOTS) have four indicators, namely:

1. Problem Solving

Problem Solving is a process of finding problems and solving problems based on factual and accurate data and information to conclude. Problem-solving, according to

J. Dewey in (W. Gulo 2002: 115), can be done through six stages which are indicators in problem-solving as follows:

Table 2. Stages in Problem Solving

Stages	Required Ability
Formulating the Problem	Knowing and formulating the problem clearly
Studying the Problem	Using detailed knowledge to analyze problems from multiple angles
Formulating Hypotheses	Imagining and living the scope, cause-effect and alternative solutions
Collecting data	The ability to find and organize data presenting data in the form of diagrams, pictures and Tables
Testing Hypotheses	The ability to analyze and discuss data, the ability to relate - relate and calculate, the ability to make decisions and conclusions
Determining Solution Options	The ability to make alternative completion of skills by taking into account the consequences that occur in each choice

2. Decision-Making Skills

Decision-Making Skills is a person's skill in using his thought process to choose the best decision from various problems through gathering information and analyzing to find a solution. The best decisions are made based on rational reasons. In developing

decision-making skills, several indicators must be developed. Indicators of decision making according to (Woolever& Kathryn 1988: 68-69), are as follows:

a) Analyze the causes of the problem from various factors.
b) Identify the impact of the problem.
c) Identify alternative decisions to solve problems.
d) Decide to solve the problem.
e) Give reasons for the selection of decision making.
f) Predict the impact of decision-making actions in a natural context.
g) Assess advantages and disadvantages and decisions.

3. Critical thinking skills

Critical thinking is a way of thinking well, which is a good thinking process. John Dewey (Johnson 2007: 187) says that schools must teach students the right thinking. On the other hand, critical thinking is an organized process that allows students to evaluate the evidence for assumptions, logic and language that underlies other people's statements by including supporting reasons and rational conclusions. Specifically, critical thinking means carefully considering a situation, question, or problem to arrive at the best solution.

According to (Halpen 1996), critical thinking is empowering cognitive skills or strategies in determining goals. The process is passed after determining goals, considering, and referring directly to targets, is a form of thinking that needs to be developed to solve problems, formulate conclusions, collect various possibilities, and

make decisions when using all these skills effectively in the proper context and type. Critical thinking is also an activity of evaluating, considering conclusions to be drawn when determining several supporting factors to make decisions based on ability, applying knowledge and experience (Pery & Potter, 2005).

According to (Robert Ennis, 1985), critical thinking is reflective thinking that focuses on decision-making patterns about what to believe and do. Based on this definition, the vital thinking ability, according to Ennis, consists of twelve components, namely: (1) formulating problems; (2) analyzing arguments; (3) ask and answer questions; (4) ask and answer questions; (5) Conducting observations and assessing the results of observations; (6) making deductions and assessing deductions; (7) making inductions and assessing inductions; (8) evaluate; (9) define; (10) identify assumptions; (11) decide and implement; (12) interact with other people.

In addition (Orlich et al. 1998) states that the abilities associated with critical thinking skills include: (1) Observing; (2) identify patterns, causal relationships, assumptions, reasoning errors, logical errors and biases; (3) build criteria and classify; (4) compare and contrast, (5) interpret; (6) summarize; (7) analyze, synthesize and generalize, propose hypotheses; (8) distinguish relevant and irrelevant data.

Based on the definitions of critical thinking above, it can be concluded that critical thinking is a way of thinking that examines, relates, and evaluates all aspects of

a problem situation, including the ability to gather information, remember, analyze situations, read and understand and identify things—a necessary thing.

To measure students' mathematical critical thinking ability, a measuring instrument is needed in the form of an indicator of critical thinking ability; this is very important and can be used as an appropriate measurement guide. Appropriate and appropriate indicators are indicators from various clear sources, including:

a) Indicators of critical thinking according to John Dewey (2007), namely:

1. Create and consider arguments
2. Evaluating the evidence of assumptions
3. Clarifying the question
4. Observing questions
5. Generalizing the question
6. Define the term
7. Determine the action
8. Interact with other people

b) Critical thinking indicators, according to Helpen (1996)

1. Analyzing skills
2. Synthetic skills
3. Problem-solving skills
4. Conclusion skills
5. Evaluating skills

c) Critical thinking indicators, according to Ennis (1985)

1. Formulate the problem
2. Analyze arguments
3. Make observations
4. Making deductions
5. Making induction
6. Evaluate

d) Indicators of critical thinking according to Orlich (1998)

1. Observing
2. Identify
3. Classify
4. interpret
5. analyze

From the opinions regarding the critical thinking indicators above, the hands of necessary thinking skills can be expressed through the behavioural aspects put forward where the definition of critical thinking is. According to several reports and characteristics previously disclosed, several activities or behaviours identify that these behaviours are activities in critical thinking which can then be used as indicators in critical thinking, namely:

Table 4. Critical Thinking Indicators

Indicator	Description
Analysis	The ability to understand and state the meaning or meaning of various data, experiences and considerations. Includes The ability to judge information and the real strength or relationship with conclusions, the ability to state the results of thoughts, to assess the credibility and power of an argument.
Evaluation	The ability to assess information and the real strength or relationship wit conclusion, the ability to state the results of thoughts, to assess the credibility and strength of an argument.
Conclude	Ability to identify and summarize the information needed to conclude.
Deductive	The ability to think and state something general that is considered valid, to arrive at specific conclusions.
Inductive	The ability to understand and express something and its application with knowledge and experience reach general conclusions.

4. Creative thinking skills

Creative thinking skills are higher-order thinking skills that stimulate the emergence of new ideas from a problem (Puspitasari et al., 2018). Creative thinking is also a person's ability to solve a problem from various solutions (Armitage, Pihl, & Ryberg, 2018; Qadri, Ikhsan, &Yusrizal, 2019). Meanwhile, according to (Naimnule, Kartono, & Asikin, 2020), creative thinking skills solve complex and complicated problems. Aspects of creative thinking skills are originality, fluency, flexibility and detail (Nehe et al., 2017). Creative thinking is the ability to use reason to create ideas, create new, original, in the form of thoughts or ideas, seek creative problem-solving. Creative thinking serves to find an answer to a combined problem so that it shows the existence of a creative thinking component. Creative thinking is one manifestation of higher-order thinking because creative thinking ability is the highest cognitive competence. As expressed by (Munandar: 28), creative thinking can find many possible answers to a problem.

Someone said to be creative certainly has characteristics that are more related to skills, attitudes and feelings. Four elements characterize the ability to think creatively, namely fluency, flexibility, originality, and elaboration. By the opinion (Munandar, 2009: 32) that the characteristics of creative thinking abilities, namely:

1) Fluency is a skill to create many ideas.
2) Flexibility is a skill in initiating various solutions to problems.
3) Authenticity is a skill in initiating various solutions to problems.
4) Detailing is a skill to explain something in detail or solve a problem using straightforward methods.

According to (Costa, 2001) Creative thinking includes cognitive skills (cognitive skills), metacognitive skills (metacognitive skills) and affective skills (attitude skills). These skills can be applied in life in all areas. Creative thinking falls within the domain of creativity and reflects a wider variety of ideas.

From several opinions of experts about creative thinking, some general characteristics can be defined cognitively, which can then be used as indicators of creative thinking.

Table 5. Indicators of creative thinking

Indicator	Description
Fluency	Can fluently provide many ideas to solve a problem (including many in giving examples).
Flexibility	Can come up with new ideas (to try other ways) in solving the same problem

Originality	Can generate extraordinary ideas to solve a problem. (can answer in his way)
Elaboration	Can develop ideas from existing ideas or break down problems into more straightforward issues.

Based on the exposure of experts' opinions regarding the HOTS indicators, namely: 1) problem solving, 2) decision making, 3) creative thinking, 4) critical thinking, a Table of HOTS indicators in this study can be made as follows:

Table 6. HOTS Indicators

HOTS Indicator	**Sub Indicator**
Solution to problem	1.Formulate the problem 2. Analyze the problem 3. Formulate the hypothesis 4. Collecting data 5. Testing the hypothesis 6. Determine the solution options
Decision-making	1.Analyze the cause of the problem 2. Identify the impact of the problem 3. Identify alternative decisions 4. Make a decision 5. Give reasons

	6. Predicting the impact 7. Assess the decision
Critical thinking	1. Analyze arguments 2. Evaluate questions and answers 3. Summing up the results 4. Deduce and consider the results of the deduction 5. Induce and consider the results of induction
Creative Thinking	1. Thinking smoothly 2. Think flexible 3. Think original 4. Thinking elaboration

C. HOTS questions

Learning evaluation is carried out using various test instruments, namely in the form of questions and non-test tools, questionnaires and observation sheets. Evaluation techniques that are often used mainly to measure learning objectives are evaluations in the form of test questions. The test measures the various developments that students have achieved after carrying out teaching activities for a certain period (Sudijono, 2013). The measurement of students' abilities during the learning process is classified

into three aspects of assessment, namely the cognitive, affective, and psychomotor domains.

Measurements in the cognitive domain are usually carried out through test instruments such as essay questions, multiple-choice, short entries, etc. The mental environment demands thinking skills for the desired goals. The thinking process describes the stage of thinking that must be mastered by students so that they can apply theory to action.

HOTS questions are arranged based on the level of domains C4, C5, and C6 formulated in the question indicators. HOTS questions can be presented in the form of multiple-choice questions, essays and others.

HOTS questions are measurement instruments used to measure higher-order thinking skills, namely the ability to think not only to recall (recall), restate (restate), or refer to but perform processing (recite). HOTS questions in the context of an assessment measure the ability to: (1) Transfer one concept to another, (2) Process and apply information, (3) Find connections from different kinds of information (4) Use the data to solve problems (5) Examine ideas and information critically. However, HOTS-based questions do not mean more complex questions than recall questions.

Viewed from the knowledge dimension, in general, HOTS questions measure the metacognitive dimension, not only measuring the factual, conceptual, or procedural dimensions, but the metacognitive size describes the ability to connect several different concepts, interpret, solve problems (problem-solving), choose a solution strategy.

Problems, find (discovery) new methods, argue (reasoning), and make the right decisions.

D. Characteristics of HOTS questions

1) Measuring higher-order thinking skills

The Australian Council for Educational Research (ACER) states that higher-order thinking skills are a process of analyzing, reflecting, providing arguments (reasoning), applying concepts to different situations, compiling, and creating. Higher-order thinking skills are not the ability to remember, know, or repeat. Thus, the answers to the HOTS questions are not explicitly stated in the stimulus.

Higher-order thinking skills include: The ability to solve problems (problem-solving), Critical thinking skills (critical thinking)., Creative thinking (creative thinking), The ability to argue (reasoning), The ability to make decisions (decision making). Higher order thinking ability is one of the essential competencies in the modern world, so every student must own it.

Creativity in solving problems in HOTS consists of:

a. the ability to solve unfamiliar problems;

b. evaluate the strategies used to solve problems from different points of view;

c. find new solutions that are different from the previous methods.

'Difficulty' is NOT the same as higher-order thinking. The level of difficulty in the items is not the same as higher-order thinking skills. For example, knowing the meaning of an unusual word (uncommon word) may have a very high difficulty level.

Still, the ability to answer the problem does not include higher-order thinking skills. Thus, HOTS questions are not necessarily questions that have a high level of difficulty.

Higher-order thinking skills can be trained in the learning process in the classroom. Therefore, to have higher-order thinking skills, the learning process also provides space for students to find activity-based knowledge concepts. Activities in learning can encourage students to build creativity and critical thinking.

2) Based on contextual problems

HOTS questions are assessments based on real situations in everyday life, where students are required to apply learning concepts in class to solve problems. Contextual problems faced by the world community today are related to the environment, health, earth and space, and the use of science and technology in various aspects of life. This understanding also includes how the skills of students to relate (relate), interpret (interpret), apply (apply) and integrate (integrate) knowledge in classroom learning to solve problems in real contexts.

3) Using various forms of questions

The various forms of questions in a test kit (HOTS questions) aim to provide more detailed and comprehensive information about the test takers' abilities. This is important for teachers to pay attention to so that the assessment can guarantee objective principles. The teacher's assessment results can describe the students' ability according to the actual situation. A review that is carried out objectively can ensure the accountability of the evaluation.

There are several alternative forms of questions that can be used to write HOTS items as follows:

a) Multiple choice

In general, HOTS questions use stimuli that come from real situations. Multiple-choice questions consist of the subject matter (stem) and answer choices (options). The answer choices consist of an answer key and a distractor. The answer key is the correct or most correct answer. Distractors are answers that are not correct but allow someone to be fooled into choosing it if they do not master the material/subject matter well. The expected answer (answer key) is generally not contained explicitly in the stimulus or reading. Students are asked to find answers to questions related to the stimulus/reading using the concepts of knowledge they have and using logic/reasoning.

b) Complex multiple-choice (true/false, or yes/no)

Complex multiplechoice questions aim to test students' understanding of a comprehensive problem related to one statement. As with common numerous choice questions, HOTS questions in the form of multiple complex choices also contain stimuli originating in contextual situations. Students are given several statements related to the stimulus/reading, then students are asked to choose true/false or yes/no. The ideas presented are related to one another. a specific pattern. A systematic, patterned arrangement can give clues to the correct answer.

c) Short or complete entries

Short or complementary questions require test takers to fill in quick answers by filling in words, phrases, numbers, or symbols. The characteristics of quick or complete questions are as follows:

1. The part of the sentence that must be completed should only be one part in the item ratio, and at most two parts so as not to confuse students.
2. The answers required by the questions must be short and definite in the form of words, phrases, numbers, symbols, places, or times.

d) Short or short answer

Questions in the form of short or short answers are questions whose answers are in words, short sentences, or phrases to a question. The characteristics of short answer questions are as follows:

1. Using direct question sentences or imperative sentences;
2. Questions or orders must be straightforward to get a short answer;
3. The length of words or sentences that student must answer on all questions is attempted to be relatively the same;
4. Avoid using words, sentences, or phrases taken directly from the textbook because it will encourage students to remember or memorize what is written in the book.

e) Description

The description form question is a question whose answer requires students to organize the ideas or things they have learned by expressing or expressing these ideas using their sentences in written form (Widana, 2017).

E. Higher Order Thinking Skill (HOTS)

High Order Thinking Skills is a thinking process of students at a higher cognitive level developed from various mental concepts and methods and taxonomies of learning such as problem-solving methods, Bloom's taxonomy, and taxonomies of learning, teaching, and assessment (Saputra, 2016: 91). High order thinking skills have problem-solving abilities, creative thinking skills, critical thinking, reasoning skills, and decision-making abilities. According to King, tall order thinking skills include critical, logical, reflective, metacognitive, and creative thinking. In contrast, according to Newman and Wehlage (Widodo, 2013: 162), with high order thinking, students will be able to distinguish ideas or ideas clearly, argue well, able to solve problems, able to construct explanations, able hypothesize and understand complex things more clearly. According to Vui (Kurniati, 2014: 62), high order thinking skills will occur if a person associates new information with information that is already stored in his memory and relates it or rearranges and develops the knowledge to achieve a goal or find a solution to a situation that is difficult. Hard to solve.

The primary purpose of high order thinking skills is to improve students' thinking skills at a higher level, especially those related to the ability to think critically in

receiving various types of information, think creatively in solving a problem using the knowledge they have and make decisions in solving problems. complex situations (Saputra, 2016: 91-92)

According to Krulik & Rudnick's view, problem-solving is a process, which means that each individual uses the acquired knowledge, skills, and understanding, which is then used in new situations. The process begins by comparing and concluding then students must integrate what they have learned and apply it to new situations. The problem-solving pattern, according to Krulik & Rudnick's view, is described in steps that can be taught to students, namely, (1) reading a problem, (2) developing information, (3) choosing strategies, (4) solving problems, and (5) recheck and expand.

Bloom divides the cognitive domain into six levels of thinking, namely, (1) knowledge or knowledge about recalling information that has been learned, (2) comprehension or understanding the meaning of the material, (3) application, using knowledge in new situations and situations that have never been experienced. Previously or applying rules or principles, (4) analysis, identifying and understanding parts of the material or the whole material, (5) synthesis, combining elements to form a new whole, and (6) evaluation, examining or assessing heart-based carefully on several criteria.

The revision of bloom taxonomy conducted by Anderson and Krathwohl focuses more on how the cognitive domain is mor lively and applicable for educators and learning practices that are expected to assist educators in processing and formulating learning objectives and efficient assessment strategies. The three concepts above,

which are the basis for high-order thinking skills, refer to analyzing, evaluating, and creating knowledge adapted to conceptual, procedural and metacognitive. According to (Krathwohl 2002), in A revision of Bloom's Taxonomy, it states that indicators for measuring higher-order thinking skills include analyzing (C4), namely the ability to separate concepts into several components and relate to each other to gain an understanding of the concept as a whole, evaluate (C5) is the ability to determine the degree of something based on specific norms, criteria or benchmarks, and creating (C6) is the ability to combine elements into a new whole and broad form, or to create something original.

HOTS abilities can also be seen from Anderson's Revised Bloom Taxonomy, where each level of Higher order thinking skills (HOTS) has different skills as listed in the following Table:

Table 7. Operational Verbs (KKO) in the cognitive level of the revised Bloom's Taxonomy

Cognitive Type	**Operational Verbs**
Remembering (C1)	Identify (identity), Remember, return, Read, Mention, Recite/recite, Write, Memorize, Arrange, list, Underline, Match, Choose, Define, State, etc.
	Explain, Interpret, Interpret, Tell, Show, Give, Example, Summarize, Infer, Compare, Classify, Show, Describe,

Understand (C2)	Differentiate, Adapt, Predict, Estimate, Explain, Substitute, Draw, Conclusion, Summarize, Develop, Prove, Etc.
Apply (C3)	Implement, Implement, Use, Conceptualize, Define, Process, Demonstrate, Calculate, Connect, Perform, Prove, Generate, Demonstrate, Complete, Adapt, Find, Etc.
Analyze(C4)	Differentiate, Organize, Attribute, Diagnose, Breakdown, Examine, Detect, Associate, Solve, Disentangle, Separate, Select, Select, Compare, Contrast, Describe, Divide, Create, Diagram, Distribute, Analyze, Sort, Receive, Opinion, Etc.
Evaluate (C5)	Checking, Criticizing, Proving, Defending, Validating, Supporting, Projecting, Comparing, Inferring, Criticizing, Assessing, Evaluating, Suggesting, Giving, Arguing, Interpreting, Recommending, Deciding, ETC.
Create(C6)	Construct, Plan, Produce, Combine, Design, Reconstruct, Create, Create, Abstract, Categorize, Combine, Construct, Design, Create, Design, Arrange, Rebuild, Assemble, Conclude, Pattern, Etc

(Direktoratpembinaan SMA, 2017:16)

F. KI dan KD SMA

Questions are organized based on KI and KD subjects. KI and KD physics subjects contain competencies of knowledge and skills. The KI and KD competencies of knowledge and physics skills of SMA Class X, XI, and XII semester one and semester 2 in the following Table:

Table 8. Core competencies of high school physics knowledge and skills Class X

Core Competency 3 (Knowledge)	**Core Competency 4 (Skills)**
KI 3. Understanding, applying, and analyzing factual, conceptual, procedural, and metacognitive knowledge based on his curiosity about science, technology, art, culture, and humanities with insights into society, nationality, statehood, and civilization related to the causes of phenomena and events, as well as applying procedural knowledge to specific areas of study according to his talents and interests to solve problems.	KI 4. Processing, reasoning, and reviewing in the concrete and abstract realms related to the development of the school independently, acting effectively and creatively, and able to use methods according to scientific rules

Table 9. Basic Competencies of high school physics knowledge and skills class X

BASIC COMPETENCIES	BASIC COMPETENCIES
3.1 Explaining the nature of physics and its role in life, scientific methods, and occupational safety in the laboratory	4.1 Making scientific work procedures and occupational safety, e.g., on heat measurement
3.2 Applying the principles of measuring the magnitude of physic, accuracy, accuracy, and substantial numbers, as well as scientific notation	4.2 Presenting the results of measuring the magnitude of physic and its thoroughness by using the right equipment and techniques and following the rules of numbers significant for a scientific investigation
3.3 Applying the principle of summing a plot vector (e. g. displacement)	4.3 Designing experiments to determine the resultant vector of a plot (e.g., displacement) along with the presentation of the results and their physical meaning
3.4 Analyzing the magnitude of physic in straight motion at a constant speed (fixed) and linear motion with constant acceleration (specified) following its application in daily life, e.g., traffic safety	4.4 Presenting data and graphs of the results of experiments on motion of objects to investigate the characteristics of straight motion with a constant speed (fixed) and linear motion with a constant

	acceleration (fixed) and the meaning of physic
3.5 Analyzing parabolic motion using vectors, along with their physic meaning and application in daily life	4.5 Presenting data on the results of illustrative motion experiments and their physic meanings
3.6 Analyzing the magnitude of physic in a circular motion at a constant rate (fixed) and its application in daily life	4.6 Conduct experiments following the presentation of the results on circular motion, the meaning of physic and its utilization
3.7 Analyzing interactions in styles and relationships between force, mass, and straight motion of objects and their application in everyday life	4.7 Analyzing interactions in styles and relationships between force, mass, and straight motion of objects and their application in everyday life
3.8 Analyzing the regularity of planetary and satellite motion in the system based on Newton's laws	4.8 Presenting works on the motion of artificial satellites orbiting the earth, the utilization and impact they have from tracing various sources of information
4.9 Applying scientific methods to propose the idea of solving motion problems in daily life	4.9 Applying scientific methods to propose the idea of solving motion problems in daily life, relating to the concept of energy, effort (work), and the law of energy immortality

3.10 Applying the concept of momentum and impulses, as well as the law of the eternity of speed in everyday life	4.10 Presenting test results of the application of the law of eternity momentum, e.g., free-falling balls to the floor and simple rockets
3.11 Analyzing the relationship between style and vibration in everyday life	4.11 Conducting harmonious vibration experiments on simple swings and spring vibrations following the presentation of the results of the investigation and its physical meaning

So physics material class X semester 1 discusses the Nature of Physics and Scientific Procedures, Measurement, Vector, Straight Motion, Parabolic Motion, Circular Motion, newton law, newton law, twntang gravity, effort (work) and energy, momentum and implies and harmonious vibration. In general, class X physics material is close to everyday life, which can be seen and can be applied in daily life.

Table 10. Core competencies of high school physics knowledge and skills Class XI

Core Competency 3 (Knowledge)	**Core Competency 4 (Skills)**
KI 3. Understanding, applying, and animating factual, conceptual, procedural, and metacognitive knowledge based on his curiosity about science, technology, art, culture, and humanities with insights into	KI 4. Processing, reasoning, and reviewing in the concrete and abstract realms related to the school's development independently, acting effectively and creatively,

society, nationality, statehood, and civilization related to the causes of phenomena and events, as well as disseminating prose-dural knowledge in specific fields of study according to his talents and interests to solve problems.	and using methods according to scientific rules.

Table 11. Essential Competencies of high school physics knowledge and skills grade XI

BASIC COMPETENCIES	**BASIC COMPETENCIES**
3.1 Applying the concept of torque, moments of inertia, heavy points, and angular momentum to rigid objects (static and dynamic) in everyday life, e.g., in sports	4.1 Creating works that apply the concept of heavy points and equilibrium of rigid objects
3.2 Analyzing the elasticity properties of materials in daily life	4.2 Conduct experiments on the elasticity properties of a material following the presentation of the results of the investigation and its utilization
3.3 Applying static fluid laws in daily life	4.3 Designing and conducting experiments that utilize static fluid properties, following the

	presentation of experimental results in technology
3.4 Applying dynamic fluid principles in technology	4.4 Creating and testing simple projects that apply fluid dynamics principles
3.5 Analyzing the influence of heat and heat transfer which includes the thermal characteristics of a material, capacity, and conductivity of heat in daily life	4.5 Designing and conducting experiments on the thermal characteristics of a material, especially to the capacity and conductivity of the heat, along with the presentation of the results of the investigation and its utilization
3.6 Explaining the theory of gas kinetics and gas characteristics in enclosed spaces	4.6 Presenting works relating to the kinetic theory of gas and its physical meaning
3.7 Analyzing changes in ideal gas conditions by applying thermodynamic laws	4.7 Creating a work/model for the application of law I and II Thermodynamics following the presentation of the meaning of physic
3.8 Analyzing mechanical wave characterization	4.8 Conducting experiments on one of the characteristics of mechanical waves following the presentation of the results
3.9 Analyzing the magnitude of walking wave physic and	4.9 Conducting running wave and stationary wave experiments, along

stationary waves in a variety of factual cases	with the presentation of experiment results and their physic meaning
3.10 Applying the concepts and principles of sound and light waves in technology	4.10 Conducting experiments on sound waves and light, as well as the presentation of test results and their physic meanings such as sonometers and diffraction grids
3.11 Analyzing how optical tools work using the reflecting and refraction properties of light by mirrors and lenses	4.11 Creating works that apply the principle of reflection and refraction to mirrors and lenses
3.12 Analyzing the symptoms of global warming and its effects on life and the environment	4.12 Submitting ideas for solving global warming problems to their symptoms and impacts on energy and the environment

So physics material class XI semester 1 discusses about Balance and dynamics of rotation, Elasticity and Hooke Law, Static Fluids, Dynamic Fluids, Temperature, Heat and Heat Transfer, Gas Kinetic Theory, Thermodynamic Law, Characteristics of mechanical waves, Walking waves, and Stationary waves, Sound Waves, Optic Tools, and Symptoms of global warming In general class XI material physics materials are close to daily life. That can conduct experiments and can be applied in everyday life.

Table 12. Core competencies of high school physics knowledge and skills Class XII

Core Competency 3 (Knowledge)	Core Competency 4 (Skills)
KI 3. Understanding, applying, analyzing, and evaluating factual, conceptual, procedural, and metacognitive knowledge based on his curiosity about science, technology, art, culture, and humanities with insights into society, nationality, Chenega-rain, and civilization related to the causes of phenomena and events, as well as applying procedural knowledge to specific areas of study according to his talents and interests to solve problems.	KI 4. Processing, reasoning, reviewing, and creating in the concrete and abstract realms related to the school's development independently and act effectively and creatively, and able to use methods according to scientific rules.

Table 13. Essential Competencies of high school physics knowledge and skills class XII

BASIC COMPETENCIES	BASIC COMPETENCIES
3.1 Analyzing the working principle of direct electrical equipment (DC) and its safety in daily life	4.1 Conducting experiments on the working principle of unidirectional electrical circuits (DC) with scientific methods following the presentation of the results of the experiment

3.2 Analyzing electric charge, electric force, strong electric field, flux, electrical potential, electrical potential energy as well as its application in various cases	4.2 Conducting experiments following the presentation of the results of electrical experiments (e.g., filling and emptying capacitors) and their benefits in daily life
3.3 Analyzing magnetic fields, magnetic induction, and magnetic forces in various technology products	4.3 Conduct experiments on magnetic induction and magnetic forces around electric wires following the presentation of the result
3.4 Analyzing electromagnetic induction phenomena in everyday life	4.4 Conducting experiments on electromagnetic induction following the presentation of the results of experiments and their utilization in daily life
3.5 Analyzing alternating current circuits (AC) and their application	4.5 Presenting the working principle of applying alternating current circuit (AC) in daily life
3.6 Analyzing the phenomenon of electromagnetic radiation, its utilization in technology, and its impact on life	4.6 Presenting the benefits and effects of electromagnetic radiation on daily life
3.7 Explaining the phenomenon of changes in length, time, and mass associated with the frame of reference and equality of	4.7 Presenting the concept of relativity about length, time, mass, and mass equality with energy

group with energy in the theory of special relativity	
3.8 Qualitatively explain quantum symptoms that include the radiation properties of black matter, photoelectric effects, Compton effects, and X-rays in everyday life	4.8 Present written reports from various sources on the application of photoelectric effects, Compton effects, and X-rays in everyday life
3.9 Explaining the concept of data storage and transmission in analog and digital form and its application in factual information and communication technology in everyday life	4.9 Presenting information search results on the transmission and storage of data in analog and digital form and its application in information and communication technology (e.g., banner posters)
3.10 Analyzing the characteristics of atomic nuclei, radioactivity, utilization, impact, and protection in daily life	4.10 Presenting reports on radioactive sources, radioactivity, utilization, influence, and protection for life
3.11 Analyzing the limitations of energy sources and their impact on life	4.11 Presenting ideas on the impact of limited energy sources on the life and problem-solving efforts with alternative energy

(Lampiran Permendikbud No. 37 year 2019)

So physics material class XII semester 1 discusses the Series of direct currents, Static Electricity, Magnetic Fields, Electromagnetic Induction, Alternating Current Circuits, Electromagnetic Radiation, Special Relativity Theory, Quantum Concepts

and Phenomena, Digital Technology, Atomic Nuclei, and Energy Sources. In general, class XII material physics materials close to daily life. Who can conduct experiments and design apart and can be applied in everyday life.

G. Relevant Research

Rizki Firda Amalia conducted the first research and Siti Wahyuni 2020) with the Content Analysis of High Order Thinking Skills (HOTS) Physics Questions for the 2018 SBMPTN. Of HOTS questions with the criteria that most of the questions are already HOTS. The category of questions that appeared the most in 2018 was the cognitive level of analyzing (C4), 53.33%. 2) In 2018 there were 80% of questions contained indicators of critical thinking skills with the criteria that most of the questions already contained these indicators. The indicator that appears the most is the analytical indicator as much as 40%. 3) The questions that contain problem-solving indicators in 2018 are 60%, with the criteria that half of the questions already contain these indicators. The indicator of problem-solving skills that appears the most is identifying problems that do not fit as much as 26.67%. This causes students' abilities to be unfamiliar with high order thinking, especially identifying problems.

Siswoyo conducted the second research and Sunaryo (2017) in Jakarta titled "High Order Thinking Skills: Problem Analysis and Its Implementation in Physics Learning in High Schools". Based on the analysis results using three aspects of assessment, namely: Material, Construction and Language, it can be concluded that the formulation of temporal indicators uses more operative words to calculate or

determine. The construction of the questions is still not good because most of them do not use pictures/graphics or description data that are not good, while based on language analysis in general, the use of language in questions is quite good. So when viewed from the requirements of the HOTS questions, the questions developed by the teacher are still at the level of memory, understanding and application. At the same time, HOTS requires thinking, analysis, evaluation and application levels.

Syaiful Rochman conducted the third relevant research and Zainal Hartoyo in 2018 in Bengkulu with the research title "Analysis of High Order Thinking Skills (HOTS) Taxonomy Analyzing Physics Problems". His study concluded that the HOTS of class XI high school students in Bengkulu Tengah District towards physics as a whole was dominated by moderate abilities. The measurement results show very high analytical ability, one student or 0.5%, high analytical ability, 59 students or 40%, good analytical ability, 62 students or 42%, low analytical ability, 25 students or 17%, meagre analytical ability, one student or 0,5%. From this research, it can be seen that the students' HOTS ability is still in the moderate category in general.

The fourth relevant research was conducted by Wandy Suhady, Yenita Roza and Maimunah in 2020 in Riau with the title "Development of questions to measure students' HOTS". The investigation resulted in a product in a HOTS Question Bank and a HOTS Question Instrument. Researchers designed the instrument through several stages, starting from the analysis stage, curriculum analysis, design stage, development, formatively evaluation, and summati vely evaluation. Furthermore, the HOTS question

instrument has gone through a validation process by a validator who is an expert in learning mathematics. Valid is illustrated from the results of the validator's assessment, where all validators state that they are good.

The fifth relevant research is Suryani Fadhilah, SilviYulia Sari, Yenni Davina, and Wahyuni Satria Dewi (2020) with the title Analysis of Physics LKS Presentation Class X Semester 1 related to Higher Order Thinking Skills (HOTS) components where this study aims to describe the availability of HOTS in LKS Physics class X SMA. The results showed that the availability of the HOTS indicator in the LKS was still not good with the average percentage obtained in the less facilitating and non-facilitating categories. The LKS that received the highest rate of the HOTS indicator was the LKS made by the subject teachers of SMAN 12 Padang, 39% in the less facilitating category. In contrast, the LKS obtained the lowest percentage HOTS indicator was CV. Publishers Grahadi 14% in the category of not facilitating. This shows that the physics learning process in West Sumatra has not trained students' HOTS abilities because the teaching materials used in the learning process have not facilitated HOTS.

From the relevant research that the researchers collected, it can be seen that the ability of students in higher-order thinking or Higher Order Thinking Skills is still low. Due to the availability of questions that are trained to students are still at an ordinary cognitive level, namely C1 - C2. This makes it difficult for students to answer exam questions with the HOTS criteria. From previous research, it is known that there has been no research conducted to investigate or review the availability of HOTS-oriented

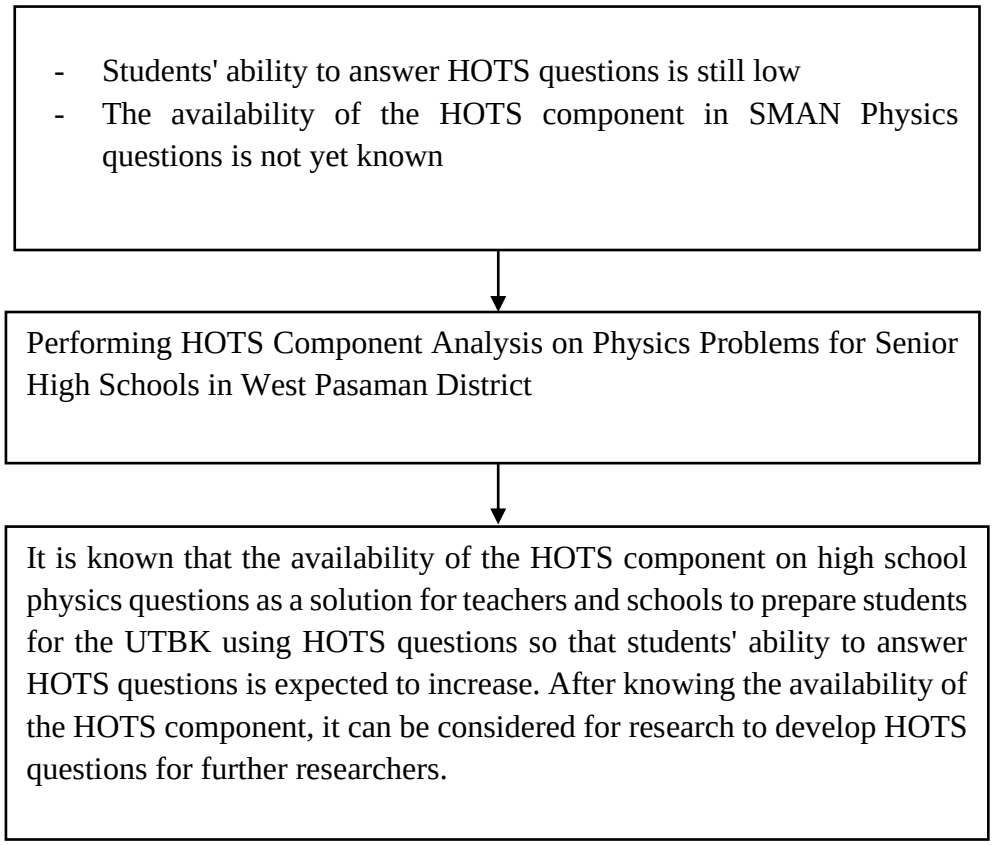
questions. Therefore the researchers wish to research the availability of the HOTS component on the questions used by high school students throughout West Pasaman District.

H. Framework

The research framework will provide a direction that can be used as a guide for researchers in carrying out their research. The evaluation of learning is done using various kinds of test instruments, namely in the form of questions and non-test tools, namely in questionnaires and observation sheets. Evaluation techniques that are often used mainly to measure learning objectives are evaluations in the form of test questions. The test serves to measure the various developments that have been achieved by students after carrying out teaching activities for a specific period (Sudijono, 2013). The measurement of students' abilities during the learning process is classified into three aspects of assessment, namely the cognitive, affective, and psychomotor domains.

Measurements in the cognitive domain are usually carried out through test instruments such as essay questions, multiple-choice, short entries, etc. The mental environment demands thinking skills for the desired goals. The thinking process describes the stage of thinking that must be mastered by students so that they can apply theory to action.

The results of the revision of Bloom's taxonomy where thinking skills in the cognitive domain are divided into six levels, namely: remembering (C1), understanding (C2), applying (C3), analyzing (C4), evaluating (C5) and creating/creating (C6) (Retno, 2011). The first three (lowest) levels, namely C1, C2 and C3, are Lower Order Thinking Skills (LOTS), while the following three levels, namely C4, C5 and C6, are the Higher Order Thinking Skills (HOTS) types.



Picture 1. Reseach Framework

CHAPTER V

CONLUSION

A. Conclusion

Based on the research results on the analysis of the HOTS indicators on physics questions in SMAN class X, XI, and XII in 2018/2019 and 2019/2020, it can be concluded that every UAS and UTS questions are included in the less available category. This is evidenced in the HOTS questions. At most, only five questions were found. With the availability of the HOTS component on the UTS and UAS Physics questions in the West Pasaman District, they are in the category of moderately available, less available, and unavailable. Only the UAS exams for class XI semester 1 2018/2019 are in the less general category, and UAS class X semesters 1 and 2, class XI semester two, and class XII semester 1 is in the unavailable category and for UTS from the six SMANs in the unavailable category. And the component that is often used is problem-solving and what is never used is creative thinking. It can be seen that the average cognitive level used is only up to C3.

The comparison of the analysis of the HOTS indicators on physics questions is seen in class X in 2019/2020, which is higher than in 2018/2019, while in class XI and XII, the indicators for HOTS questions are higher in 2018/2019 than in 2019/2020, this is because of lack of availability of HOTS on physics UAS in West Pasaman District in every question. As for the HOTS question indicators at the UTS in West Pasaman District, 3 SMANs with the highest HOTS in 2018/2019, while 1 SMAN and 2 SMANs with the highest HOTS in 2019/2020. So the availability of HOTS questions has not been made well.

B. Suggestion

Based on the results of the research conducted and the conclusions obtained,

the researchers put forward the following suggestions:

1. Teachers should use HOTS category questions by applying HOTS-based learning; students will become active, critical, creative, and problem-solvers in everyday life.

2. Other researchers, to continue making questions that contain HOTS indicators or according to the proportions for making HOTS questions and questions in them.

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